



TALKING
HEALTH
AND
HOUSING

TALKING TECHNOLOGY ENABLED CARE - A PERSONALISED, VISUAL, DIGITAL PLATFORM TO TRANSFORM HEALTH, SOCIAL CARE AND HOUSING SERVICES

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Introduction

The aim of the *Talking Technology Enabled Care* project was to conduct a feasibility study to co-design, implement, evaluate and deliver a novel, visual, digital care management application for those who find communicating their health needs challenging. The project has been funded by *Innovate UK*.

Effective communication is at the heart of holistic healthcare. Enabling people to talk about their needs and concerns is the first step in providing care that addresses these concerns, supports recovery and self-management. Technology is a potential enabler of communication between individuals and those in their informal or professional care network.

Technological solutions can enhance communication among professionals who are encouraged to work together across traditional boundaries to provide holistic healthcare that addresses individuals' health, social care and housing needs. However, for individuals with communication difficulties expressing their needs is especially challenging and the inability to collect and share information electronically inhibits interagency working. Harnessing – and developing – existing technology that enables talk between individuals with communication difficulties, carers and service professionals can address communication barriers and enhance integrated care delivery between the health, social care and housing sectors.

Talking Mats

Talking Mats (Ltd) is a social enterprise specialising in visualisation methods that aid communication. Over the past 6 years Talking Mats have developed an innovative, award-winning digital tool that helps people with communication difficulties, such as those with learning disabilities, living with dementia or after a stroke, to express their thoughts and needs. The aim of this project was to widen its potential as a digital health tool to new areas by co-designing, implementing, evaluating and delivering a novel, visual, digital care management application that is personalised to the needs of individuals with communication difficulties and facilitates inter-professional collaboration between health, social care and housing professionals. The project extended the use of Talking Mats technology into the housing sector, increasing Talking Mats market reach and potential impact.

Talking Mats has been developed through clinical experience (Speech and Language Therapists working with the NHS) and a programme of robust research at Stirling University (<http://www.talkingmats.com/projects/research/>) all focusing on developing and testing technology that addresses communication disability. *Talking Technology Enabled Care* aligns with key national strategies such as the UK Department of Health shared delivery plan for 2020, which focuses on enabling people and communities to make decisions about their own health and care, while also improving services through the use of digital technology and information.

Partners University of Stirling, Edinburgh Napier University, Age Scotland and the Wheatley Group have supported this project led by Talking Mats sharing the new Talking Mats housing-related product with over 1,000 voluntary organisations, representing 250,000 older people. Academic partners have evaluated and gathered robust data for development of the digital health tool. Increased availability of the personalised, visual-based, digital tool will transform the integrated health, social care and housing sectors and result in lasting impacts that will improve patient outcomes and support individuals with communication difficulties to access health services.

Background

The aim of the *Talking Technology Enabled Care* project was to conduct a feasibility study to co-design, implement, evaluate and deliver a novel, visual, digital care management application for those who find communicating their health needs challenging.

We believe this streamlined and targeted communication could transform healthcare delivery for people with communication difficulties and improve the efficiency and effectiveness of three key public services: Health, Social Care and Housing. The new Talking Mats product aims to be a conduit to connect these diverse set of actors:

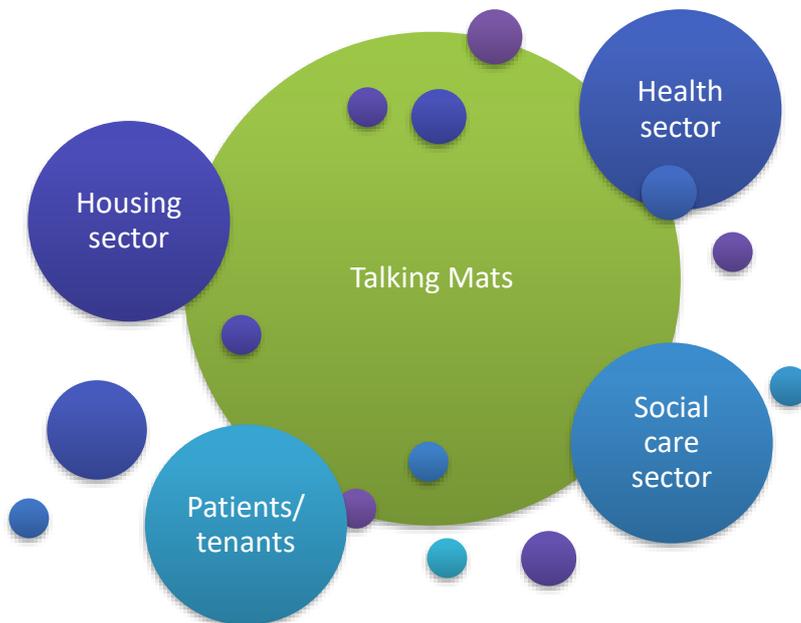


Figure 1: Key areas for Talking Technology Enable Care Project

By creating a more targeted, holistic, visual, digital care management tool that establishes clear and nuanced lines of communication via mobile technology, and testing this with patients/citizens and health, social care and housing professionals,

we have assessed if Talking Mats can enhance health (physical and mental) and social care outcomes of many vulnerable groups.

To deliver this new platform a diverse group of partners came together to explore new avenues of development:

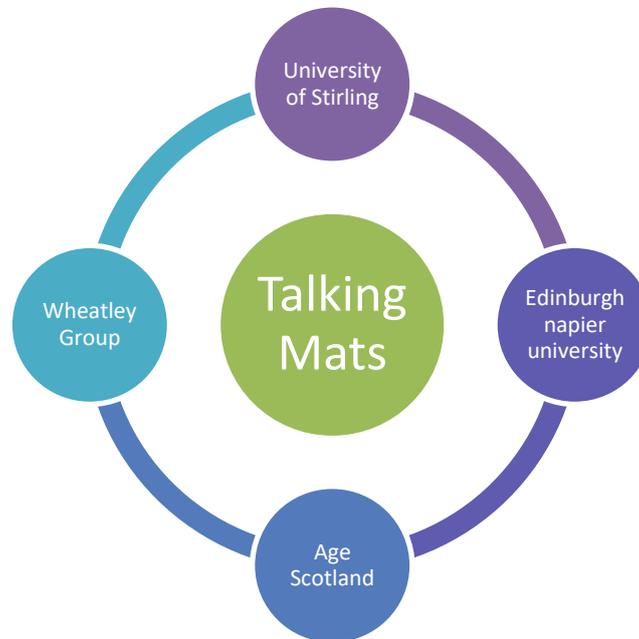


Figure 2: Project Partners

The context for testing the new platform was with Loretto Care (part of the Wheatley Group), which is a non-profit Housing Association with the aim to building properties and transform neighbourhoods to help tenants to get the most out of life. Loretto Care is dedicated to supporting tenant's health and provided access to social housing tenants to test the feasibility of the new communication platform.

The project was also supported by Age Scotland, a charity empowering older people in Scotland to enable them to enjoy better later lives. Their involvement was to widen the scope of the findings presented in this report and to develop further networks and insights that support older people living in the UK more widely.

Methodology

The development of the Talking Mats App and subsequent evaluation of the new housing-orientated Talking mats tool was conducted by the University of Stirling and Edinburgh Napier University, combining expertise in housing, health and technology. The project was conducted in a phased approach:

Phase 1: Co-design

Phase 1 included a comprehensive scoping exercise to co-design new personalised, visual dashboards of the health (physical and mental), social and housing needs of people with communication difficulties including people with learning disabilities and those living with dementia.

Twelve participants co-designed three sets of housing and health related concepts. Front-line professionals in health (3), social care and housing (4) and housing tenants (5) participated in the co-design process that concluded with 3 different sets of Mats:

- Home
- Well-being
- Supporting people

Arum Limited (an independent design company) then translated these findings to create a new visual platform co-designed and informed by the people who will be using the App:



Figure 3: Visual of scoping exercise output

The outcome of Phase 1 was an enhanced App building on the previous Talking Mats software; utilising and adapting the visualisation symbols drawn to user specifications by a leading graphic artist Adam Murphy (see front page and appendix for examples).

