

Abstract:

Most adults over 65 years old, live in mainstream housing in the UK, yet these can often be unsuitable for an individual's needs. With increased understanding of the relationship between housing, and health and well-being, the importance of modifying the home to suit individuals is recognised as being paramount. However, it is often difficult to monitor the ways in which home adaptations and equipment are used in the home. This study used innovative wearable technology to explore everyday, lived experiences of using home adaptations and equipment. Six older adults who had received a major home adaptation in the last 24 months took part in this study. Each participant used a wearable camera for one day and participated in a semi-structured interview whilst watching the images back as a 'slideshow'. Using this novel approach, three themes were generated from the data: acquiring adaptations and equipment, adapting routine and changing behaviour, and inconsistent and unintended uses. The findings of this study opens up the complexity of the lived experience of using home adaptations and equipment. Experiences from access to long-term outcomes are personal, and individuals modify and use the adaptations in various ways to suit their own needs. The wearable camera allowed additional insight into lived experience that would otherwise not have been captured without its use, as the photographs acted as a way of stimulating conversation and highlighting taken-for-granted behaviours not often consciously considered by the individuals.

Keywords: Integrated health and social care, home adaptation, lived experience, activities of daily living, wearable camera, visual method

What is known about this topic:

- In the U.K., most homeowners aged 65 and over wish to continue living in their own home.
- Home adaptations and equipment can help older adults maintain independence in their own home.
- Emerging life-logging technologies offer a new way of measuring daily living.

What this paper adds:

- Lived experience of using home adaptations and equipment, from access to long-term outcomes, is complex and personal.
- Individuals often modify home adaptations and equipment to ensure they fit their individual needs.
- The use of this technology, in conjunction with the semi-structured interviews, highlighted taken-for-granted behaviours with use of home adaptations not often consciously considered by the individuals.

It is widely recognised that housing has the potential to impact health and well-being (Gibson et al., 2011; Liddell & Morris, 2010; Marmot et al., 2010; Hilary Thomson & Thomas, 2015; Hilary Thomson, Thomas, Sellstrom, & Petticrew, 2009). More than 80% of homeowners aged 65 and over in the U.K. wish to continue living in their own home (Lloyd & Parry, 2015), and over 90% of people in the UK over 65 currently live in mainstream housing (Office for National Statistics, 2014). With homes now being acknowledged as a place for both independent living and delivery of care (Carnemolla & Bridge, 2018), there is an understanding of the need to

ensure cooperation and integration of services, including housing (Local Government Association, 2015).

Whilst many older people, including those living alone, experience independent and fulfilling lives, evidence suggests that ageing is associated with greater risk of living with higher levels of disease and disability, including long-term conditions, mobility limitations, social isolation, mental ill health and falls (Age UK, 2018). Home adaptations are one way of older adults maintaining independence in their own homes by improving biopsychosocial well-being, including physical functioning and psychological factors, such as self-confidence and a sense of control, and social participation (Adams & Hodges, 2018; Carnemolla & Bridge, 2018; Powell et al., 2017). Home adaptations also support community caregiving (Carnemolla & Bridge, 2018). Strong evidence now suggests that minor adaptations (those costing less than £1000) can be cost-effective in preventing falls and injuries, improving performance of everyday activities and improving mental health (Powell et al., 2017).

Everyday lived experiences can be difficult to capture. Typically, performance-based measures, such as accelerometers, or self-report measures, such as questionnaires or diaries are used to measure aspects of daily living. However, both can be problematic. Whilst performance-based measures neglect personal experiences and contextual factors (Kerr et al., 2013), self-report measures can be limited by their subjectivity and recall biases (Althubaiti, 2016). Emerging life-logging technologies, such as the wearable camera, offer a new way of measuring varying aspects of daily living. A wearable camera is a camera worn on the body and allows continuously still footage to be captured without user input, recording a visual diary of the user's day. This allows the device to record multiple aspects of daily living, including contextual information (Kerr et al., 2013), without relying on memory of events (Bell & Gemmell, 2009). Wearable cameras are considered as a close equivalent of the 'gold

standard' measure of observation within the assessment of health behaviours (Doherty et al., 2013; Kerr et al., 2013). Further evidence has recommended using these tools in conjunction with other data collection measures, such as interviews, to ensure participants' own insights are also captured (Wilson, Jones, Schofield, & Martin, 2018).

