Portraits of Individuals with dementia: Views of Care Managers

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It can be very difficult to get to know a person with late-stage dementia. This is especially true for staff that work in care homes with little time to spend with each resident and even less to focus on social interaction. This paper presents a software tool that was created to help care staff become more familiar with a person with dementia in a limited timeframe. A study was conducted with three care home managers to collect initial response, usefulness and usability ratings of the software in a care home environment. The participants responded positively to the software finding it engaging and very relevant to a care home environment

Multimedia. Dementia. Usability. Care Aid.

1. INTRODUCTION

Dementia is a growing concern worldwide. In Scotland alone 1.32% of the population have dementia and about 40% of these people live in a care home or hospital (Care Commission and Mental Welfare Commission, 2009). Dementia is an umbrella term for a persistent impairment in multiple areas of intellectual function including attention, orientation, memory, judgment, language, motor and spatial skills (Mendez and Cummings, 2003). Dementia, although typically associated with aging, can occur to anyone at any age. The most common form of dementia is Alzheimer's disease but there are over 100 different types of dementia each with unique causes and symptoms. No two people with dementia will have the same experience of the disease with life history, relationships, personality and environment a stronger factor than the dementia (Chapman, et al., 2001).

It is now widely accepted that the quality of care can shape how a person with dementia copes with their situation and life. With the correct support some people with dementia can continue to have full and meaningful lives.

Many people with dementia are cared for at home by their families until this is no longer feasible because families are no longer able to cope or the illness / death of a spouse or partner who was the main carer. This results in people being introduced

to a care home in the later stages of dementia when their verbal or written communication skills can be significantly deteriorated. This can then translate into difficulties experienced by staff (nurses, doctors, care providers) in getting to know and interacting with the person with dementia. Extra effort and innovative strategies are required to encourage communication and social interaction between people with dementia and care staff.

Care functions can also be limited to dealing with the daily living needs such as eating, bathing, toileting, and sleeping rather than providing full interaction (Ward, et al., 2005). Ward et al. (2008) and Armstrong-Esther et al. (1994) report that residents with dementia spend 45% of their time engaged in solitary activities and an average of just 10% of the day in direct communication with others.

However, the social environment in residential homes is essential to the quality of care and quality of life for residents with dementia. In many instances, interaction with the care staff will be the only social contact for residents, yet there is considerable evidence showing the severe lack of staff-resident interaction (Ward, et al., 2008; Armstrong-Esther, et al., 1994). In addition, care staff consider talking to residents as important and enjoyable (Armstrong-Esther, et al., 1994) but are unable to do so because they lack the tools, training, time or information to explore different communication approaches.

At present every person entering residential care must have a legally required care plan created. The care plan contains information about medical history, hospital history, risk assessment (for lifting and handling, health and safety, infection control etc.), weight charts, fluid charts, blood pressure charts and daily nursing plans. Care plans are essential in meeting the daily care needs of residents but have a focus on the physical care of a resident rather than their social or personal preferences and needs.

Although care homes purport to capture personal preferences and social needs, a recent study found that 42% of residents had no preferences of personal likes and dislikes, taste in food, music and interests recorded and only 24% had adequate recording of their life history (Care Commission and Mental Welfare Commission, 2009). In addition, these plans can be kept in various locations depending on security and confidentiality issues making them easier or more difficult to access by care staff. For example, if plans are kept in the locked office of the manager, it can be very difficult for care staff to access them. As a result, these care plans may be of limited use in assisting care staff in understanding the communication needs of the individuals in their care.

One solution to this problem is to have family members in conjunction with care homes create a life story to use with the person with dementia for reminiscence (McKeown, et al., 2006). These books are often large binders with much detailed information, in the form of images and text description, about a person's life. It can be difficult for care staff to find the time to work through these life story books independently to learn about the person. A quick and efficient system of accessing pertinent personal and social information of a person with dementia may assist care staff in improving their ability to interact on a social level with people in their care. In addition, it may help them better understand and empathize with that individual.