Phase 2: Implementation

Phase 2 created and implemented the newly designed product ready for testing and training.

Frontline housing professionals from partners The Wheatley Group (specifically Loretto Care) were given Talking Mats Foundation training so that the product could be tested between three case study areas in the social housing-based services governed by project partners in Glasgow. Researchers were also trained and carried out Talking Mats with tenants.

Case Study Areas

The three case study areas were specially selected to include social tenants that may have certain difficulties within communication. These were all managed by Loretto Housing and Care, with both Housing and Health staff involved in supporting social tenants.

Site 1 - East End of Glasgow within a multi-deprived area. Tenants were those with Alcohol Related Brain Damage (ARBD) and other health-related support needs.

Site 2 – South side of Glasgow. Supported accommodation for older people. Tenants included a range of ages 65+ with some living with dementia and other health-related support needs.

Site 3 – North side of Glasgow. Supported accommodation for adults living with disabilities. Tenants included those with learning and physical disabilities and other health-related support needs.

Phase 3: Evaluate

Phase 3 focused on data collection and analysis of the bespoke digital platform. Figure 3 shows the location, gender ratio and number of mats undertaken as part of this project. The mats were carried out with participants from all three case study sites. There were more participants who were men at the East End site, and more participants who were women at the South and North case study sites. 29 tenants participate overall, but repeated sessions and the project collected 38 mats in total.

Figure 4: Breakdown of Mat participants and location

Case Study sites	Number of Mats	Gender ratio	Number of tenants that had repeat sessions
Glasgow East	9	M7-F2	6
Glasgow South	9	M1-F4	10
Glasgow North	11	M0-F12	10
Unspecified*	9	M2-F1	3
Total**	38	M10-F19	29 participants

*Some Talking Mats were done out-with case study sites by trained staff
**Number of participants and Talking Mats are un-aligned due to some participants not wishing Mats to be shared.

Qualitative data was also collected via a number of focus groups and semi-structured interviews throughout the project. These were conducted with a range of health and

housing professionals who used the Talking Mats application as outlined in Table 4 below.

Figure 5: List of interviews conducted with health and housing professionals

Type of data collection	Who/What	Date
Scoping group meeting (1) notes	Project members, tenants, housing staff	02/05/2018
Scoping group meeting (2) notes	Project members, tenants, housing staff, health staff	09/05/2018
Field notes from Training session	Staff being trained to use TM	20/9/2018
Interview	Housing staff	25/10/2018
Interview	Housing staff	25/10/2018
Focus group	Health staff	29/10/2018
Focus group field notes	Health staff	29/10/2018
Interview	Housing staff	06/11/2018
Interview	Housing staff	13/11/2018
Interview	Housing staff	14/12/2018

Phase 4: Delivery and Dissemination

The new digital care management product was launched to the Scottish social housing sector to disseminate the results of the feasibility study to key groups.

The launch was on the 18th January 2019 in the Scottish Federation of Housing Association offices with over 40 attendees.

The project will be presented at the Housing Studies Association Conference.

The information will be used to teach others and will be presented in a research report and an article is being developed for the Journal of Social Inclusion.

The research will be presented at several conferences in the UK and internationally.

The report will be shared on the Talking Mats website.

A marketing plan will be developed to take the new resource into the wider Housing market.

Talking Mats is an inclusive and holistic communication framework and we wanted this to be reflected in the language used for the topics.

Once the topics were decided there was a lot of lively discussion about what options were needed under each topic that would best help tenants to express their views.

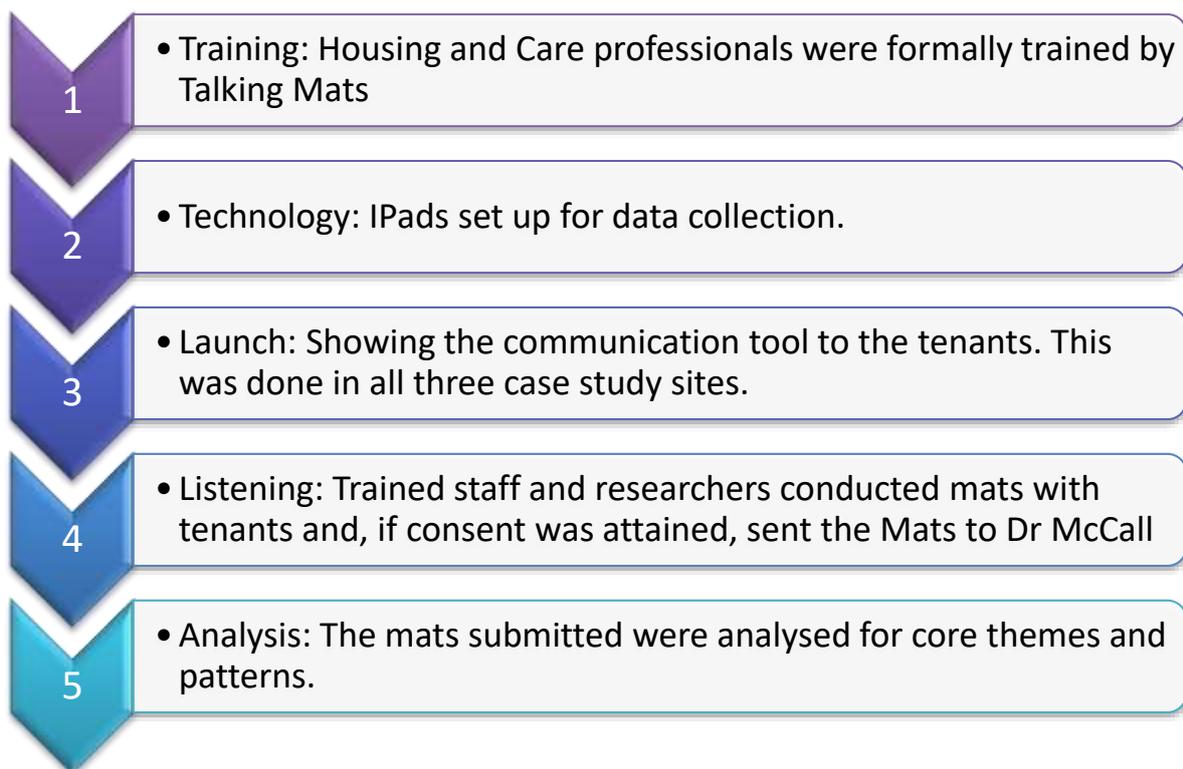
Once the topics and options for the App were finalised and designed by the graphic artist, Talking Mats tested App with 6 tenants in Fullerton, one of the case study sites with partners Loretto. Feedback was extremely positive, with participants very willing to do mats.

Feedback from the test resulted in 3 changes with the product (2 symbols were taken out due to duplication and the symbol 'brain' was added).

After testing, Talking mats and University of Stirling finalised the product for final development ready for training on the 31st July.

Talking Mats with social tenants

The project process included key steps for collecting the Talking Mats data with tenants.



Step 1: Training

Housing and care professionals were formally trained by Talking Mats in two separate sessions, gaining a certificate of achievement at the end of that process. Overall, 14 people were trained through the process. The Talking Mats training and

the Talking Mats product were well received by both those being trained as Talking Mats 'Listeners' and the social housing tenants who engaged with the process.

There were initial reservations about the App, but participants quickly engaged once they were shown it and it was explained. The feedback from staff is that Talking Mats would be helpful and effective – both in terms of the project and going forward in their work in communicating with tenants.

Overall these were very interactive and positive sessions where staff were interested and keen to learn about the mats and the project.

Lessons from the training:

- Feedback from the training process noted that the training sessions were essential to initial buy in of the communication tool.
- In some cases, staff were unsure of the relevance of the mats for their own role and how they could use them (in particular the activities co-ordinator). It was discussed that although the App might not be relevant for their work it could still facilitate positive engagement and perhaps a different set would be more appropriate this type of role.
- Participants felt that sub-mats would be beneficial for some of the project topics, as they could then gain more in-depth information about a particular aspect. Overall in terms of the project thought the topics and sets were good and appropriate.