This study aims to use a novel data collection method of a wearable camera and semi-structured interviews to explore everyday, lived experiences of using home adaptations and equipment.

Methods

The findings in this paper present a thematic representation of case studies as part of a larger study. The larger study explored the role of home adaptations in improving later life (Bailey, Hodgson, Aitken, & Wilson, 2018; Hodgson et al., 2018). Ethical approval was received from [name removed for peer-review], Health and Life Sciences research ethics subcommittee.

This study adopted a Phenomenological methodology (Manen, 1997) due to the focus on understanding and describing lived experiences (Swanson-Kauffman & Schonwald, 1988). van Manen's Hermeneutic Phenomenology, like that of Husserl, wishes to understand human experience as it is lived. This is also echoed in Heidegger's, "Being-in-the-world", a phrase used to denote the way human beings are involved with, act and exist in the world (van Manen, 1990).

Qualitative case-studies were carried out using a novel data collection technique which aimed to collect data that could not otherwise be gathered. Data was collected using a combination of photographs automatically captured using a wearable camera (Autographer, OMG Life), and semi-structured interviews. The in-depth themes generated using the innovative

combination of data collection tools informed further data collection within the larger study (Bailey et al., 2018).

The Autographer (OMG Life) wearable camera was used in this study. The Autographer is a small, light (58g) camera with a 136-degree wide-angle lens, and can be either worn on a lanyard, resting on the user's chest or clipped onto clothing. It automatically captures at least one still image every 30 seconds, without user interaction. The wearable camera does not capture video footage. Due to the position of the camera, it enables the recording of activity, social participation, and health-related behaviours, as well as use of assistive devices, adaptive behaviours, and home adaptations (Wilson, Jones, Schofield, & Martin, 2016).

The recorded images enhanced each semi-structured interview in that images were reviewed as a 'slideshow' with each participant whilst the interview took place. This allowed the image contents to act as a reminder to individuals, or to spark conversation from the interviewer. This data allowed participants to reflect on taken-for-granted behaviours, and everyday use of home adaptations, enhancing interview data collection in this study. This method privileges the individual, promoting the importance of individual journeys and experiences (Wilson et al., 2018).

This study was carried out over two local authorities in the North East of England. Sampling criteria (age, gender, ethnicity, house type, tenure, household composition, funding source for adaptation, adaptation size) were given to local authorities to identify participants. Both local authorities were involved in the study stakeholder group, had knowledge about the project and the wearable camera, and had built up a relationship with the research team. The research team took time to explain the project to the recruiters from both local authorities, and they were also given a project explanation script to read to potential participants. Potential participants were contacted and asked if they would take part in this study using

the wearable camera and interviews. Sixty-nine individuals expressed interest in participating, and after speaking to a member of the research team, 30 chose to participate in the study. From this sample of 30, six (three over each local authority) chose to use the wearable camera as well as participate in semi-structured interviews.

Once individuals had verbally agreed to participate in the study, GW visited each home to ensure they were fully informed and understood the camera's purpose and how to use it. Participants were given a demonstration, as well as written, illustrated instructions. Once the individual understood the process and had all of their questions answered, written consent was agreed.

