Dementia abnormal psychological behaviors, such as depressive

Art & Culture, Music

Dementia is considered a progressive neurological disorder which affects all aspects of functioning. Short-term working memory is usually the primary sector where decline is detected, although as the illness progresses, all aspects of cognition tend to be affected, including speech, perception, problem-solving, decision making and functional abilities (Raia, 1999). It is also linked to various abnormal psychological behaviors, such as depressive symptoms and depression, paranoia, hallucinosis, sleep disorders and wandering about (Finkel, 2000), as well as a decrease in motivation (Burns & Iliffe, 2009).

There are numerous factors that can contribute to the development of dementia, such as medical background, lifestyle, education, and genetics, however advancing age remains the biggest risk factor (Knapp & Prince, 2007). As life expectancy is steadily growing, so do the numbers of people affected by dementia worldwide; over 46 million people are living with dementia right now and this number is expected to increase to 131. 5 million by 2050 (World Alzheimer Report, 2015). What is more, even though it cannot be prevented or reversed, a diagnosis of dementia can bring with it stigma and social isolation (World Alzheimer Disease, 2015). Dementia is considered as an umbrella term, describing a group of diseases, the most common of which is Alzheimer’s disease (AD) accounting for 50% to 70% of dementia cases, followed by vascular dementia (VaD) and Lewy body dementia that seem to account for 25% and 15% of the cases respectively (Dementia Fact Sheet, 2012; Burns & Iliffe, 2009). People with dementia face the loss of short-term autobiographical memory, while long-term memories remain intact (Snowden et al., 1996; Nestor et al.

, 2002). That is why, reminiscing about the past, especially about their childhood and adolescence, seems less challenging to people with dementia than talking about recently occurred events. However, each individual tends to experience the condition differently and progress at a different rate, leading to a diversity of symptoms. Emotional and physical resilience, alongside the support that is available to each individual, can influence greatly the experience of the condition (Alzheimer's Society, 2011). As the condition progresses, all aspects of cognitive function are affected, which then leads to certain impairments in people's social, emotional and psychological behaviors.

Over the course of the condition, social activities and communication with others are becoming increasingly difficult or may stop altogether, as working memory plays a crucial role in all of those tasks (Bowie & Mountain, 1993). As a consequence, people with dementia become increasingly dependent on family members and caregivers for their care and support, while they gradually become socially isolated and deprived of the wide range of social interactions that play a significant role in everyday life. Furthermore, dementia disrupts the brain biologically, which can trigger behavioral and psychological disruptions, resulting to a loss of autonomy, initiative, and wellbeing, leaving patients to feel as if they are being robbed of their identity and independence (Mulvenna et al., 2010).

Most of the research surrounding dementia is focused on identifying a cure, while less attention is being paid to investigating and exploring ways to offer better care to people living with the condition. Undoubtedly, the need for

psychosocial solutions that will enable people with dementia to have a better quality of life is now more urgent than ever. The number of people aged 60 years and over, reached 700 million in 2006 and this number is expected to rise up to 2. 1 billion people by 2050 (Chucks, 2010; Issahaku & Neysmith, 2013). This will result in the existence of fewer people under the age of 60 who would be likely to play the role of informal caregivers for people aged over 65 years old. Therefore, promoting independence for people living with dementia through assistive technologies has now been the focus of numerous studies.

Technology is being commonly used in dementia care, primarily addressing issues of security, safety and carer reassurance, neglecting the person's capacity and willingness to maintain effective communication alongside the experience and enjoyment of new things. The potential of such technologies to be utilised as an intervention to aid communication, social interaction and leisure activity has only recently been acknowledged. In fact, a recent large RCT focused on reminiscence groups with people with dementia, concluded that there is an urgent need for the exploration of additional approaches that could possibly enhance the relationship between formal/informal caregivers and the person with dementia (Woods et al., 2012). 1. 2 CIRCA & LIM Information must be processed through a series of stages, with short-term memory being the first of those and long-term memory the last, in order to form new memories (Baddeley & Hitch, 1974). As is widely known, during the early stages of dementia short-term working memory is affected, while long-term memory remains relatively intact until much later on. Thus,

older memories are better preserved and more easily accessible than recent ones.

As is also widely accepted, short-term memory plays a critical role in verbal communication and social interactions, and when impaired it can have a severe impact on one's social life. That is why one of the first social causalities of dementia is the disruption of those exact domains. However, despite the decline in various aspects of their daily life, people with dementia seem to eagerly desire communication with other people, since many aspects of social interactions remain intact (Astell & Ellis, 2006). In light of this information, researchers have been developing creative ways so that people with dementia can continue to participate in meaningful social interactions. The Computer Interactive Reminiscence and Conversation Aid (CIRCA) is an innovatively designed software application based on interaction, consisting of generic digital media including video, music and photographs (Astell et al., 2010), aiming at supporting and promoting communication between people with dementia and caregivers (Alm et al., 2004; Astell et al., 2005).

It is based on reminiscence, a popular activity in dementia care services (Jackson, 1991), and the positive outcomes of which have been noted by a number of authors (Cook, 1984; Gibson, 1993; Woods & McKiernan, 1995). Reminiscence therapy is considered to contribute to the well-being of people with dementia while providing a positive activity (Brooker & Duce, 2000). What makes CIRCA ideal for people with dementia is the fact that it utilises hypermedia in order to address the memory and conversation maintenance

deficits experienced by people living with the condition. First of all, hypermedia is fundamentally flexible, providing users with the freedom to move between interconnected but individual items in whichever way they choose without putting any penalty on “ losing the place” in the system (McKerlie & Preece, 1992).

Secondly, it allows users to link items from a range of media, such as text, graphics, photographs, sound and film recordings in a dynamic way, providing people with dementia and their caregivers with an enjoyable activity to explore and discuss together (Alm et al., 2004; Astell et al., 2005). What is more, no previous knowledge or experience of ITC is required, making its use simple and effortless for people living with the condition. CIRCA has been previously evaluated and according to the findings of a number of studies, it provides a wide range of advantages both for the people with dementia and their formal or informal caregivers. It provides the person living with dementia the opportunity to make independent choices, as well as to equally participate in conversations with others (Astell et al.

, 2008). As for the caregivers, CIRCA allows them to re-evaluate their expectations of the person living with the condition and thereby view them “ in a new light” (Astell et al., 2008). Its use is also linked with feelings of increased competence and job satisfaction by formal caregivers (Astell et al., 2007).

The development of the Living in the Moment project (LIM) was established to explore the parameters that could allow the development of computerised activities in order to provide engaging and stimulating pastimes for people with dementia (Astell, Alm, Gowans et al., 2009). LIM is a series of computer games designed to assist the user's independent interactions, thus individuals using LIM are encouraged to engage actively with the touch screen computer rather than sit back and passively watch a video clip. The hypothesis behind the LIM games is that after a period of support, scaffolding can be withdrawn gradually so that independent interaction is enabled.

This way, the person with dementia can experience feelings of achievement and accomplishment by utilising well-preserved skills whilst compensating for the impairment.