Step 2: Technology

iPads were set up with the Talking Mats App for data collection and given to Loretto HA for dissemination to those who had been trained. A specific e-mail address and ID was set up for the project.

iPads were used for data collection, but it should be noted the App can be used on any tablet device.

Lessons from the technological set up:

- Although the project supplied iPads for use by Loretto staff, they noted that they have their own work iPads, and these could be utilised in the future.
- There were issues with the use of the e-mail system, where staff would have preferred to use their own work e-mails linked to the iPads
- There was a discussion about duplication and how the Mats would fit within current systems. However, overall it was felt that the mats could be useful in supporting Outcome Star (internal Loretto customer feedback mechanism).

Step 3: Launch

The new communication tool was launched to the tenants via 3 separate launch events at each of the case study sites.

For case study site 1, this was integrated into a standard coffee drop- in session where residents often come together to socialise. On arrival, 2 of the residents were present with more slowly joining in. The approach was to have tea and coffee and informally introduce ourselves as researchers and begin to introduce the App. This was 1 to 1, to allow focused time with each resident.

For case study site 2, a more formal event with cakes had been set up with the full resident body. On entering, the research team had to immediately present to a room full of 20 plus people. There was no ability to really go 1 to 1. For those trained in the App, we broke into groups to demonstrate and the groups were 3-4.

For case study site 3, the events manager organised a meet and greet in the common room. Once again there was the chance to informally meet people (as in case study site 1),and introduce the App more slowly and in a more focused way in the context of a social get together.

Lessons from the launch:

- When launching the product, an informal setting is much more effective. For case study sites 1 and 3, the communication tool was more effective.
- 1 to 1 introductions were the most effective, and often let to multiple, longitudinal data collection
- The Listeners must first gain the trust of participants before introducing the communications tool

Step 4: Listening

The Talking Mats were always carried out one to one. Most sessions were pre - arranged but some residents with particular communication difficulties made use of support workers when they wished. Participants took pseudonyms for data protection purposes.

The mixture of residents who did the mats was very positive, especially those who did repeat Mats. More on this is presented in the findings below.

Step 5: Key themes from the Talking Mats

Key topics and themes emerged when undertaking Mats with social tenants. In total 22 key themes (n=38 Mats) were identified. These included:

- Future
- Friends and Family
- Outside
- Housing referrals
- Health intervention
- Tenants group
- Technology
- Mental health
- Safety

- Neighbourhood
- Mobility
- Faith
- Communication and being Listened to
- Relationships not going well
- Repairs
- NEW Topics
- Health referral
- Treatment
- Independence
- Confidence
- Being active

The Future

Eighteen of the participants chose to focus on discussions about the future of their housing and health. This was one of the most popular themes that seemed to be generated from the Talking Mats discussions. The discussions focusing on the future were a mixture of housing and health outcomes such as about moving, improving health and increasing independence in the future.

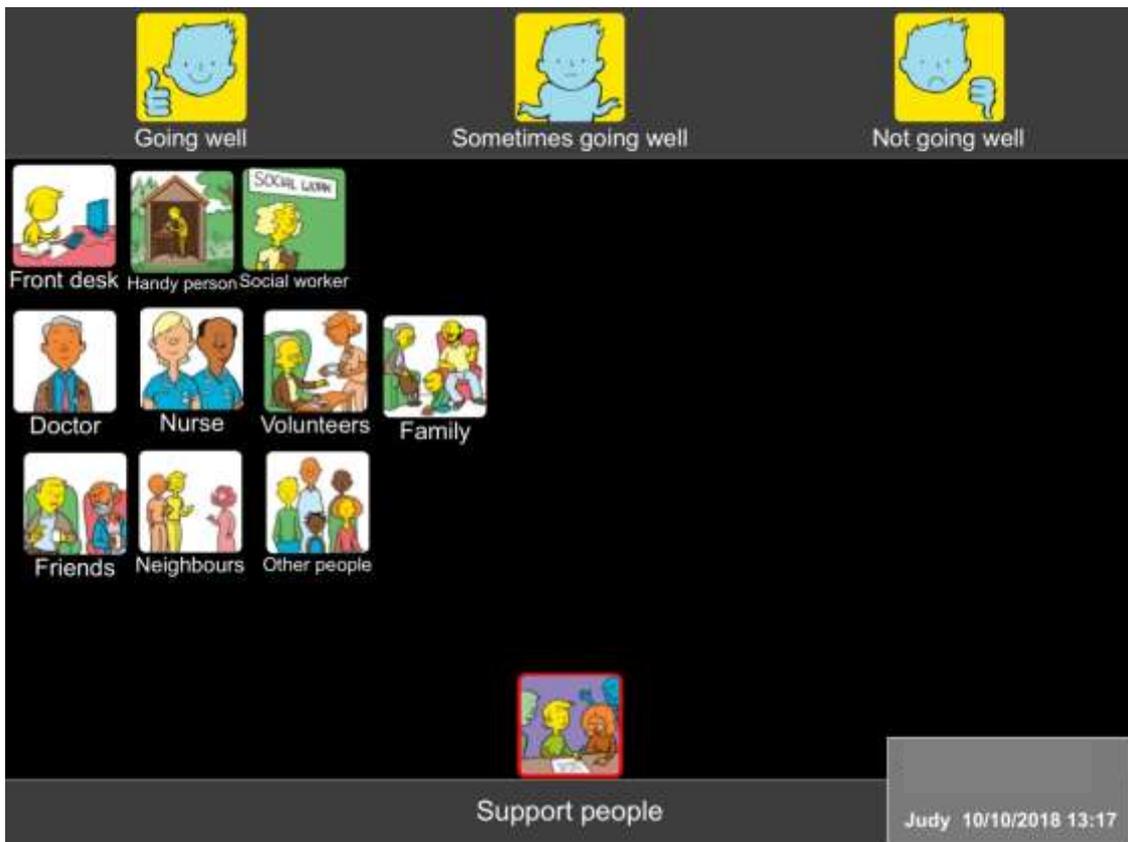
In this example, Judy connects moving with a wish for more things to do, transport links and the availability of tenancy information.



Support People

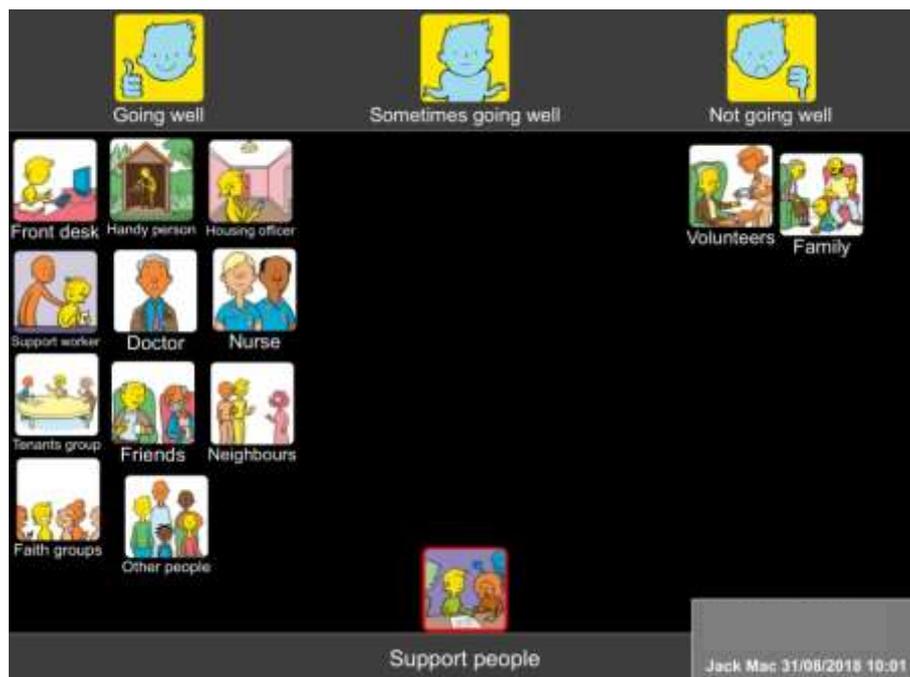
Friends and family were one of the most consistently positive themes of the Talking Mats discussions. Most participants were very happy within their family circles, placing these relationships as both positive and important. When comments about

family and friends were positive, the Mat itself seemed to lean more positively. For example, Judy (10/10/18) shows a very positive Mat here:



“I have a new social worker and he seems to be fine. I am with daily contact with my family. Have friends that I enjoy.” (Judy 10/10/18)

Others noted fewer positive relationships, such as JackMac (31/08/18):



“Have a son who works [anonymised] but the relationship with him is not well at the moment. Like to leave the relationship as is now. Not looking for to build or improve this relationship in future.”