Participants were asked to use the wearable camera over a one-day period (not overnight), only within their home or in the immediate surroundings outside of their home (i.e. in their garden). The privacy of participants and non-users (third parties) was imperative, and relevant ethical guidance was followed (Kelly et al., 2013). Kelly et al. (2013) recommend four ethical guidelines; informed written consent, privacy and confidentiality, non-maleficence, and autonomy of third parties. Informed written consent was followed as all participants were shown how to use the camera, including how to pause recording at any time they wished to do so, and were given information of how the images would be used, before they agreed to participate. Privacy and confidentiality were maintained as participants were given the opportunity to look at their images alone, and delete any images that they did not wish to be included in the dataset, or reviewed by the research team, furthermore only the research team had access to the full dataset, and data was stored according to regulations. Non-maleficence and the autonomy of third parties were both adhered to as participants were encouraged to turn off, or remove, the camera at any point, or if a visitor did not wish for them to use it. Participants did not wear the camera in public, only in their own home.

GW returned to the participant's home and uploaded the images onto a password-protected laptop. Participants were given the opportunity to look over their images before they were viewed by the research team, however, none of the participants wished to take up this opportunity. The semi-structured interview was carried out which consisted of scheduled questions, as well as guidance from the images (Table 1).

[Insert Table 1 here]

The images were reviewed as a 'slideshow' with each participant, enabling reflection on the image content. If the participant, or interviewer, wished to discuss the contents of an image the 'slideshow' was paused and then resumed. Interviews lasted between 25.34 and 48.38 minutes. All interviews were recorded using a Dictaphone.

Semi-structured interviews were transcribed verbatim before being entered into NVivo qualitative analysis software. Data was analysed using open and axial coding as individual categories (i.e. as individual locations, within each strand) by multiple members of the research team, before interim findings were drawn together to identify overarching themes and issues. Codes were generated inductively, derived entirely from the research data. Wearable camera images are used for illustration of these themes.

Findings

Six participants took part in this study (Table 2). Four received adaptations funded by local authorities. Two of these were for minor adaptations which are determined using a rapid assessment and are often directly provided by contractors appointed by local authorities. The other two participants underwent an assessment to receive a Disabled Facilities Grant (DFG)

for a major adaptation. Such assessments consider the necessity and appropriateness of the proposed changes, with regard to the individual's needs, and their reasonableness and practicableness in relation to the home environment (Wilson, 2018). Successful applicants can appoint their own contractors to install adaptations or rely on the local authority to organise installation.

[Insert table 2 here]

Participants used the wearable camera over a one-day period (mean 12 hours 52 minutes), gathering a total of 5757 images (mean 960) over the sample. There were various instances in which the photographs acted as a way of stimulating conversation, either because the individual had not consciously realised they had adapted their behaviour, used adaptations/equipment in an unintentional way, or because it created conversation around something not otherwise covered in the interview. This allowed a more detailed exploration of daily living than conducting the interviews alone, and generated themes that would otherwise not have been identified without further probing into the captured images. Three themes were generated from this novel method of data collection: acquiring adaptations and equipment, inconsistent and unintended uses, and adapting routine and changing behaviour.

Acquiring adaptations and equipment

The wearable camera evidenced some of the difficulties of acquiring home adaptations. As the photographs were viewed, and the participants were questioned on the nature of the adaptation or piece of equipment within the images, it was not just their function that was discussed. Participants also described their acquisition of the adaptations and equipment

including individual apprehension, or policy-driven ineligibility, which sometimes resulted in individuals making their own arrangements.

The perception of 'disability' was seen as a barrier to using adaptations and equipment for Participant 01, especially those outside of the home. Participant 01 continuously described his difficulty in accepting himself as being "*disabled*".

"I don't know how many walking sticks I've got, but I won't use them[...]I think people tend to look at you, you know, and I don't want to be disabled"
(Participant 01)

The image of disability was evidently difficult for Participant 01, and this sense of disability was heightened by the need for adaptations and equipment, especially those seen outside of the house, ultimately influencing his functioning. This prevailed for fixed adaptations, as he made social comparisons to justify his own use of two grab rails that were seen on the photographs as being placed at the rear entrance of his bungalow (Fig. 1). He rationalised his use of them because "*a number of people use them*".

