

# An evaluation of computers for reminiscing

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**Abstract**

This paper presents a case study on card-based versus device-based (Apple iPad) reminiscing using photographic images. Nineteen older people participated in this study and results show that there is no significant difference between traditional and device based reminiscing of photographic images. The authors' position on reminiscing focuses primarily on helping to understand people's current practices around reminiscing, supported by empirical studies and theories of memory that might inform technology designs.

**Keywords**

Reminiscence systems, reminiscing, reminiscence therapy, life story.

**ACM Classification Keywords**

H.5.2 User Interfaces (D.2.2, H.1.2, I.3.6).

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## **Introduction**

In this paper, reminiscence is explained and reminiscence therapy is outlined as a beneficial intervention for older people. The use of reminiscing activities as a cognitive support or prosthetic is described and early work in computer based reminiscing is introduced. The importance of the changes in society and the implications of these changes are explained in the section 'Getting On', which outlines how the older population is a varied group of individuals, each with their own needs and issues. The research carried out for this study to evaluate card-based versus device-based reminiscing using photographic images, the findings from the study and the conclusions that may be drawn are described in the final sections of the paper.

The paper provides a useful discussion focus around the role of technology in reminiscing, and illustrating with a small study how older people engage with technology versus traditional paper-based reminiscing. The authors' position on reminiscing focuses primarily on helping to understand people's current practices around reminiscing, supported by empirical studies and theories of memory that might inform technology designs.

## **Reminiscing in Context**

Reminiscence has been defined as a 'process of thinking or telling others about one's past experiences' [3]. As a therapeutic intervention, reminiscence is 'using the recall of past events, feelings and thoughts to facilitate pleasure, quality of life, or adaptation to present circumstances' [4]. Reminiscence therapy involves the 'discussion of past activities, events and experiences with another person or group of people,

usually with the aid of tangible prompts such as photographs, household and other familiar items from the past' [10].

Research has generally indicated that reminiscence therapy has a variety of effects on the health and well-being of older adults, such as decreasing depression [7], self-health perception [10], mood status [11], sense of mastery [2] and transcendence, which has been negatively correlated with depression [7]. Some studies have indicated similar results for clients with dementia, while others have not [9].

### *The Computer in Assistive Technologies*

The potential of computers to inform compensatory strategies against cognitive impairment has been noted since at least the early 1960's [5] and the term 'cognitive prosthesis' has been used to describe such human/compensatory interaction. Indeed advances in computer engineering and neuroscience research now proffer the concept of an implanted 'brain prosthetic'.... 'A chip that mimics neurons, firing up the memory.... a potential remedy for the ravages of Alzheimer's and stroke related language deficits.'.... But this is clearly very early days.... "At least in principle it looks as if a chip imitating some functions of the hippocampus could be implanted in the future" [1].

With the ever-accelerating advance of computer technology, an expanding global culture allied to lowering hardware and software costs, computers have become an indispensable human tool and subsequently an equally important component in the development of assistance technology. The development of successful computer based prosthetic devices will depend greatly on the seamless integration of this technology into our living and working environment. Crucial to this process is the positive progression of the human/computer

relationship and a 'human centred approach' in developing the interface with contemporary and emerging technologies [1].

Computer based reminiscing is a relatively new field and has been discussed in the literature since 2009 when the Computer Interactive Reminiscence and Conversation Aid (CIRCA) was trialed in care home environments. CIRCA was designed to provide an 'intuitive, expansive and fail safe reminiscence experience, utilizing contemporary computer touch screen technology and interactive media design to assist people with dementia and their carers and relatives in prompting conversation in one on one or group situations' [6].

Collecting a large amount of materials may make it difficult to find specific items; however, using a personal computer eliminates storage and sorting problems, and enables us to use photos, music, and movies simultaneously [8]. Using special computer software such as CIRCA may make it easier to conduct reminiscence therapy; however, this depends on the subject's familiarity with personal computer use. In Japan, many nursing homes lack human resources; therefore, the personal computer has been turned to for individual reminiscence therapy [8]. Tamura et al [8] carried out a study to decide if reminiscence using a personal computer has the same effect as conventional therapeutic reminiscence therapy. The authors concluded that participants made positive replies about both images and no significant difference was seen between the two methods.

## **Method and Study**

The intention of the study was to identify the attitudes of older people in using a device to reminiscence as opposed to a card-based approach. The study also attempted to measure the impact of card- versus device-based reminiscing, using the amount of time spent with each image as a measure of impact, and to gather qualitative information on reminiscing using cards versus devices.

Three types of images were used in this study: personal images belonging to the participants, generic images of life events and shared experience images. For example, a generic image may be a guitar, a shared experience image may be a photograph of people at a dance hall in 1950's Ireland, while an example of a personal image in this context may be a photograph taken at a dancehall, involving the actual participant.

Another aim of the study was to see if the different types of images – personal, shared experience or generic – made a difference in reminiscing. The study was designed to use the amount of time spent by the participants on each image, as a measure of impact.