(Jack Mac 31/08/18)

On some occasions the option card ‘family’ was connected to future plans, such as moving to Spain to ‘*build a home with siblings*’ (James, 31/01/18). There were only a limited number of people who placed family in the ‘Not going well’ category and the comments mirrored overall communication difficulties. This may be an important consideration for future use of Talking Mats, perhaps opening up opportunities to communicate with family and friends in a positive way.

In her Support People Mat Donna said:

“I don’t like the doctor I like my old doctor better, since moving flat, the old one is too far away, also I would rather have a woman doctor. With support workers sometimes they are annoying, and I want peace and quiet sometimes. Sometimes they say they have other people to see instead of me”. (Donna 31/08/18).

This session identified the following Actions:

Staff support to speak to GP surgery about changing to a female doctor - revisit in 1 month at end of Sept 2018. Support Donna to communicate concerns about having time with staff and other people receiving support in the same area/service. (Donna 31/08/18)

And in his Support People mat, Adam Adams identified that the relationship with the GP was going well but that he was not sure about ‘neighbours’ or ‘housing officers’.

Outside, neighbourhoods and safety

Outside spaces, such as gardens and wider neighbourhood spaces were frequently categorised as ‘Not going well’ by tenants. Neighbours and the wider neighbourhood were seen as areas of anxiety in terms of social interactions. Neighbourhood relationships were also a key discussion point. Many participants discussed their social relations outside the home, most wishing them to be stronger.

There were clear examples of the impact of interventions that link to both housing and health. For example, in speaking with Jean (31/08/10) in case study site 2, she noted her worry and anxiety about going outside. On giving closer detail, she discussed the ‘*slanty bit*’ (Jean, 31/08/10) outside that limited her and her fellow participants from venturing out too much due to worry of slips and falls. On being able to feed this back, a quick and easy housing solution was implemented to fix the ‘slanty bit’. This - both addresses and feeds into the preventative agenda and improves tenant mobility and anxiety, with the potential to increase well-being.

Safety outside also emerged as a key concern for other tenants as we can see from the two mats below.

Going well

Sometimes going well

Not going well

Transport

Inside your home

Tenancy information

Technology

Neighbourhood

Safety outside

Garden/patio

Chance to socialise

Repairs/maintenance

Household management

Things to do

Being listened to

Getting in/out

Access to facilities

Neighbours

Home

cat mccat 23/10/2018 3:45



In his 'Home' mat Adam Adams explained that his front door was broken which was referred to the housing officer for repair. This is a standard repair type service in social housing association provision. However, the Talking Mat noted that this feeling of safety is more nuanced than simply the front door. The same participant notes that the things that are not going well includes 'safety inside', 'safety outside' and technology, followed closely on the items they are not sure about that included 'neighbourhood', 'neighbours' and 'not being listened to'.

Even when feeling safe, participants still did refer to feelings of safety, which highlights the importance of safety for this group:

'keeping fit is important go Monday and Friday like living here compared to other place feel safe here when going outside like to go as a group go to clubs together' (Madonna 31/08/18)

(Adamadams) also did a 'Well-being' Mat, and things that were not going well included 'mobility', 'vision' and 'communication'. This provided more depth about why feelings of safety inside and outside have been compromised - there is a clear health link in this support need. So, although the tenant has reported a specific housing-related item - a door repair - the Mat gives a much more nuanced picture of the respondent's support needs. Supporting issues around mobility and vision may make the tenant feel safer and more secure in their neighbourhood.

The benefits of doing both a Housing and Health-related mat that compliment and give insight to each other, indicated solutions to tenant needs.

One of the main actions was linking in with housing officers to help with neighbours. Overall, most participants saw elements within their homes going better than outside their homes.

Communication

There were several requests by participants to form or be part of tenants' groups, one of the main mechanisms in the housing sector for tenants to provide feedback and make change. This request was consistent across case study sites where people also indicated they wanted to be listened to more.





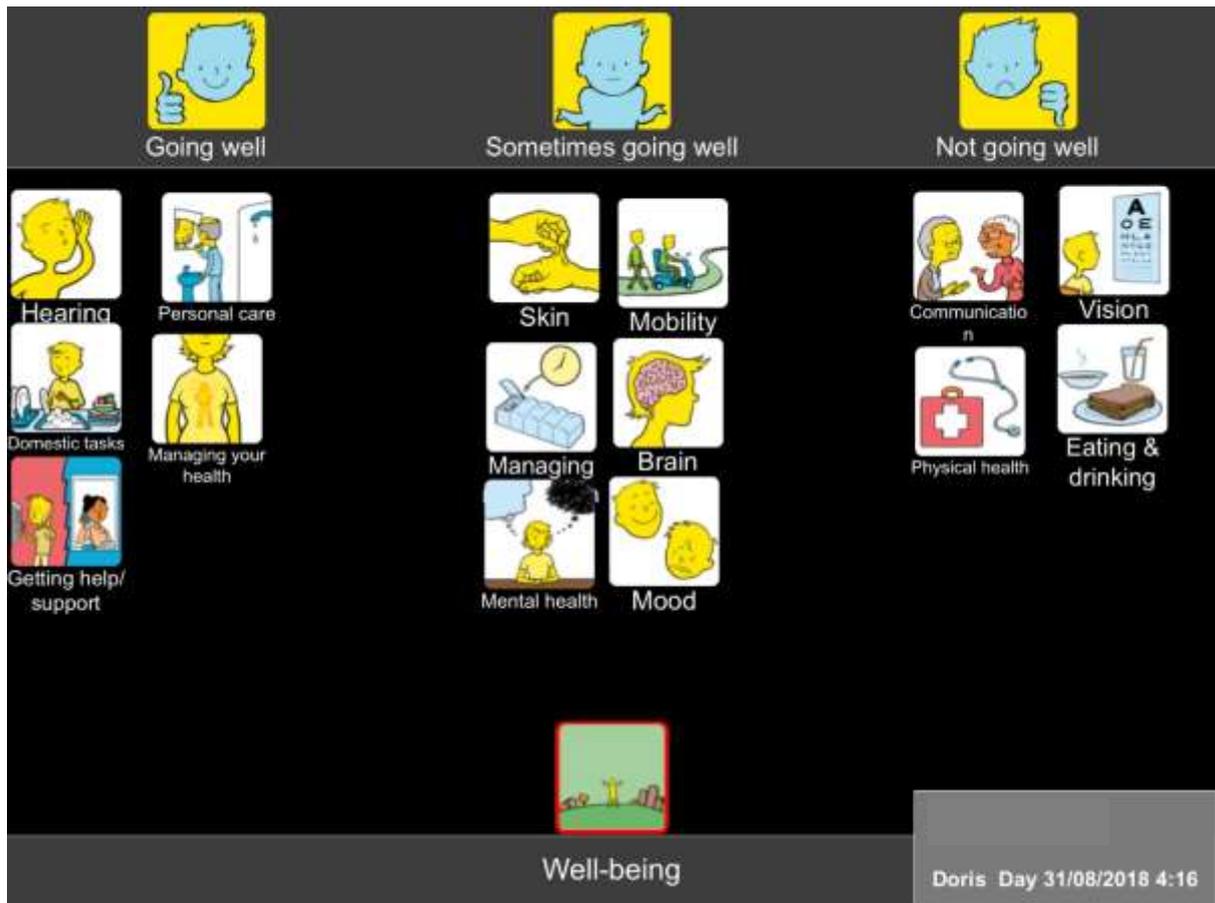
‘tenants’ group would help the building’ (CatMcat 23/10/18

The findings indicate that housing and health were integrated elements in tenant lives. Support solutions included both health and housing interventions which are now explored in more detail below.