To date most work on tools for dementia has focussed on solutions for the person with dementia, not on solutions for the caregiver. For example there are many different tools available to aid people with dementia from simple pill boxes to 'cognitive prostheses' (Astell, et al., 2009). The Computer Interactive Reminiscence and Conversation Aid (CIRCA) uses a touch-screen interface and randomly presented generic multimedia content (e.g., images, videos and music) to encourage people with short-term memory loss associated with dementia to draw on reminiscences to converse with relatives and carers (Alm, et al., 2004, 2007). In CIRCA, researchers found that the touch-screen was

essential to the success of the project as people with fairly severe dementia were able to use it with encouragement. The use of a touch-screen also removed the need to learn new skills such as using a mouse which meant people with dementia were not excluded due to working memory problems (Alm, et al., 2007).

ExPress Play is a prototype system designed to enable people with dementia to create music, regardless of any prior musical ability, (Riley, et al., 2009). It also uses a touch screen interface to control the system. The system has a simple interface with uncomplicated navigation that enabled people to be creative through music making in a failure-free environment that is easily supported by carers. The system provided an engaging and enjoyable activity for those participating with the opportunity to increase social interaction if used in pairs or groups (Riley, et al., 2009).

Multimedia Biographies (MB) is designed for both carers and the person with dementia. MB tells the life story of a person with mild cognitive impairments and Alzheimer's disease in a DVD format. Digital video technology was used to construct a DVD-based multimedia biography consisting of family photos, film clips, audio narration and music (Smith, et al., 2009; Damianakis, et al., 2009). DVDs were selected as the medium for the MB as they are widely available and inexpensive but there were still technical difficulties associated with using the DVDs. Some participants damaged the DVD, and the remote controls for the DVD player were too complicated for some participants to use alone meaning caregivers had to be present to operate the MBs (Smith, et al., 2009). One of the major benefits of MB was that it helped carers see the person as an individual who had a full life and not just as an 'old lady with AD' (Damianakis, et al., 2009).

Thus there seem to be some successful solutions to address the need to provide personal and social information to care staff about an individual in their care. However, it appears that these solutions either provide too much information, are too difficult to obtain, or are too time consuming to sort through. They are also designed to be used as a communication or reminiscent support for people with dementia rather than by care staff to understand important social or personal information about the individual with dementia. In this paper, we will present a system, called Portrait, which has been designed to provide personal preferences and information about a person with dementia specifically designed for use by care staff. Portrait is designed to enable care staff to obtain pertinent information about an individual within a three to four minutes time frame. It uses a touch screen

interface so that the need to learn less direct interaction techniques (e.g., using a mouse or keyboard) is minimized. This study reports one aspect of a larger ongoing project that is examining the creation, content, input system and usability of Portrait. This paper will discuss the initial usability and care manager reaction to the system.

2. SYSTEM DESCRIPTION

The Portrait system is designed to provide care staff with important but limited personal and social information about people with dementia that can be accessed within three to five minutes. A multimedia Portrait on each person is presented using a combined computing system and touch screen. Care staff can spend a small amount of time learning more personal information about each person in the care home in order to gain a better understanding and appreciation of those individuals.

The Portrait system is not designed to be used as a reminiscence tool with the person with dementia. As such is not designed to replace existing tools such as CIRCA or Multimedia Biographies but rather to complement them. The Portrait system aims to aid social interaction and increase conversations between care staff and people with dementia by stimulating more natural conversations and discussions rather than repeated generic conversations (e.g. the weather, the dinner menu).

The multimedia Portraits contain digital or digitized information on the person with dementia including key life events, family, preferences, important things to know, and hobbies and interests. The Portraits would be created by the person's family and key care workers.

The quantity of information is limited to either one or two screens per topic so that it can be easily accessed by care staff. The level of detail and type of information in the Portraits are aimed at being useful to staff to help them see the person not simply an 'old lady with dementia' and to help stimulate more natural conversations between the people with dementia and carers. Unlike the life story book (McKeown, et al., 2006), Portrait is not intended to be a full and complete explanation of the person, nor is it intended for use with or by the person with dementia. The system would likely be located in a duty/work room so it is easily accessible by care staff.

