Case Studies in SenseCam use for Cognitive Stimulation Therapy in Early-Stage Dementia.

Paulina Piasek*, Kate Irving* and Alan F. Smeaton+

*School of Nursing and +CLARITY: Centre for Sensor Web Technologies

Dublin City University

Dublin, Ireland

Abstract

Estimates suggest that Ireland will have 50,000 people with dementia by 2016 and over 100,000 by 2036. Combined with European total costs are estimated in 2005 at €130 billion. As dementia is incurable there is a real need to support the existing dementia health care practices and carers by innovative technology use. Using technology to improve mental health of the people with dementia is one way of such support. This research explores intervention which uses Microsoft SenseCam images within the principles of Cognitive Stimulation Therapy (CST) to engage people with early stage dementia in meaningful discussion. This SenseCam intervention, like the CST approach, aims at general enhancement of quality of life and global cognitive and social functioning.

Research Question

The primary aim of this research is exploring responses of individuals with dementia to viewing images derived from SenseCam, secondary aims include exploring whether the images enable rich opinion based discussion, under what conditions, and whether discussing such images is meaningful and enjoyable to individuals. A broad range of measures and qualitative data are collected to evaluate the extent to which the images from an individual's own life generate discussion, and such discussions affect quality of life, communication skills and carers' strain for example. As the research is at its initial stages there are no findings to report at this point in time. However at the time of the conference this paper session will present a flavor of the initial results of these case studies and demonstrate the SenseCam interface being used with clients.

Background Research

There are 37,000 people with dementia in Ireland (O'Shea and O'Reilly 2000). By the year 2026 it is estimated this number will increase to 52,000 (O'Shea and O'Reilly 2000). In the European Union approximately 5.1 million people live with dementia and within the next 50 years this number will raise to approximately 11.9 million dementia cases (Berr, Wancata and Ritchie 2005). Dementia is a serious loss of cognitive ability beyond that which might be expected from normal aging which affects social activities, relationships or work. The above criteria set out in the Diagnostic and Statistical Manual of Mental Disorders is most commonly used for diagnosis of the

disease (American Psychiatric Association 1995). Dementia is an umbrella term for many different diseases, all of which have similar symptoms, but different aetiologies. The onset of dementia is generally insidious and there is no definitive biological marker of disease onset. Because of this the diagnosis of dementia is a complex process (Chui 2003).

There is growing evidence that early identification of dementia has the potential to be beneficial to sufferers and their families and so there is increasing medical and public consensus that diagnosis should be made as early in the illness as possible (National Audit Office 2007). There are studies indicating the possibility of improving memory performance and maintaining carer mood through use of targeted psychosocial intervention in the early stages of dementia (Moniz-Cook and Manthorpe 2009, Moniz-Cook, et al. 1998).

This research explores the use of SenseCam technology as an intervention in early stage dementia. The SenseCam images are viewed within the principles of Cognitive Stimulation Therapy (CST) to engage people with early stage dementia in meaningful discussion. Innovative technology uses in dementia health care practices have the potential to promote independence, enhance quality of life and make significant difference to the person with dementia and their carers (Hagen, et al. 2007).

SenseCam is a lightweight wearable digital camera which passively takes images of the wearers' activities throughout the day. It does not have a viewfinder or a display that can be used to frame photos; instead SenseCam is fitted with a wide-angle (fish-eye) lens that maximizes its field-of-view. This ensures that nearly everything in the wearer's view is captured by the camera. SenseCam also contains a number of electronic sensors, including light-intensity, a passive infrared (body heat) detector, accelerometers, and a temperature sensor, which are used together to automatically trigger a photograph to be taken (Microsoft Corporation 2011). SenseCam takes about 3,000 images a day.

Aspects of CST adopted in this intervention include: focus on strengths and abilities and carefulness to avoid situations which erode self-esteem; and a framework of 14 sessions of themed activities run over a seven week period (Spector, et al. 2003). The sessions have some basis in reminiscence. As remembering is an

act of communication, meaningful discussion about memories from one's life is the key to social interaction, enjoyment, interpersonal bonds, increased contribution and engagement. Reminiscence relies heavily on generic images to generate discussion. In this instance the images derived from SenseCam are personal to the individual and always relate to individual's own life, and to that of one's family. They encourage romanticizing about everyday life events, finding sentimentality in unexpected events and portraying personality (Lindley et al. 2009). SenseCam images have also been found to improve memory in patients with memory impairments hence this technology has potential as a memory training technology although this is not the central focus of this study (Berry, et al. 2007). Microsoft Research suggest many people enjoy using SenseCam and reviewing images of their experiences as it makes them feel more confident and relaxed. Carers also reported they find SenseCam very beneficial (Microsoft Corporation 2011).

Research Methodology and methods.

This research is being conducted over a 36 month period in an exploratory and descriptive approach using the Multiple Case Study method (Yin 2009). Three individual case studies are used to collect in-depth data within their context about a complex issue. Three individuals with early stage dementia who have a carer are asked to wear SenseCam while they go about their everyday life, for the duration of seven weeks. During which the therapist and the researcher visits at pre-arranged appointments twice a week, 45 minutes each. Throughout these sessions the therapist views the images and engages the participant in discussions about the images using software which automatically structures the thousands of SenseCam images captured each day, into "events". The event-based browsing software developed in the CLARITY centre allows huge amounts of SenseCam data to be navigated easily. The researcher observes the therapist and participant engaging in CST, noting reflections in the journal regarding the process of administration, participant enjoyment and any other comments (Doherty and Smeaton 2008).

Significance of Research contribution

Currently, people with dementia and their families in Ireland rarely receive any intervention in the early stages of the disease; participation in this study provides intervention for both the person with the dementia and their carer. It is possible that

there will be direct benefits to the person with dementia and the carer in terms of improved cognitive or psychosocial well-being. We intend to define a process for further testing which best facilitates this. Indirectly this contributes to the currently small literature base on meaningful interventions in the early stage dementia care.

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