Connection between health and housing solutions

The comments and actions coming from the sessions were linked to both housing and health solutions:

When participants were discussing their health needs, there was a linked theme around communication. Something ‘going well’, ‘not going well’ or sometimes going well’ seemed to be linked to the relationships they had with people around them.



Doris Day's Mat (above), identified the following as not going well: 'communication', 'physical health', 'vision' and 'eating and drinking' with the added comment that she *'Hopes to speak to someone if feel I need too' (Doris Day 31.08.18)*.

Health referrals and interventions were one of the most common actions recorded from the sessions. Actions included:

'Making a 'medical appointment on next Monday to check my brain though this is a general check-up' (JacMac 03/10/18)

'keep my brain active through reading, doing puzzles and other activities such as music and painting' (Judy 10/10/18)

'Staff support to speak to GP surgery about changing to a female doctor - revisit in 1 month end of Sept 2018.' (Donna 31/08/18

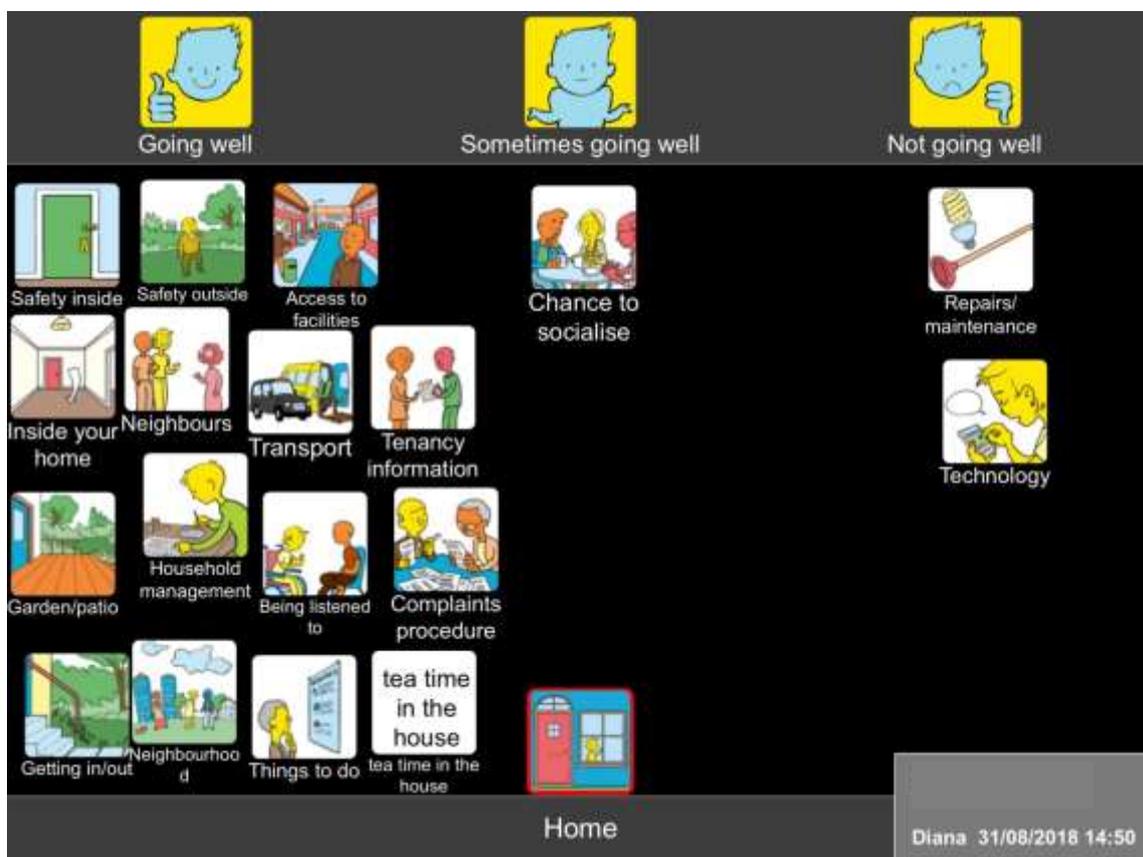
These plans seemed to be important to participants.

'it's about control and confidence... [which was] very important central to everything, included central to future plans' (James 31/08/10).

There was much more variety of health interventions discussed than housing interventions as these tended to focus on certain areas such as repairs and tenants' groups.

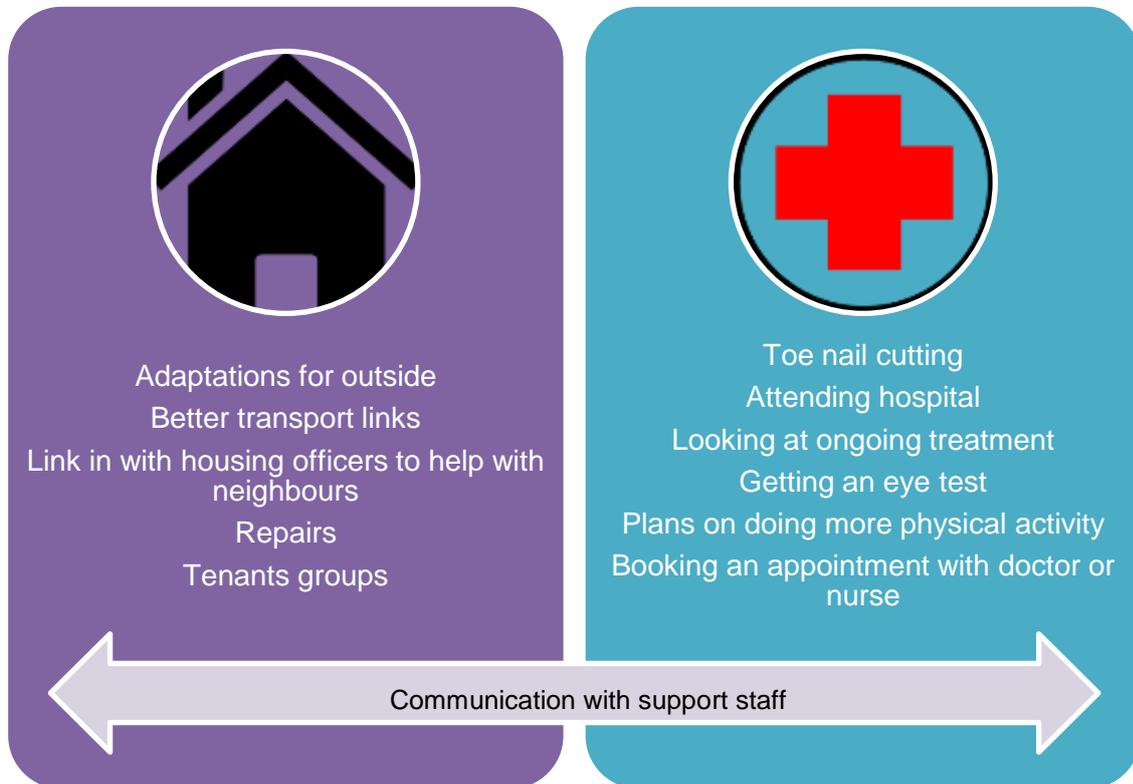
Repairs were an important housing-related theme, especially when connected to elements of safety. There were several participants looking at door security but there were wider elements such as cold taps, toilets and uneven ground. The Mats showed clear actions and plans for repairs that were discussed. Diana (31/08/18), below, notes that repairs were not going so well, and this mat resulted in an action that included:

'Staff support to request a repair - follow up mid Sept. Happy for it to be shared with staff too' (Diana 31/08/18).