The inclusion criterion for the study was older people over 55 years and normally under 85 years. This included people born from 1925 (for 85 year olds) and 1945 (for 60 year old). Participants were recruited from two locations in Northern Ireland to reflect a mix of urban and rural dwellers. There were 19 participants in total. The participants were informed that the study would help to develop the understanding of computer technology in the area of reminiscence and life story work.

The study divided the participants into two groups, the control group using photographs mounted on cards and those using a device. The study control group used traditional photographs, mounted on card (card-based), while the device group used Apple® ipad® devices with touch-screen navigation of photographs (device-based). The allocation of devices and photo cards to participants was randomized, within each location.

In the study, each participant was presented with fifteen photographic images in random sequence, either on the device or mounted on card. The fifteen photographs were drawn equally from personal, shared experience and generic photographs, that relate to when the participant was 18-40 years, therefore, photographs from 1943 (age 18 for people born in 1925) to 1995 (age 40 for people born in 1945) were used.

In order to prepare for the study, there was one initial group meeting at each location. At this meeting each participant met with the fieldwork supervisor who explained the study to all those participating. Informed consent was obtained from the participants and all relevant questions, queries and concerns were answered. At this initial meeting participants also got the opportunity to become familiar with the hand held device. The fieldwork supervisor asked the participants to consider five images from their personal photograph record that are of personal significance to their lives. The specific wording was to 'consider five images that are personally important within you own life, which trigger memories for you'. This initial meeting was also an opportunity for interaction with the participants to help guide the selection of the generic and shared experience images.

At a second drop-in meeting at each location, the five personal images selected by the participants were scanned and immediately returned to the participants. The fieldwork supervisor also carried out a survey with each participant to gauge what images would be appropriate for use as generic and shared experience images, and from this, culturally relevant generic and shared images were selected to avoid presenting an image with which the participant had no interest. At this meeting, the fieldwork supervisor also finalized the schedule of individual meetings. In the study itself, each participant sat with a facilitator and the participant held the cards or device and decided when to move to the next photograph. After the study, a post-study questionnaire was used gain feedback from participants on the study.

**Results**

A summary of the results of the average time (in seconds) spent by the participants on the image types, divided by locations (A and B) and whether they used a device or card is presented in Table 1.

The data shows that, regardless of location, participants on average spent longer viewing photographs that were mounted on card than those on devices, for each of the different photograph types. In terms of differences between the types of photographs, there is no statistically relevant difference in the durations of viewing between any of the types of photographs.

Table 1. Time spent viewing photographic images (seconds)

	A card	B card	A device	B device
Generic	115	128	83	93

Shared	127	130	91	82
Personal	114	137	87	112

The results of the post-participation survey provided interesting views on perceptions of card versus device based photograph reminiscing. In terms of what participants liked about using a device: "easy to use, tidier than paper, images don't get destroyed by handling, kept all images together, ease of use, exciting, image quality, immediacy, very handy and quick, very good." The comments against the device were: "my left arm is weak after break", sensitive screen initially".

The comments in support of traditional images were: "cards can be handled around friends, could hold it in any hand, photographs are handy, handle images and look at full image closer, it is more personal, being able to hold them". Negative comments about card-based photographs were: "traditional images are almost out of use, everything now is cd, I would like to try the device also".

### **Conclusion**

The study found that there was no major difference between device-based (iPad) and card-based (traditional) forms of reminiscing of photographic images. It found no significant issues in using devices for reminiscing, and identified that the participants had positive expectations of using both cards and devices for reminiscing.

Participants took longer on average for photographs mounted on card than for device-based photographs. However, perhaps the most important outcome of this

study was that the participants did not reject the device-based reminiscing; indeed, while they spent shorter times viewing photographs on the devices than those mounted on card (which could be for a variety of reasons), the results from the surveys indicate that they enjoyed using the device.

There was no difference in how the participants viewed the three types of images (personal, generic and shared experience). When designing the study, it was felt that the participants would relate more strongly to images of their, children for instance, than to generic or shared experience images that did not have a family member included. It is only conjecture, but the reason for the equal impact of all photograph types is perhaps that the participants enjoyed discussing all the images with the facilitator and felt that they could not share private family matters around personal photographs. In the privacy of their own home, people may have different behaviors.

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Maurice Mulvenna is Professor of Computer Science at the TRAIL living lab in the University of Ulster. He co-chaired the First Reminiscence Systems Workshop at HCI-2009 in Cambridge, England, and has recently published in the area of pervasive technologies supporting people with dementia, including reminiscing work and has co-editing a special issue of a journal on 'Towards systems in support of reminiscence work'. His experience in the TRAIL Living Lab working in life story work will bring a perspective from the user communities in reminiscing.

Terence Wright is the Professor of Visual Arts at the School of Art & Design in the University of Ulster. He co-chaired the First Reminiscence Systems Workshop at HCI-2009 in Cambridge, England, and has recently published in the area of visual narratives. He has co-editing a special issue of a journal on 'Towards systems in support of reminiscence work'.

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