Fig. 1. Grab rails at rear entrance (Participant 01)

Most other discussion around acquiring adaptations and equipment surrounded the difficulty in processes and eligibility. Participant 02 described her experiences of the system as being a "*fight*". As a result of questioning an adaptation in the photographs that the interviewer was not aware of, Participant 02 discussed her ineligibility of an entry ramp at the rear entrance, as the front entrance had already been adapted. The participant stressed the importance of her garden as being paramount for her own well-being. Participant 02 bought

artificial steps to improve access to the back garden (Fig. 2), however, lacked confidence when using the temporary adaptation.

“[the steps are] pretty high. I haven’t been out there yet, but I am going to... They wouldn’t give me rails for the back. They just gave me them for the front...so, I would like a rail there...I’ve bought these artificial steps myself, but they’re not much good” (Participant 02)

Fig. 2. Temporary handrail and walking frame (Participant 02)

Fig. 2 also shows a walking frame that Participant 02 keeps in the back garden, as she cannot transfer her walker, or other walking aids, outside. Participant 02 evidently modified her own home and used the equipment in ways which were most functional to her own daily living due to the barriers of acquiring further home adaptations. Local authority policies did not consider the individual’s own daily living or requirements, indirectly impacting her own well-being and personal safety. Participant 02 described the assessment process as being another barrier to acquiring further adaptations and when discussing her need for further adaptation she described not wanting to “*cave in yet*” as she was fearful of losing her attendance allowance, i.e. the help given for extra costs required if you have a disability severe enough that you need someone to look after you (UK Government, n.d.), and was “*dreading getting assessed*”.

Participant 05 also described an instance in which it was necessary to create her own adaptations. In this case, the legs of her own armchair had been raised, however, the local authority only adapted one of the three chairs (Fig. 3).

Fig. 3. Raised armchairs (Participant 05)

This impacted the appearance of the chairs, but also practical use, as the individual would no longer have been able to use other chairs in the room. Participant 05 relied on social capital, specifically the skills of her family, to ensure the adaptation was more appropriate for her own home, and for her use.

The individual's own personal context had an impact on the acquisition of home adaptations, whether this was due to stigma, perception of the processes, or the social context.

Adapting routine and changing behaviour

It was evident that individuals often adapted their own behaviour, with and without the use of adaptations or equipment. These behaviours were frequently seen within the photographs, and on occasion, participants had not considered their changes in behaviour as being relevant to their use of/need for home adaptations or equipment, and was therefore a conversation raised primarily due to wearable camera data.

Participant 02 was entirely reliant on a walker to move around her home, of which she described as being "*her legs*". This was evidenced by the wearable camera images as the participant used the walker in every image in which she was seen walking (Fig. 4).

Fig. 4. Using the walker to move around the home (Participant 02)

The walker was imperative to her mobility around the home, however relying on this at all times meant that some areas of her home were out of bounds due to its size. For Participant 02, keeping her home and her possessions were more important than her being able to use all of the space. Participant 02 adapted her behaviours in order to allow her to keep her home as it was, whilst being able to function using the walker. Additionally, the participant

described the way in which she has adapted her behaviours to lessen movement around the home, and the walker helped her to do this.

“I try to do things... You see, I go to the toilet, I try to do a lot of things on my way back. Pick things up and it saves me another journey” (Participant 02)

However, the walker did not completely reduce risk when walking around her home, and the participant learnt her own triggers, needing to *“sometimes rush back”* to her armchair to avoid falling.

Furthermore, based on one of the images showing pillows and duvet on the sofa (Fig. 5), Participant 02 discussed mobility limitations that impacted her sleeping habits.

Fig. 5. Pillow and duvet on the sofa (Participant 02)

Her reasoning for sleeping on the sofa was because *“it’s not so far to walk to the chair”* and the bed is *“a bit high”*.