It is important to note that tenants did not always see the role difference of staff supporting them. Housing officers were not often explicitly called 'housing officers' and the tenants spoke generally about the support staff (some of whom may or may not have been housing officers). Tenants only saw people in their network who were facilitating between health and housing needs.

In summary, here were the most common housing and health related interventions:



Housing and Health professionals

The data was analysed thematically using the constant comparative method to convert the qualitative data into systematic categories that could be compared and contrasted, enabling an in-depth understanding of Talking Mats to emerge (Patton, 2002). The five stages of this analytical process: data reduction; data display; data comparison; data conclusion; data conclusion and verification, were followed (see Figure 6).

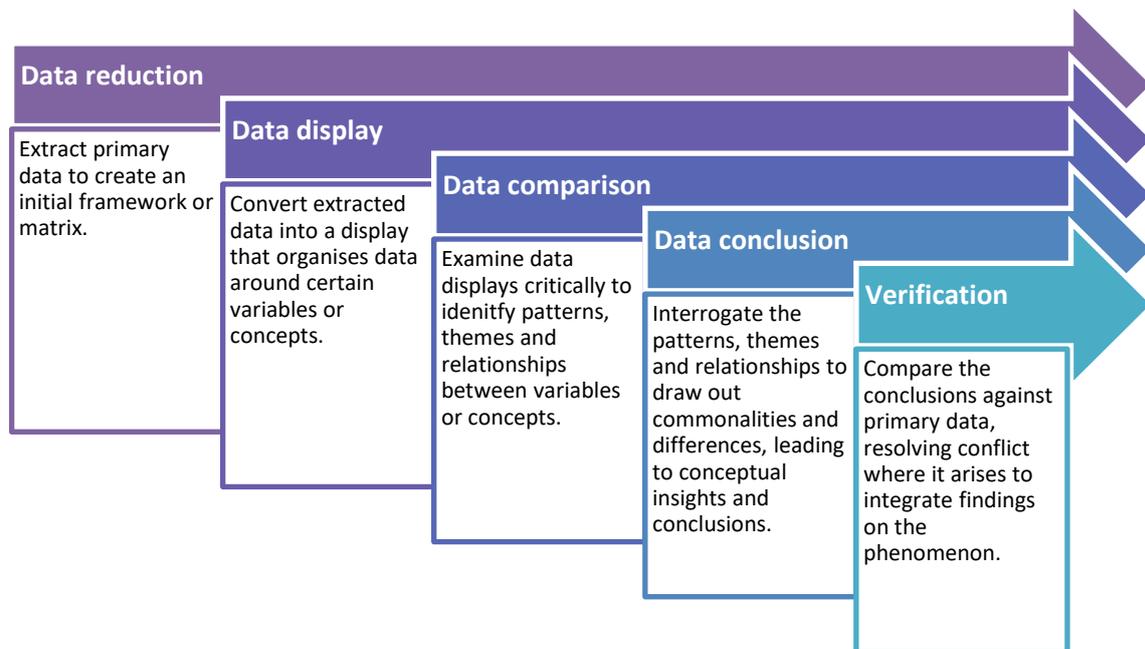


Figure 10: Constant comparative approach

The data were transcribed verbatim from the recorded audio files and uploaded onto NVivo QSR 12 for analysis. Data from each of the focus groups and interviews were extracted to create an initial matrix or coding framework. The data display phase encompassed iterative rounds of qualitative coding, until a number of central concepts emerged. Next these concepts were compared and contrasted to determine overarching themes. In the next phase, themes were analysed further to identify how different or cohesive they were in helping explain how Talking Mats impacted both professionals and tenants and how the digital application was used and integrated into day-to-day life in social housing. This results in a number of themes and subthemes outlined in Figure 6 and discussed in more detail below. Qualitative quotes are provided for each theme as supporting evidence.

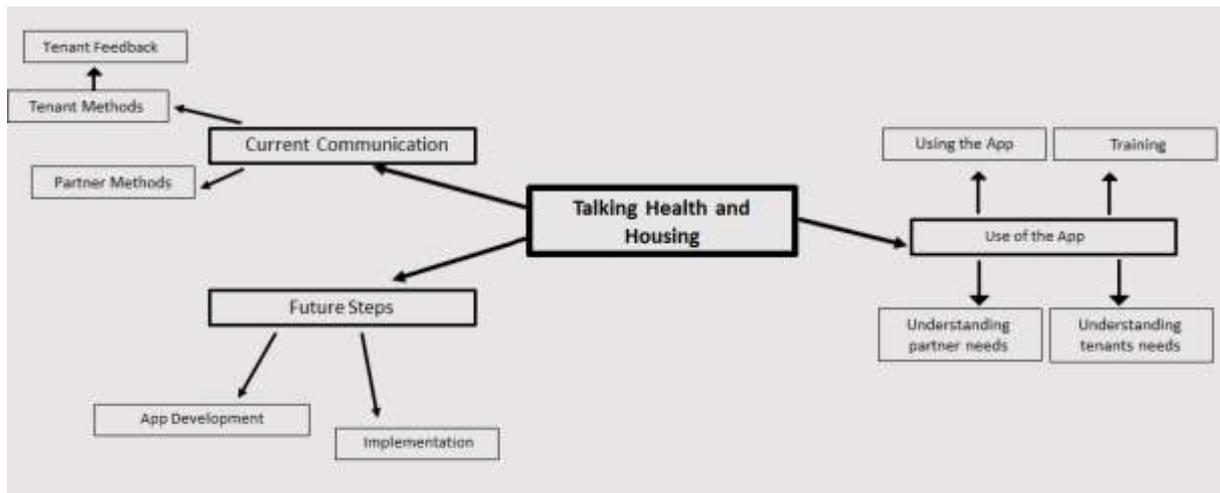


Figure 11: Theme concepts map

Current Communication

Current communication methods were explored in terms of partners and organisational communication and how staff currently communicate with tenants. As part of this discussion the use of current formal evaluation methods for tenants (Outcome Star) was discussed.

Partner communication methods. This theme centred on how individuals and organisations currently communicate and share information with other organisations and professionals. Face-to-face was one of the most popular means for keeping in touch with other staff whether this was individually or in meetings. Other more traditional means such as using the telephone is also used, as was email to aid communication between individuals and organisations. The issue of data sharing also came up in terms of confidentiality and data protection.

“No. There are confidentiality issues with that. It will be need to know basis only. Guys here from the very start tell us whom they want to be involved in their care. Who they want to be known about them so that is where it stops”
– Focus group, October 2018

“Again, normally it tends to be through general conversations, emails and back and forth on the phone. With care staff, it is normally on-site. If there are reviews happening or then like that taking place or yeah... out loud would be the main mission whether it is health issues or social work issues or... yeah... it is more either certain meetings or just kind of... communication through different channels” – Interview with housing staff, December 2018

Tenant communication methods. This theme focused on how tenants communicated with staff in the housing sector which included primarily more traditional styles such as face-to-face within their homes or residential units, especially for those with brain related injuries who found communication difficult.

Some tenants used a telephone to keep in touch with professionals and the organisations they worked for. In a few cases staff would meet tenants through group activities so they could discuss issues as a group.

“Overall, communication tends to be verbal or via whiteboards, thought this would be a valuable alternative and also help give control to the clients” – Focus group field notes, October 2018

“Most people do live here need support to do that from a member of staff because their cognitive abilities or the memory is affected by alcohol related brain damage. Someone is there to express their views and needs. It tends to be verbal form” – Focus group, October 2018

“I’ll either do it quickly by phone if the person is active or quite go getting. Sometimes I’ll arrange to go and visit them and just sit with them” – Interview with housing staff, October 2018

Tenant feedback methods. The subtheme of ‘Tenant communication methods’ focused on different ways that evaluation or feedback was formally collected from tenants as part of an assessment of the housing services provided. The main point here was in relation to an evaluation framework called “Outcomes Star” that is formally used by staff with tenants to gauge the impact and value of their services.