All staff that work in care homes have been included as possible users for the Portrait system as the authors have observed that most staff working in care homes as well as most visitors interact with the residents. The range of possible

users encompasses a large variety of roles, responsibilities, and levels of skill and training. It includes direct carers who are usually relatively unskilled as well as highly skilled visiting paramedical and medical personnel such as doctors, special activity personnel, and physiotherapists. It also includes management, nursing, gardening, maintenance and catering staff that may have more limited but important interactions with residents. There is thus a great variation in computer experience, age, literacy levels, and time available for training. For example, the main duty of a direct carer is to carry out the daily care tasks required for a person with dementia. These may include dressing, toileting, feeding and bathing activities but does not include computing tasks. The direct carer could thus be classified as a novice computer user. The system must be intuitive, simple and easy to use, and require little or no training to suit this large range of users (Mulvenna, et al., 2009).

The touch screen interface has been found to be one of the most direct, and intuitive interfaces (Albinsson and Zhai, 2003). It has been shown to be one of the most direct forms of interaction as the information display and controls are the same (Mahmud and Kurniawan, 2005). For this reason, it is widely used by banks, museums and as information kiosks in public spaces (Albinsson and Zhai, 2003; Mahmud and Kurniawan, 2005). In addition, there is no need to learn how to use other hardware such as a mouse. The Portrait system has implemented a touch screen interface to take advantage of the ease of use features of this interface. All buttons are designed to be large enough to be easily selected. Enough space is placed between each button to reduce the chance of accidentally selecting an undesired option. The system was developed in Adobe Flex Builder 3 (recently renamed to Flash Builder) using the Adobe Air runtime to allow the system to run as a standalone client application without the requirement for a web browser. Adobe Flex builder was selected for the system development as it allows the possibility of migrating or developing a web based version of the system quickly and easily.

The overall design of the Portrait system orders six different categories/topics of information along a linear menu system located in the lower portion of the screen (see Figure 1). The topics are 'Time Line', 'Family Tree', 'Things To Know', 'Hobbies & Interests', 'Family Stories' and 'Photo Album' (see Figures 1) the topics cover information such as key life events, family, important information, preferences and interests. The main menu bar is consistently available in this position making it easy to locate at any time during system use.

The six topics available in the main menu were derived from an informal survey asking individuals what they would like care home staff to know about them if they had to enter a care home situation. In addition, senior care staff and management were asked what they found useful when first meeting a person with dementia. For evaluation purposes two Portraits were created one male and one female. These example Portraits were from actual people but who did not live in the participating care facilities so as not to bias the Care Managers.

Above the main menu is the content area where information related to each menu item is displayed. Figures 1 through 4 show examples of four different categories along with the main menu system in the lower screen area and the content area in the centre. Each main category and content area is represented by a unique primary colour (e.g., purple is the colour associated with the photo album category), and high-contrast text label so that the different topics are easily differentiated and to help users keep track of their location within the system. Colours were selected to be noticeably different from each other and to have good contrast with the images and text so that they were legible. In earlier work, two colour choices were found to have poor contrast with the text and were changed as a result (Webster, et al., 2010). The primary colour hues were also very positively received in this study (Webster, et al., 2010) and considered eye-catching and bright. The headings for each category in the menu are represented by icons and text labels to provide redundancy and to reduce literacy level requirements.

To select a menu item the user would touch that item of interest on the screen. A new screen would appear containing a limited amount of information about the personal or social preferences of the person with dementia for that category. This information is also presented in high-contrast text and image formats. The text format is organized into short sentences that are precise and concise to ensure the information can be read easily and quickly (see Figures 3 & 4). In our earlier work, we discussed substituting bullet points for the full sentences but users indicated the short, full sentences were preferable. Where non-photo graphics or icons are used to represent a concept a brief text description is also provided (see Figures 3 & 4). In addition, text is used for instructions to users (see Figure 2).

A second content screen is available in three categories, photo album, timeline, and family stories. A “go back” button has been added to these second screens so that the user can easily return to the first content screen (see Figure 3). The other three categories contain only one screen of information. Finally, a picture and the name of

the person whose Portrait is currently being reviewed are constantly located in the top portion of the screen to remind the user/care worker which person is currently being reviewed (see Figure 1-4).

Sound has not been included in the Portrait system because care homes are often noisy environments and the system may be located in a variety of spaces where that sound may distract people not using the system.