Participant 02 acknowledged her own learnt behaviours in knowing the best way for her to use her own home, and to sleep.

“You work it out, what you can do” (Participant 02)

Participant 02 learned how best to use her own adaptations, and altered her behaviours and routine to align with the adaptation, ultimately to improve functioning. Participant 02 had a number of other adaptations and equipment around the home that she learned to use.

“I’ve learned [...] it takes time to get used to them” (Participant 02)

Some participants were seen on the images as adapting their behaviour by sitting down during tasks that usually require standing up. Participant 01 discusses the use of a stool in

the kitchen which he uses “*all the time*”. Fig. 6 below clearly illustrates Participant 01 sitting whilst washing the dishes.

Fig. 6. Sitting on the perch stool to carry out household tasks (Participant 01)

Participant 01 also described using the stool whilst carrying out other household chores, such as ironing. The stool allows Participant 01 to maintain participation in household chores that he could otherwise not do due to standing for too long. The wearable camera also showed P006 sitting down whilst completing household chores that would typically be carried out whilst standing up, due to long-term pain caused by arthritis (Fig. 7).

“If I stand too long, I can’t walk properly, you know. So I just sit there to do it” (Participant 06)

“I’ve tried standing at the sink. I can stand long enough to wash dishes and empty a washing machine, you know. But when I’m standing a long time my hip hurts” (Participant 06)

Fig. 7. Adapting behaviour to maintain functioning (Participant 06)

Although some food preparation was seen being completed standing at the kitchen bench, some was carried out whilst sat in the living room. Participant 05 also adapted her behaviour this way by sitting on a perch stool to prepare meals or carry out household chores in the kitchen (Fig. 8).

Fig. 8. Perch stool (Participant 05)

Participant 05 specifically used this perch stool when she felt increasing pain in her back or legs.

“It’s more uncomfortable, mind, trying to work that way. But it... But, yeah, you’ve got to put up with it, so... But it takes the pain away” (Participant 05)

The importance of adapting behaviour was evident more generally throughout the interview, and Participant 05 discussed “*common sense*” in working out strategies to maximise functioning.

“I think I’m good like that – working things out. But... I mean, these days, they don’t use their common sense” (Participant 05)

Participant 05 also described the way in which she adapted her behaviour to enter and exit the back of her home (Fig. 9).

“I’ve got two steps for you to walk up here. There’s two steps to go up into... [...] And I would... I went up the steps and turned round and came down the steps” (Participant 05)

Fig. 9. Rear entrance grab rail (Participant 05)

Some individuals described placing equipment strategically around their home, whereas others carried aids around with them. In Participant 01’s image set, it was possible to see a grabber hanging up in his kitchen which he describes using “*all the time*” and confirmed that this equipment remains in the kitchen, as well as a walking stick stood by the back door. This demonstrates the way in which individuals learn to adapt, and come to understand their own needs. Other participants (including Participant 02 and Participant 05) have kept their grabber, and/or walking stick, near their armchair, and in Participant 05’s case, carried it

around the home. However, Participant 01 strategically places the equipment around his home (Fig. 10), depending on how he uses the equipment.

Fig 10. Grabber and walking stick placed around the home (Participant 01)

Inconsistent and unintended uses

Individuals did not always utilise the adaptations and equipment, despite them being in their home. The variations of use were recorded on the wearable camera, and their use was dependent upon several factors. Whilst discussing these images, some participants described their use of the adaptations/equipment as being inconsistent, and depending on the individual, they either used them on days in which they had enough functional capacity to do so, or days in which they felt their functional capacity was low, and the adaptations/equipment allowed them to function as 'normal'. Participants also used adaptations and equipment in ways otherwise unintended.

For Participant 05, the adaptations made her feel "*normal*" (Participant 05).