“For individuals, there are floor plans and laid-on outcomes that they are working towards. We use outcome star. Again, just having various conversations on points on star that impact on person’s life. So, it could be they are trying to improve general health or mental health or trying to get in to employment or whatever area is it in the star kind of helps you to visualise where that person is. The area to visualise is as a numbers scale... I guess... So, where are they on this scale, are they 10 where self-managing or are they fine or been worse before” – Interview with housing staff, December 2018

Use of the App

Using the App This theme focused on how tenants used the Talking Mats application. How the digital tool was utilised tended to vary from person to person, with some tenants wishing to use it themselves while others preferred housing staff to interact with the software on their behalf. Not all the symbols were used by each tenant and any that were felt to be irrelevant were discarded, demonstrating the flexibility of the application which could be personalised to each person’s individual needs.

“So, it’s been quite nice actually and it’s been quite interesting to see how the different tenants used it. So, one of the tenants just worked with me and I did all the work on the iPad and just pushed where she pointed to and things. Whereas another lady she wanted to do it herself and I just sat with

her and she moved the icons to the area and things and then changed her mind and moved them back.” – Interview with housing staff, October 2018

“So, it’s probably nice to have that tile in there but not all tiles are appropriate for everybody but it wasn’t a problem, people say we don’t need to discuss that at all if there’s nothing you want to talk about there that’s fine if you think it’s not appropriate or its not pertinent to you then you can take it away so that was fine” – Interview with housing staff, October 2018

Several people commented on how easy it was for tenants to use the Talking Mats app as it was engaging and interesting to work with.

“I think everybody is moving forward with the technology and the iPad because it’s quite colourful and it’s not too small it was actually quite easy to see and manoeuvre” – Interview with housing staff, October 2018

“The clients that I worked with were really, really receptive to it and actually thought it was quite good fun. One lady even said oh I’d love to show my granddaughter I was doing this” – Interview with housing staff, October 2018

There was some critical feedback about aspects of the Talking Mats application that did not work as well as expected. This included minor problems with using the application if the icons were not touched for long enough as well as a general disinterest in using the technology particularly from some older adults. Another participant mentioned that she found some of the visualisations difficult to understand and she felt it was challenging to represent some complex topics in a simple icon.

“it’s taken a couple of goes to realise to keep your finger on the icon as you move it but ya, they seem to get it quite quick!” – Interview with housing staff, October 2018

“the gentleman wasn’t really interested in technology at all” – Interview with housing staff, October 2018

“So, it was a wee bit hard for her to explain any further than that but I was trying to say to her that there are some things that you just can’t put into a picture as well. So that’s difficult, how do you draw certain things?” – Interview with housing staff, October 2018

Understanding tenant needs. This theme focused on how the Talking Mats application helped staff understand the needs of tenants who created a Mat during the pilot study. The app facilitated conversation between staff and their clients in a comfortable and safe way.

“I think it would be quite good for people who have extreme communication problems as well if they can’t hear well and if I had older clients who were

quite hard of hearing it might be a nice way to have a conversation with them you know without making them feel as if they can't hear me all the time they could sit and do that and definitely get more of an idea of what we are talking about from my point of view because I work with older clients" – Interview with housing staff, October 2018

"The people that I did them with, I had so many conversations in the past. But, just, I was able to get so much more [information] of the person in a much more meaningful way. Really, really great conversations in one person particular. I really felt like connected with that person in a much reliable [way] and he described as been therapeutic. Felt like he is really been listened to" - Interview with housing staff, December 2018

Two specific subthemes emerged under understanding tenants needs namely: 1) Health and 2) Housing.

Health

Health problems such as mobility and pain were identified by tenants through using the digital application.

"we'd met him at different lunch clubs and we'd kind of seen him looking quite badly and one of the other tenants said he's not dealing with, he's had quite a bad mobility problem with his knees, his knees are very painful. Some of the medical questions pointed to me asking him about you know that kind of thing and how do you deal with that and it's just come out and he's now going to see a GP and things as well and he's went and got some support. So, he's now talking about this mobility problem that he's had with his knees so that's been quite good actually. So, it kind of gave me a chance to pick up, it gave me a cue to pick up on this to decide if he is getting the right care" – Interview with housing staff, October 2018

"One of the women was talking about not walking down to one of the clubs and I was you know I hadn't asked why not but she didn't want to say she needed her toenails cut which is basically a really small thing but we wouldn't have known until she kinda of came out with that when she was talking about mobility and getting out and about" – Interview with housing staff, October 2018

Further to this, it was suggested that it could help to inform care plans for individuals and to even enable support workers to become more involved in the health issues of an individual

"It could enable support workers to be more involved and help to inform the care plans (as they are not allowed to write care plans) and so assist the qualified nursing staff. – Focus Group with health Staff, October 2018

It was felt that it may help to support tenants in terms of risk assessments and can enable individuals to take more responsibility for their own health needs and exploring what they require to support their health.

Housing

Specific housing needs around security and safety in the home and local community were also highlighted by tenants when using a Mat, which enabled staff to raise this issue with the appropriate provider to ensure it was addressed. Another need that Talking Mats helped identify for tenants was a desire for more active involvement in the running of their building and control over how it operated. Once staff were aware of this they were able to discuss it with management in their organisation about how this could be facilitated.

“So, it brought up that one of the tenants said she doesn’t feel safe in her flat because the main door is always broken. So, that was something else I could take back and say this lady feels unsafe in her flat because that doors been broken” – Interview with housing staff, October 2018

“So that gave me the kind, the kind of I dunno the start to approach [housing association] and say listen people are, the ladies and gentleman having been great with this Talking Mats and all three of them have said that they’d like more involvement in the running of the building” – Interview with housing staff, October 2018

Understanding partner needs. This theme discussed how the app might be used in relation to facilitating understanding between partner organisations and their needs. Some participants believed Talking Mats could be used to highlight issues that tenants faced and that individuals Mats could be sent between health, social care and housing agencies to share useful information about tenants needs between different services so they could be addressed.

“So, if somebody said they weren’t having a good relationship with their social worker, then we can start to advocate what they could do themselves... that kind of a thing. I think it could highlight problems and issues” – Focus group, October 2018

“send mats to other agencies certainly within care, within services” – Interview with housing staff, December 2018

However, there were other individuals who were unsure how this might be able to facilitate communication between other professionals at this point.

Training The development of the app and training for staff was discussed both within the focus group and with those staff members who had been able to attend training sessions to be able to use the app within their work. This theme centred on how well the training sessions for the Talking Mats app worked so staff could understand how to use the digital application. Overall staff felt they were useful

learning sessions to gain knowledge of how the digital application worked. The videos were seen as particularly useful so staff could observe the Mat in action with a range of clients. This gave them insights into how it could be used with tenants in social housing.

“is been used on the video slides. That was really nice to see the effective in communicating with of the young child with the learning... (inaudible)... Asperger’s is one of these things and then the elderly man in the care home. It was really good to see its been used visually” – Interview with housing staff, November 2018

“It is quite self-explanatory, isn’t it... on the booklet you gave us. I still got my booklet. It is a great tool, absolutely that will benefit so many people” - Interview with housing staff, November 2018

Future Steps

Steps for further development were discussed within the data. These specifically related to the development of the design and functionality of the app in terms of the topics that should be covered and the icon improvement. How the digital application could be implemented into a housing association such as Loretto Care was the other theme around future steps to take.

App Development This theme focused on data that discussed how to develop the Talking Mats application further to help improve its design, functionality and ultimately use in the future. Some participants suggested additional visualisations that could be incorporated into the Mat to make it more usable by a wide range of tenants and staff across health, social care and housing. Others felt it would be useful to create sub-Mats within the digital application as then staff could gain more in-depth information about a particular topic that was important to tenants.

“You are thinking of more benefits, but I am thinking more than just household management. Something like welfare” – Focus group, October 2018

“The matters related to ‘Inside’ the home is somewhat lacking” – Scoping group field notes, May 2018

“In case options become overloaded, see the possibility to get the app developer to produce sub-mats” – Scoping group field notes, May 2018

Minor elements such as how icons and features were labelled within the application arose. These were voted on during the scoping exercise to ensure the most appropriate language was used, a method that could be utilised again in the future.