Figure 1: Time Line showing the menu bar and six topics available: „Time Line‘, „Family Tree‘, „Things To Know‘, „Hobbies & Interests‘, „Family Stories‘ and „Photo Album‘.

Figure 2: Photo Album topic showing label explaining to the user what to do.

Figure 3: Selected photo from Photo Album topic with short to the point text description.

Figure 4: Hobbies & Interests topic with short to the point text description and meaningful icons.

Our earlier work with two groups of novice users (not staff from care homes) demonstrated that the system was very positively received by novice users (Webster, et al., 2010). They successfully used the system without prior training encountering very few difficulties. The usability study was conducted in two iterations with different novice users in each. The novice users were not care staff and focused on the usability of Portrait not its content. There were only three usability issues highlighted during a first iteration: the colour contrast was insufficient, the text size was too small and the back button was unclearly labelled. All of these issues were addressed and a second iteration of the study was carried out. No new usability issues arose during this iteration of the usability study and the previous issues seemed to be resolved. All participants in the second iteration rated Portrait as either engaging or very engaging, and fun to use.

In the present study we conducted a study with carers to assess the usefulness and usability of Portrait. In particular in this study we used care home managers, all experienced carers, to assess the system. Three care home managers were recruited with each being from a different 'style' of care home: a care group care home, council-owned care home and a day centre for people with dementia. Different types of care homes were selected to ensure that there was a range of opinion and possible use-case scenarios represented.

3. EVALUATION

3.1 Method

The three study participants were female as is common in the care environment and they were aged between 30 and 49. All had been a carer and worked with people with dementia for over 11 years. They did, however, vary in experience as a manager of under 5 years to 15 years experience. Data were collected using a pre-study questionnaire and a post study semi-structured interview. Participants were involved in the study for a maximum of 1 hour. During that hour, they answered a questionnaire, used Portrait, and engaged in a post-study interview.

The pre-study questionnaire consisted of nine questions and collected demographic information such as age and experience. The pre-study questionnaire also gathered information about what information is normally received when managers first meet a person with dementia and how useful they find this information. There was a large variation in the quantity of information received by each care manager with only medical history and information being reported as received by all care managers. There were nine other possible types of information including: family and personal history, social, cultural and spiritual preferences, and communication needs. All managers indicated that they would find all possible types of information as either useful or very useful.

The Portrait system was then demonstrated to the care managers and they were asked to use the system in order to understand its functionality and user interface. As the design of the system was intended to require little training to understand, each participant was only provided with a very brief introduction to the system (roughly 2 minutes) explaining what each different topic of information covered. Participants were then asked to complete three simple training tasks to become familiar with using the system. The care managers then spent more than six minutes trying the different aspects

of the system and asking questions. The participants were asked to think aloud while working through the training tasks and using the system. After completing the tasks, the participants were interviewed to gather their opinions of the system and its potential use in their facilities.

The post study interview consisted of 13 questions and was designed to gather information about the content, use and benefits of the system for care staff. During the study audio and screen capture software were used to record on-screen actions and commentary. This data was used to analyze positive and negative user experiences and comments regarding issues with and usefulness of the system particularly in their setting.

The post study interview was semi-structured, informal and conversational in style, lasting between 20 and 35 minutes. The interview was held at each respective care home and focussed on the manager's opinion and experience of the system. There were thirteen guiding questions (see

Table 1). A qualitative thematic analysis of the interview data was carried out in order to examine common views of or issues with the system in the care home context as well as any specific issues related to care home type.

Interviews were transcribed verbatim and ten thematic categories were derived from a subset of this data in accordance with the method outlined by Miles and Huberman (2002). Two of the categories had positive and negative subcategories. Table 2 provides a definition and examples for each category. Two independent reviewers were then asked to categorize two of the three data sets into the ten categories. Two reviewers were used to create the categories to ensure there was no bias. Their categorization data were compared using Intraclass Correlation statistic in SPSS v18. The ICC value for all ten categories was high, above 0.9. The final interview was then analysed by a single reviewer as the categories were already created.