"You just don't feel as if you're not normal. I keep saying that – not normal"

(Participant 05)

The adaptations and equipment were viewed as a way of allowing her to function as she used to. Participant 05 had a reclining armchair that she used to enable her to transition from sitting to standing and she used this function every time she got up from the chair (Fig. 11). Participant 05's daughter stressed the importance of this especially when Participant 05 was feeling at her "*worst*".

Fig 11. The reclining chair and surrounding equipment

Fig. 11 also shows the close proximity of items to the chair. Despite having equipment to hand, when discussing the image, Participant 05 stressed the importance of trying to do things independently in the first instance, and relied on the equipment and adaptations if this was not possible.

“Mind, I always try and do everything myself. [...] people say to you, “Oh, I’ll help you.” I say, “No, don’t. Unless I can’t do it.” Because I think the longer you do it, you get your muscles going.” (Participant 05)

Similarly, Participant 03’s intermittent use of adaptations including the stair lift (Fig. 12) and shower seat (Fig. 13) depended upon her physical health, however, rather than only being able to use this on good days, the participant used them when she felt she could not do it on her own. Participant 03 discussed only using the stair lift when she is “ill”, otherwise trying to “keep fit” by using the stairs

“I’m going to walk up the stairs to try and keep my fitness” (Participant 03)

Fig 12. The stair lift in use (Participant 03)

“If she’s not really up [for it], she can go in and just sit down and have a shower” (Participant 03’s husband)

Fig. 13. Walk-in shower with self-placed grab rail (Participant 03)

As well as providing Participant 03 with the physical ability to shower, the shower seat and grab rails also gave her confidence.

“I think it’s knowing [the shower seat is] there. It gives her confidence. Because we’ve got grab rails” (Participant 03’s husband)

Participant 04 had installed and retained adaptations and equipment for the future, and was “*hanging on*” to the walker to use outside “*when [her] legs are bad*” (Fig. 14).

Fig. 14: Shopping trolley and walker (Participant 04)

The image shows the walker, as well as a shopping trolley of which Participant 04 explained her use of it being dependent on “*how confident I’m feeling on the day*”.

Participant 02 had equipment and adaptations to assist her showering, specifically, grab rails above the bath and a seat in the bathroom (Fig. 15 and Fig. 16).

Fig. 15. Grab rails above the bath (Participant 02)

Fig. 16. A seat used in the bathroom (Participant 02)

Despite the installation of grab rails in the bathroom, it is evident from Fig. 15 that these were not being used as intended. This is due to Participant 02 only being able to use the adaptations when she felt physically able to do so.

“I don’t get many showers, you know. I use wipes – baby wipes and... On my bad days” (Participant 02)

There was clearly intermittent use of the grab rails, resulting in the bath being used as a place to hold her clothes rail and dry her washing. Although the adaptations and equipment influence Participant 02’s functioning, there are still times when adaptations and equipment are not enough.

“I have bad times where I think I can’t cope and I’m finished. And then I seem to get strength from somewhere to go on [...] but sometimes you feel like giving up” (Participant 02)

Participant 02 also used her walker, which was imperative for her own physical functioning, in a number of unintended ways. The participant described hanging her clothes to dry on the handles of the walker.

“I’m finding it hard to hang them on [a clothes rail]. I’m just putting them on the radiators, on the walker. And just letting them dry” (Participant 02)

Participant 02 also used the seat on the walker to carry her meals into the living room (Fig. 17), or to carry other items around the home, reducing the frequency of her movement (Fig. 18).

Fig. 17. Food and a hot drink being carried into the living room on the seat of the walker (Participant 02)

Fig. 18. Cleaning products, and the grabber, being carried on the seat of the walker (Participant 02)

Similarly, despite using the perch stool as intended, Participant 01 also adapted his perch stool, using it as a space to temporarily hold his ironing once done (Fig. 19).