“The labelling of ‘area’ and ‘neighbourhood’ was debated and a vote was called to select the suitable labelling” – Scoping group field notes, May 2018

Implementation. This theme, which has a number of subthemes, focused on what is needed for tenants, staff and the wider organisation to continue to be able to use the Talking Mats application in the future. There were several sub-themes within this, which included 1) a specific focus on training; 2) equipment required and organisational services and evaluation.

Training

Although all health and housing staff received training on how to use the digital application, some staff recommended that a refresher may be useful in the future to ensure staff had up to date knowledge and skills to use the tool effectively with tenants. Along with having some type of mobile device to access the software application one housing staff member felt it would be useful to be able to download and use on other devices (however, it should be noted that if organisations were paying for licences they would be able to do this – they were unable to do this due to the nature of the research project)

“I do not know if you do a refresher course and things like that. I am not sure. So, will you be continuing to upgrade the visuals?” – Interview with housing staff, September 2018

“And I’m just think carrying a bag with two iPads and two phones you know if that bag was lost then so I had to ask for the app to be put on but it couldn’t be done because the Wheatley Group and Loretto have quite tight security on their technology, on their iPads so we couldn’t download the app” - Interview with housing staff, October 2018

One point made by a housing staff member was the importance of staff being given dedicated time to receive training on the digital application and being supported to incorporate it into their day-to-day work.

“think across ‘care’ in general at the minute and housing as well, I guess. It is finding the time to invest in staff and even staff to invest in themselves wee bit. Take a step back and think... right...on what I need to improve on what I am doing. It comes back to that thing where staff can be so busy and so many things to do. It’s actually if you take a step back and receive a bit training, it could help you do all those things that all you got to do... in a much better more effective way” – Interview with housing staff, December 2018

Within the organisation, a member of staff has gone on to complete Talking Mats Accredited training which allows them to train staff in the organisation in how to use the Talking Mats application. This would enable more individuals within the services to be trained. They will also be an ambassador for Talking Mats, offering ongoing support in using the App and helping to embed its use across the organisation.

“if I’m going to be an Ambassador, I think we’ll be training everybody at the service” – Interview with housing staff, October 2018

Other useful suggestions were put forward such as creating 'roadshows' and visiting a number of sites over a period of time to speak directly to staff and tenants about their needs and how technology could support them with these. Another idea was to spend time educating staff and tenants on how Talking Mats worked and what value it could bring within social housing and healthcare. This could stimulate new ideas on how it could be applied in a range of contexts with different populations of tenants in both rural and urban areas.

"Almost like roadshows that doing onsite with smaller groups and staff. That is another way of doing it. But then you lose something by getting different services together... different sector together... housing and care" – Interview with housing staff, December 2018

"timing is quite important as well but setting it up and spending time explaining it a bit clearer on a one to one basis and discussing it with people cause some of the set-up we did before was in group settings where we had lots of people sitting around and it was quite difficult. In hindsight, to explain in detail why we were there and what we were doing and to introduce it in a nicer way especially for older adults when you're in a room full of 10-15 people and you're bringing in an iPad and saying this is what you're doing. I think next time I would scale it down and do it much smaller on a one to one basis" – Interview with housing staff, December 2018

Equipment

The issue of who to give mobile technology to, for the Talking Mats application was brought up by one participant, who felt tenants were not necessarily best suited to having a device. He felt staff could be given a tablet computer and take it with them as they visited different housing services, which could be a more efficient use of money and equipment.

"say if I gave one tenant an iPad in a unit with fifty-five, people who live in this building think if you gave one an iPad the rest would be going looking for one as well" – Interview with housing staff, October 2018

"So it may be a costly affair for yourself. So if it was just something that the staff member had you know and they just had a Talking Mats file on their iPad and they could you know they could use it when they are visiting tenants" – Interview with housing staff, October

In terms of setup for using the app, staff discussion focused around how Talking Mats could be accessed by housing staff which consisted of giving them access to the right kind of equipment, namely a mobile device of some kind either in a smartphone, table or laptop form.

"I do not know what to expect at all because I never had the chance to be in previous inputs, but it is good to know there are couple of laptops (iPads)

in here with the software. But, we cannot access it... if can just access it” – Focus group, October 2018

Organisational Services and Evaluation

Another participant felt that the tool would work well within the mental health services that the housing association provided as it could be used as an action planning tool to facilitate the coordination of care. Two suggestions made by housing staff included using the digital application with a range of other healthcare providers such as General Practitioners (GPs) and nurses to ensure the care delivered was more beneficial for tenants.

“we are uniquely placed, and we work closely together. I guess it is same with one of the (Inaudible) within GHA service and sharing the information with their housing officers. It was received well and again we work closely together. I think it could work really well and it will be interesting to explore that health side of it further as well. You know, if you are able to share a mat with the GP or the nurse and how would that go down” – Interview with housing staff, December 2018

“for adults or other people that’s got support plans in place which the clients I know, tenants in north and south X [region of Scotland] the mental health services they’ve all got support plans in place. So, it could possibly help if you’ve got notes at the end of the Talking Mats then it could be passed on to and be made available for all staff to see what the next steps are gonna be, a plan of action” – Interview with housing staff, November 2018

Finally, several participants also saw the potential to integrate Talking Mats with the standardised outcomes that are used to evaluate the services they provide within social housing, so it could serve a dual purpose and assist staff in formal organisational evaluation.

“It aligned really well without difficulty with outcome star. Also, with having outcome conversations using outcome star. Your Talking Mat can be alongside that helping to have those conversations around different points along the star. Whether it is managing a tenancy and you know... you can be going through the housing mat to help draw out” – Interview with housing staff, December 2018.

Summary

Overall, the app was well received by the interview participants. Both Health and Housing staff identified potential benefits of the app in how it can support tenants. There was more of a focus on how this can support tenant’s voices being heard rather than using the app as a way to facilitate communication between partner organisations. However, the individuals felt that the app would highlight issues for

tenants which can then be highlighted to other professional groups/organisation as necessary.

Moving forward there are key messages to be considered. This is particularly in terms of ensuring that there is organisational support for the training and time available on the ground for staff to complete mats with individuals. There is also scope for further development of the app to ensure it meets the needs of the users.

Outcomes

Increasing access to healthcare and improving outcomes

Looking at both health and housing outcomes is especially important for people with communication difficulties in particular, such as those with learning disabilities and people with dementia. The project was a co-design approach involving these three key stakeholder groups i.e. patients/citizens with communication difficulties, informal carers and health, social care and housing providers, to further develop the existing Talking Mats application.

The result has been the development of a communications tool that has the potential to explore nuanced and effective health and housing solutions that increases the well-being of social housing tenants.

Integrating housing and health services

Many public services have poorly integrated technical and human systems both within and across organisational boundaries, leading to communication and coordination challenges in delivering holistic care to patients/citizens.

The data has shown that many support solutions for social tenants are inter-related between health and housing. The outcomes and impact on social tenants can be positively enhanced when these services work together.

Transform service delivery

We have created advanced, personalised and visual dashboards of information representing the physical and emotional health and social care needs of people with communication difficulties.

Virtually sharing this information with carers and key frontline providers from health, social care and housing, a range of services can be effectively communicated and coordinated leading to improvements in health and social care outcomes for patients/citizens.

We have enhanced the ability of those who find communicating their health needs challenging to self-manage their own health care needs.

Conclusions

Our innovative, award-winning communication tool is based on extensive research and was designed by Speech and Language Therapists. This project has explored the feasibility of developing this tool for a new audience to bring health, housing and social care professionals together. From this partnership working, we have developed a new app, trained and collaborated with key partners and evaluated and disseminated the tool.

Effective communication is at the heart of all care and support, so it is important to extend use of Talking Mats to a much greater range of professionals and housing is an area that wishes to develop communication between organisations and tenants.

The project has furthered the development and business model of Talking Mats, enhanced the current software by co-designing advanced personalisation and visualisation techniques for housing. Collaborators can now utilise the findings for business, practice and academic outputs that will lead to wider funding opportunities around the area of digital health.

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