Table 1: Semi-structured Guiding Questions

Questions	
1	What information did you find most interesting? Why?
2	What information did you find least interesting? Why?
3	What information do you think you would find most relevant when you first meet a client?
4	What information do you think is missing?
5	What problems did you find with the system?
6	What benefits do you think staff would gain from using the system?
7	How much time do you think is needed to learn how to use the system?
8	What type of care giver do you think would benefit from using the system? (New staff, staff with a few years of experience, all staff, managers)?
9	How do you think that new staff would react if they were introduced to their clients using this software? (E.g. before they began work?)
10	When and how do you think existing staff would use this system?
11	What impact do you think the system would have on existing staff working with new or existing clients?
12	Where do you think that the system should be available (e.g., in staff room, in patient rooms, etc.).
13	Overall what do you think of the Portrait system?

3.2 Results and Discussion

As the number of participants was small a qualitative, rather than quantitative treatment of data is thus presented.

The categories in Table 2 can be grouped into overarching categories: the first five categories are directly related to the impact of the information contained in the Portrait system on individuals with dementia and care givers, and the last five categories are related to the usability of the Portrait system and general computing issues.

Communication was one of the categories most discussed with a total of nine incidents. The comments about Communication included ~~that's~~ the talking point then" and ~~you're~~ communicating, you're not just talking the weather." These comments indicated that the participants recognized the value of the system for stimulating more meaningful conversations that could potentially be rewarding for both conversation partners, the care staff member and the person with dementia. Care staff could potentially use the information contained in Portrait as topics of conversation that could be more interesting for both conversation parties.

There were five comments for the category Humanise with comments such as repeatedly mentioning “empathise” and “it is seeing (sic) the whole person.... not just the person as they are (sic) now that’s especially important (sic) with people with dementia.” Managers indicated that the

Portrait system would allow care staff to view the person with dementia as a person who had lived a varied and interesting life and not simply an entity who needed “looking after.” By enabling this potential attitude shift, Portrait may increase job satisfaction for care staff, which may in turn, lead to a better quality of life for residents.

Table 2: Category Definitions and Examples

Category	Description	Example
Communication	Any indication of starting, improving or increasing discussion or interaction with a client.	<i>“will trigger a conversation with the individual”</i>
Humanise	Seeing client as a person or individual rather than only medical or daily living needs (e.g. feeding, toileting).	<i>“make the person a person”</i>
Inform Others / Educate	Provide information so others can learn about the person.	<i>“other health professionals who visit the unit”</i>
Find Out More Details	To learn more or new information about a client, their life or experiences.	<i>“find things”</i>
Care Management	Improve or adjust a client's care to suit their individual needs.	<i>“personalise things”</i>
Data Entry	Any discussion or question regarding who or how the client's <u>Portrait</u> would be created or inputted to the computer.	<i>“inputted by myself or senior staff”</i>
Ease of Use	Any discussion or comments on how easy the system is to use.	<i>“It’s very user friendly isn’t it”</i>
Interface Suggestions	Any suggestions or discussions on how to improve the user interface.	<i>“I would like a bigger picture of the resident”</i>
Technical	Computer use, touch-screen or training for system.	
- Positive		<i>“quite easy to follow”</i>
- Negative		<i>“is going to have to involve staff training or just the basic use of a computer as well”</i>
Time	Any indication or discussion of how much time would be required to access and learn to use the system.	
- Positive		<i>“it would enable staff to come in there at any time”</i>
- Negative		<i>“I can’t believe you would get all the information in 3 minutes”</i>

The Inform Others/Education category was mentioned seven times. Example comments included “we have district nurses coming in here who want to know a wee bit more” and “over (sic) staff who are not with us on a contract basis all the time so they have been working on the 2nd January but are not back till the 3rd march. Things change, people change but Portrait (sic) can be updated ...I want to know for the afternoon as (sic) I am being left to do hobbies or arts and crafts with somebody; something about who I am actually with and that’s the answer.” It was suggested that Portrait would be able to assist transient or intermittent staff such as doctors, physiotherapists, and temporary nursing/care staff to learn personal information about the residents quickly. This could then translate into a better understanding of the individual they came to see and again provide

