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Citation: Zachos, K., Maiden, N., Karlsen, K., Jones, S., Turner, I., Rose, M., Pudney, K. & MacManus, J. (2011). Introducing creativity techniques and software apps to the care of people with dementia. Paper presented at the 8th ACM conference on Creativity and cognition, 3 - 6 Nov 2011, Atlanta, Georgia, US. doi: 10.1145/2069618.2069718

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Link to published version: <https://doi.org/10.1145/2069618.2069718>

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Introducing Creativity Techniques and Software Apps to the Care of People with Dementia

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ABSTRACT

This poster reports research to introduce creative problem solving techniques and software to the care for people with dementia in residential homes.

Author Keywords

Creativity; analogical reasoning; dementia care.

ACM Classification Keywords

J.3 [Life and Medical Systems] Health

General Terms

Human Factors

DEMENTIA CARE AND CREATIVITY

Dementia is a condition related to ageing. After the age of 65 the proportion of people with dementia doubles for every five years of age, so that almost one fifth of people over the age of 85 and a third of people over the age of 95 are estimated to be affected [2]. Two-thirds of all residents in care homes have a form of dementia [5], and caring for these residents can pose complex problems. Symptoms vary from person to person, requiring care to be individualized and care staff to think creatively to deliver the novel and effective treatments and support that individual residents need. The EU-funded FP7 *Mirror* Integrated Project is providing new capabilities to enhance care by offering care staff new forms of creativity training, techniques and software apps adapted to the care domain.

Research in *Mirror* aims to overcome two challenges in the care for people with dementia. The first is to implement creativity techniques that can support the care for dementia in residential homes effectively. These techniques need to be effective within the constraints that residential care homes impose, constraints such as the low status and limited training of the care staff [1]. The second is to develop new software apps that can support effective creative thinking with the techniques to be implemented in care homes. High turnover of staff means that sharing

knowledge about good care practices that we perceive as a pre-condition to effective creative thinking is difficult. Therefore in *Mirror* we have developed mobile apps that enable care staff to undertake case-based reasoning with previous solutions to the same problem and creative thinking with analogical solutions to similar problems.

INTRODUCING CREATIVITY INTO DEMENTIA CARE

We observed and interviewed care staff in one care home to understand current care practices and introduce creativity techniques and software apps. Data collected revealed three distinct opportunities for creative problem solving:

1. *Managing challenging behavior*: creative problem solving can be used to analyze data about such behavior to discover its causes then compare with previous episodes of challenging behavior to propose possible resolutions to it.
2. *Adapting to an evolving understanding of each resident*: the process of understanding residents is not formulaic but requires care staff to react to individual situations, thereby establishing opportunities for creative problem solving.
3. *Devising stimulation to residents with advanced stage dementia*: creative thinking offers opportunities to discover new forms of stimulation through all five senses for these residents within one major constraint – limited staff time.

CREATIVITY TECHNIQUES FOR DEMENTIA CARE

Six care staff from the residential home experimented with different creativity techniques on a dementia case study, and the technique deemed most interesting and effective was *other worlds*, an exploratory creativity technique that encourages analogical reasoning in different domains. Its selection recognized the potential for case-based problem solving in the care for dementia [4]. The care staff generated ideas to solve problems analogical to ones encountered in dementia care in four domains - *social life*, *research*, *word of mouth* and *different cultures*, then transfer these ideas to the care for dementia. The staff then randomly picked a fifth analogical domain from *politics*, *tennis*, *flying* and *army* [6] and repeated the idea generation process. The success of *other worlds* can inform work redesign and new forms of training in the pilot care home

THE CARER SOFTWARE APP

A software app, called *Carer*, was developed to support creative thinking by care staff in situ based on the transfer and application of knowledge about previous similar episodes of challenging behavior. In particular it supports two forms of creative problem solving with previous strategies for managing challenging behavior. The first is case-based reasoning with descriptions of cases solved successfully in the same domain, i.e. challenging behavior in dementia care. *Carer* supports the care staff to adapt solutions developed initially for other people to residents in their own care, as reported in [4]. The second is analogical reasoning with descriptions of cases solved successfully in other domains such as policing and teaching. *Carer* supports care staff to reason analogically with then transfer and apply knowledge from the source domain to manage the current challenging behavior, as achieved with the *other worlds* technique. For example, a description of good policing practice to manage disorderly revelers can provide analogical insights with which to manage challenging behavior in dementia care. *Carer* distinguishes between these two forms of creative problem solving using two similarity measures specified in Gentner's [3] Structure Mapping Theory (SMT). These measures use attributional and relational predicates extracted from natural language descriptions of challenging behavior queries and descriptions of successful strategies.

Carer was implemented on an iPod Touch. Care staff enter natural language descriptions of the encountered behavior into the text box shown on the left hand side of Figure 1 using the device's keyboard, then refines it by selecting one of the observed behavior values such as *Resident is violent*. When the user presses the *Retrieve similar cases* button the app automatically generates a query that it fires at the central repository. A first version of the repository was seeded with 20 cases of published good care practice [Owen & Meyer 2009] and good care practices collected from experienced care staff at the pilot care home.

Carer's discovery service has two important capabilities from [9]. The first is *query expansion* – the addition of terms in the query that have the same or similar meaning to existing query terms, to make the query more complete. The second is *term disambiguation* – selecting the meaning, or sense of each term in the query to enable query expansion, thus making the query unambiguous. Therefore the description of an encountered challenging behaviour entered by care staff need not adhere to any lexicon or have same terms as the stored cases, making *Carer* more flexible. The right-hand side of Figure 1 shows how the three most similar retrieved case studies are displayed to the care staff, who receive an ordered list of case studies and view the details of each one by clicking on it.

FUTURE WORK

We are currently extending *Carer* with capabilities to retrieve good practices from domains analogical to dementia care by extending it with the AnTiQue discovery service [8]. To exploit these new capabilities we are

populating the repository with managing challenging cases from other domains in *Mirror*, such as stroke care, as well as domains external to it such as policing and social care.

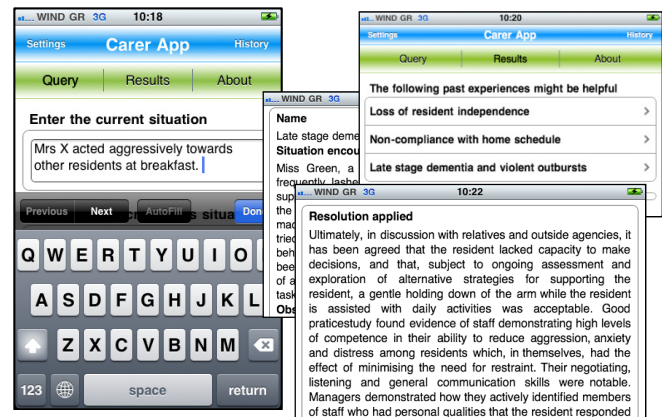


Figure 1. the *Carer* software app

ACKNOWLEDGMENTS

The research reported in this paper is supported by the EU-funded MIRROR integrated project 257617, 2010-14.

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