Fig. 19. Unintended use of stool (Participant 01)

Discussion

This study aimed to explore everyday, lived experiences of using home adaptations and equipment. As a result of using a wearable camera in addition to semi-structured interviews, three themes were generated: acquiring adaptations and equipment, adapting routine and changing behaviour, and inconsistent and unintended uses.

Findings demonstrated that lived experiences of home adaptations and equipment are complex and personal, and the wearable camera allowed additional insight into these aspects of daily living that would not have been captured without its use. There are both personal and process-driven barriers hindering access and installation. These complexities remain after installation of the adaptation or equipment, with individuals changing their own routine and behaviours, as well as the inconsistent and unintended uses of adaptations and equipment. It is imperative to consider the person, and home holistically, including individuals' perceptions of use, their own daily living, and their use of the home. It is recognised that minor adaptations are more effective when combined with necessary repairs and home improvements, such as improving lighting or reducing trip hazards (Adams & Hodges, 2018; Powell et al., 2017). Furthermore, it is evidenced that the most successful outcomes are attained when the individuals, their families, and their carers are involved in decision-making processes (Adams & Hodges, 2018; Powell et al., 2017). This is consistent with the core finding of the present study, in the need to consider each individual and each home independently to get the most valuable outcomes.

Individuals often modify home adaptations and equipment to ensure they fit their individual needs, and the use of the wearable camera, in conjunction with the semi-structured interviews, highlighted these modifications and the taken-for-granted behaviours not often consciously considered by the individuals. Without the wearable camera data, participants were unlikely to be able to identify the depth of uses and outcomes they experienced. This suggests that services may face difficulty in illustrating, capturing and measuring the impacts of their services in such complex and nuanced environments. As such, the fact that the

themes outlined relate to unintended uses and changes to routine behaviours illustrates the potential to overlook their true value to both services and service users. As well as the importance of individuals being central to decision-making processes, a recent review proposed the importance of involving older people in service design, as an important step to give older adults a voice in this process and to promote personalisation of services (Adams & Hodges, 2018). Providing choice within home adaptations and their design is less likely to lead to the individuals' own modifications to the equipment, which is potentially dangerous.

Strengths and limitations

To better understand the complexities of acquiring and using home adaptations and equipment, it is essential to consider the person and home holistically. Home adaptations improve various aspects of biopsychosocial well-being (Adams & Hodges, 2018; Carnemolla & Bridge, 2018; Powell et al., 2017), however, many current data collection tools do not allow this data to be captured. It is suggested that additional methods to interviews in qualitative inquiry allow for richer more nuanced data (Black, 1994), and in this project, the wearable camera allowed insight into daily functioning, and interaction with the home environment that could not otherwise be captured. In privileging the individual's journeys and experiences (Wilson et al., 2018), the use of the wearable camera, in conjunction with semi-structured interviews, not only allowed the individuals' interactions with their home environment to be recorded objectively, but also ensured that meaning was given to these interactions. By reflecting on the images during the interview process, individuals were able to provide their own story, not only of the image's contents, but also the journey toward that point, including, access to the adaptation and personal or process-driven barriers. There were specific

instances throughout the dataset presented in this paper, in which conversation was solely stimulated from the images on the photographs, rather than conversation itself. This was either because the individual had not consciously realised they had adapted their behaviour until they viewed the images, because they had used adaptations/equipment in an unintentional way, or because it was something not otherwise covered in the conversation. This allowed a more detailed exploration of daily living than conducting the interviews alone, and informed further interviews within the larger study in which these case-studies were placed (Bailey et al., 2018). However, only as a result of using this technology, older adults choosing to wear the camera participated in this study, and many individuals were approached to do so but did not want to take part in the study specifically as they did not want to use the wearable camera. From the 69 individuals showing an expression of interest, and the 30 individuals choosing to participate in the wider study, only six individuals chose to wear the camera. This limitation has been acknowledged in other research, suggesting a specific type of well-functioning, interested individuals will use this type of technology (Wilson et al., 2018). Reasoning behind this has been explored, and similarly individuals' expectations were much more positive than their experiences of using this technology, and it is individuals' expectations that fuel their desire to decline participation. Familiarity of this type of technology in the wider population would be beneficial, as well as further exploration around the use of language and description of privacy features of the cameras.