opportunities to stimulate meaningful conversations during their visit. In addition, the information may also provide reasons for some of the observed behaviour in people with dementia. One example provided was “if somebody likes being (sic) in the kitchen, you would have to re-organise seating arrangements for that lady as she is not going to find it comfortable sitting in the living room with 9 or 10 other people; she is going to find really quite irritating if she likes to be in the kitchen constantly boiling the kettle.” Each Care Manager also believed that the Portrait system would allow staff to find out more details about the people with dementia. In the category Find Out More Details there were nine incidents. Comments such as “get to know someone much quicker” and “the fact that they have got a wee bit more information that’s basically there. It’s in your face; it’s there. You are

taking it in" indicate that managers believe that the system could aid care staff in learning more information about the people with dementia under their care than is available from current sources such as the story book or the patient file/care plan. In addition, the important information about the person could be acquired quickly which is vital if care staff are to use Portrait as they have little time to spend on non-care tasks.

Improving Care Management was discussed six times in relation to how knowing more information about a person could help personalise care and potentially improve quality of life for that person. This is demonstrated in the example with the woman who prefers to be in the kitchen and a care manager described Portrait as a "care aid definitely." It is important that management recognise the Portrait system as a care aid that is beneficial to the care home. As care staff have little control over their system of work (Ward, et al., 2008), having Portrait recognised by management as important, may justify time being allocated for introduction to system and using it.

Regarding specific comments on the actual content, all of the care managers mentioned that the Time Line topic was the most interesting one. Reasons for this included that it highlights the most important parts of someone's life, as they lived it, providing an historical perspective in time whereas the other topics were overall summaries and had no pattern or relation to time.

No topic was identified as least interesting by the care home managers with one even stating "don't think that there is anything there that is least interesting. I think they are all relevant. I think they all have to be there." It would appear that the topics selected during the initial interviews conducted at the beginning of this project were well identified and relevant to the care environment. However, further evaluation of the use and usefulness of each topic must be tracked with the system in actual use.

The impact of the information contained in the Portrait system may have a direct impact on care staff which may then translate into improvement in the care provided for the person with dementia. It was discussed that the Portrait system would allow care staff to quickly learn more information than is currently available about the person with dementia. This information could help care staff to have more natural and stimulating conversations with the person with dementia. Assisting care staff to engage socially with people with dementia may also increase care staff's job satisfaction because it could enliven daily routines to include relevant and interesting interactions for both parties.

Examining the grouping of categories related to the use of the system, it is apparent that the majority of responses were positive. The Technical Positive and Ease of Use categories had 4 and 7 comments respectively. Examples of the types of comments that were provided were "I'm not very good on a computer and I would find that quite easy to use" and "quite easy to use" and "get to know someone much quicker."

The responses to interview question 7 provided further evidence of this positive experience. The question asked how much time the participants thought would be necessary to learn how to use the system. All care managers reported that "not very much time" to "no time at all" would be required and made comments regarding specific amounts of time "You could learn it in the space of 5 minutes" and "you shouldn't need a whole days' training for it or anything like that, just 5 minutes/10 minutes max so you have time to read it all." This indicates that the participants in the study believed the system was easy to use and learn, two key elements of usable interfaces (Preece, et al., 2001). It also may indicate that the system may be acceptable to implement in care facilities where care staff are always busy and have relatively little time for learning new functions or tasks. Because the Portrait system would take little time to learn and the interface is simple, it may be feasible for use in care home situations.

The next step in the research is to recruit families of people who have dementia and live in a care home. These families are going to develop a Portrait of their loved one to be put in place in the care home for care staff to use. This study will examine the processes involved in creating the Portraits and staff interaction with them.

Although the overwhelming impressions of the Portrait system were positive, managers did identify some important concerns particularly in the Data Entry and Technical categories. The most important concerns that arose in the Data Entry category related to who would enter the person with dementia's information, the time it would take to enter that information and the need for a simple data entry process. Comments such as "so who enters all the information?" were common among all three managers. These questions are to be addressed in the next study when Portrait creation is to be assessed.

In the Time Negative category, the issue of data entry was also mentioned in relation to concerns regarding the amount of time that would be necessary to gather and enter the personal data and images for the individual Portraits. Example comments were: "there would be a time factor that on top of their own written work and contact

information that we need to have time to type that as well would be difficult." It is of most concern because additional data gathering and entry tasks would likely conflict with care staff's already busy schedule and the main task of caring for the people with dementia. It may also involve having the family collect the data and make it accessible to the care staff and/or the Portrait system. This is a key concern and one that requires considerable interface and process design consideration.

The Technical Negative category had six comments but they were quite varied with no one clear issue in common to all managers. Examples of the comments made when asked if they experiences or could foresee any problems included "I can't say I actually had any problems. I think I would like the print to be bigger because we have got staff who do wear glasses, and they might not have their glasses with them at the time for reading" and "it (sic) is going to have to involve staff training or just the basic use of a computer as well." This is further reflected in the responses to question 4 on what information the care manager thought was missing with none selecting the same answer, one person saying "nothing", one person saying "other" and the third person saying that "define each section clearer or the name of one of the sections was misleading." This lack of any clear or common Technical Negative issue with the Portrait system indicates that the overall design of the system does not suffer from obvious usability issues. We will now proceed to the next level of research with actual care staff, people with dementia and families with the current system.

The categories Interface Suggestions and Time Negative were the least mentioned with only two comments in each category. Both comments in the Interface Suggestions category were related to the image of the resident at the top of the screen e.g., "I would like a bigger picture of the resident." It is not surprising that there were very few issues concerning the interface considering the positive results reported for the usability studies (Webster, et al., 2010). As a result, no interface modifications to the Portrait system are considered necessary before field trials begin.

Overall, the system was very positively received by the care managers who made closing comments such as "I think it's great that everything is basically there - all of the key things," "I like it, I do like it a lot. I think it's got an awful lot of potential," and "I think there is a huge amount of potential for it to personalise care." All care managers thought that all staff could benefit from using the system "I think all staff would benefit (sic) as there is so many changes around residents as you will have met someone new and you might not have seen Annie for a short (sic) while so you will have forgotten

various things so you can just use this as a refresher." These comments indicate that the Portrait system could be of benefit to care staff and people with dementia who live in care homes. These benefits could include care staff being able to build a better relationship with residents increasing job satisfaction and improving the social environment in care homes. Increased job satisfaction may also assist in increasing staff retention levels within care homes which could provide further benefit to the residents and the social environment. Improvement to the social environment in a care home has been reported as vital to the social well being of residents and care staff alike (Ward, et al., 2008; Armstrong-Esther, et al., 1994).

4. LIMITATIONS

The small number of participants in this study is a clear limitation. The results found in this study cannot be considered representative of the entire industry. However, this work does provide confirmatory evidence, together with our earlier work (Webster et al., 2010), for the usability of Portrait. Furthermore, the interview with the care managers provide initial indicators of the potential benefit of the Portrait system.

Also, one specific aspect of Portrait deserves consideration. It is likely that in many (perhaps most) of the cases the portrait of a person with dementia will be created not by them, but by a family member. While it could be hoped that the family's information about the person accurately represents their life and preferences, it can be imagined that if the person were writing their own biography some of the information would be different. In this respect, work that seeks to have persons newly diagnosed with dementia to begin capturing important information about their lives is critical work.

5. CONCLUSION

The study reported in this paper examined care managers' initial responses to the usefulness of the Portrait system in a care home environment. The care managers' participation confirmed that the content of the Portrait system is appropriate and that they would like to see it tested with care staff for the goal of promoting learning about the personal side of individuals with dementia and more personalised care.

In this round of evaluation, the Portrait system had positive usability outcomes. Managers from three different care settings anticipated that their care staff would be able to use the system successfully without many foreseeable difficulties or lengthy

introductions to the system. The major concern with the system, however, was the data entry process, specifically who would gather, enter and manage the individual's information and the time it would take to accomplish those tasks.

6. FUTURE WORK

Future research will address the issues of data entry and management. A study with care staff will be conducted in different care environments and the Portrait system will be compared to different paper-based resources. Finally, a series of longitudinal case studies will be carried out with real people with dementia living in care homes to determine the effect of Portrait on the day-to-day social interactions between people with dementia and their care workers over the long term. The researchers will work with the families of people with dementia living in care homes to create the biographies of the person with dementia; these portraits will then be placed in the care home to monitor care staff use.

In addition, next steps will involve placing Portrait in working care home settings and evaluating the use and usefulness of the system over the long term.

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