The purpose of this study was to capture individual lived experiences, rather than to capture a representative sample, however, it is noted that all participants were recruited from two local authorities in the North East of England, and the sample size was relatively small. These are limiting factors, and have implications for the transferability of findings, due to a lack of

diversity between participants, as well as specificity of provision by the local authority services.

Furthermore, it is important to consider the recruitment strategy in this study as the individuals were recruited by the local authority, rather than the research team. The recruiters were made familiar with the wearable camera, and were also given a script, however, they may not have been able to fully articulate the use of the wearable camera and answer potential questions, or concerns, in the same way as a member of the research team. Finally, not all home adaptations and equipment were viewed on the camera, as they were used at times when it was inappropriate to use the camera (i.e. wet rooms and bathing equipment), therefore, some adaptations, their use, or modification may have been missed during this data collection.

Future directions

To the researchers' knowledge, this is the first study to use a wearable camera in this setting to examine lived experiences of using home adaptations and equipment, thus, providing a unique insight into these experiences. Further research utilising this method would be beneficial to build on this evidence base. Specifically, a longitudinal design would be beneficial collect camera and interview data at multiple points. Recording multiple time points, from before the acquisition of the home adaptation to long-term follow up, would allow further insight into the individual's journey, including changes to routine and behaviours, and decision-making within the unintended or inconsistent use of the adaptation or equipment.

Further research using wearable cameras in related areas would benefit from a recruitment strategy involving 'champions', i.e. peers who have chosen to use the camera can help others

in their decision to use it or not. This may reduce the likelihood of individuals' expectations leading them to decline participation without having seen the wearable camera, or having heard from anyone else that has used the camera.

Conclusion

This study clearly highlights the complexity of using home adaptations and equipment, from access to long-term outcomes. Lived experience is both complex and personal, and the wearable camera allowed additional insight into these aspects of daily living that would not have been captured without its use. Individuals often modify home adaptations and equipment to ensure they fit their individual needs, and the use of the wearable camera, in conjunction with the semi-structured interviews, highlighted these modifications and the taken-for-granted behaviours not often consciously considered by the individuals.

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Table 1: Semi-structured interview schedule.

<p>Please tell me about your adaptation.</p> <ul style="list-style-type: none">• What was the motivation for you to get this adaptation?• What prompted you to get this adaptation?
<p>Please tell me about the process of acquiring the adaptation.</p> <ul style="list-style-type: none">• Positive?• Negative?
<p>Were there any barriers to getting the adaptation?</p>
<p>Is this the adaptation that you wanted?</p>
<p>Tell me the differences that it has made to your life, if any.</p>
<p>How did you manage beforehand?</p> <ul style="list-style-type: none">• What strategies did you use?
<p>Has this adaptation had an effect on anyone but yourself?</p>
<p>Would you have further adaptations made to your home?</p> <ul style="list-style-type: none">• What factors would influence your decision to do this?

Table 2: Participant characteristics

		Participant (n=)
Age	65-74	2
	75-84	3
	85+	1
Gender	Male	1
	Female	5
Ethnicity	White British	6
	Other	0
House Type	Bungalow	1
	Semi-detached	3
	Terrace	1
	Flat	1
Tenure	Social rent (local authority)	2
	Social rent (housing	0
	Owner occupier	4
	Private rent	0
Household composition	Lives alone	5
	One other occupant	1
	Two other occupants	0
Funding source	Disabled Facilities Grant	2
	Local Authority (No DFG assessment)	2
	Mixed	1
	Self	1
Adaptation Received	Minor	1
	Major	5