

PO5. 15. Engagement of people with cognitive impairment and their carers in online games – observations from the CaregiversPro-MMD study

David Howe¹, Jonathan Thorpe¹, Rosie Dunn¹, Kate Cunnah¹, Rebecca Platt¹, Caroline White¹, Paraskevi Zafeiridi¹, Konstantinos Votis³, Ioannis Pakiokas³, Dimitrios Tzovaras³, Kevin Paulson², Emma Wolverson¹

¹Psychological Health, Wellbeing and Social Work, School of Health and Social Work, Faculty of Health Sciences, University of Hull, UK

²School of Engineering, Faculty of Science and Engineering, University of Hull, UK

³The Centre for Research and Technology, Hellas, Thessaloniki, Greece

Background

There is growing evidence that certain types of video games (broadly referred to as “Serious Games”; i.e. games which are designed or utilised for purposes beyond enjoyment/entertainment, such as health outcomes) can have a range of benefits to people living with dementia/cognitive impairment (PWCI). These benefits may include positive effects on cognitive functioning (1), as well as mood and behaviour (2). Recent evidence also suggests that the informal caregivers (CGs) of PWCI may also benefit from web-based video games, potentially as a means of relieving stress (3).

For games to realistically yield these benefits, there is an assumption that both PWCI and CGs will engage in regular, unprompted/unsupported use of games in their daily lives. Website analytics data provides a useful measure of this type of engagement.

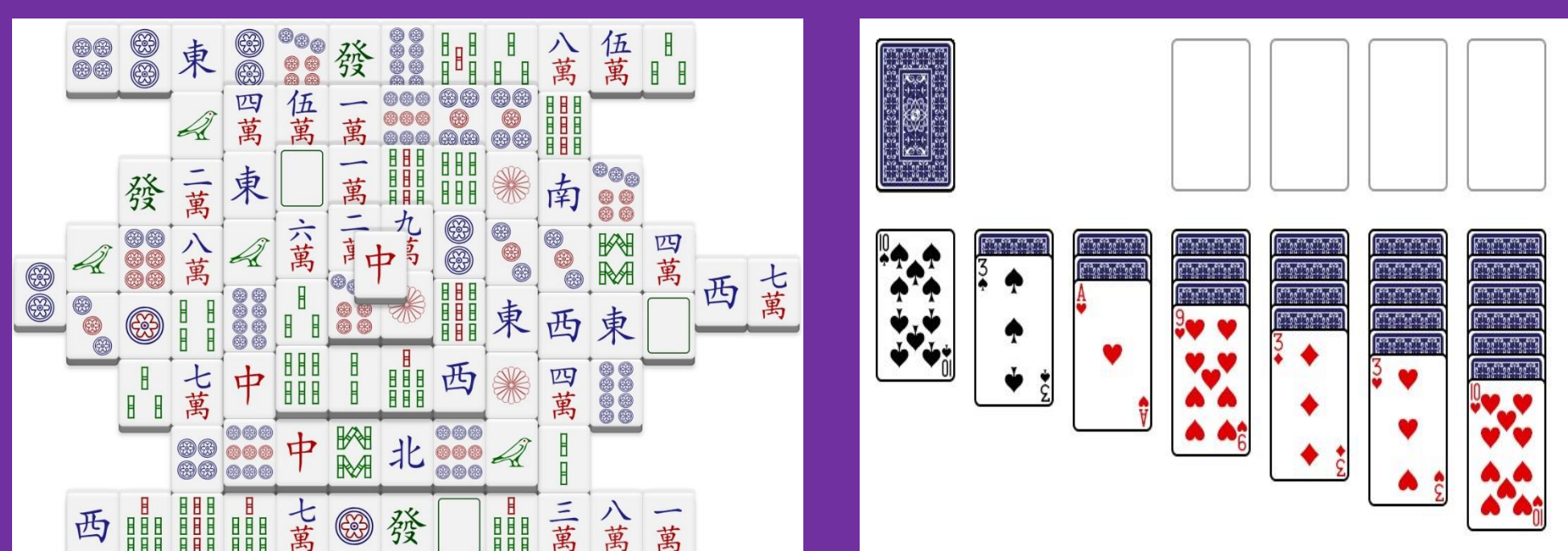
CaregiversPro (CGP) is a web-based social networking and information-sharing platform, designed for use by PWCI and their informal CGs and delivered via touchscreen tablets. The website is being trialled in an ongoing study across four European countries. In addition to social networking and information-based features, the platform also allows users to engage in games; two custom-designed memory training games which are built into the platform, as well as links to various external web-browser games:

In-Built Games

- Back to School (BtS) – a game which involves identifying the missing word in a series of proverbs.
- Hall of Fame (HoF) – a game which requires a picture of a celebrity to be matched to their name.

Browser Games

- Jigsaw puzzles
- Mahjong
- Solitaire



Web analytics data were analysed to determine:

- The extent to which PWCI and CGs engaged with games on the CGP website in their daily lives.
- Whether any sociodemographic factors predicted engagement with the games.

Data Collection and Analysis

Participants’ use of the CGP website was recorded using the Matomo open analytics platform. Each action performed/URL accessed within the CGP website by each user was recorded. Actions/URLs accessed were grouped into “visits”; a new visit was started whenever an account either visited the website for the first time, or visited the website 30 minutes or more after their last action.

Data were analysed for N = 74 participants (37 PWCI, 37 CGs), all from the UK intervention group of the CGP trial. Data were representative of platform use between 13th February and 31st July 2018.

References

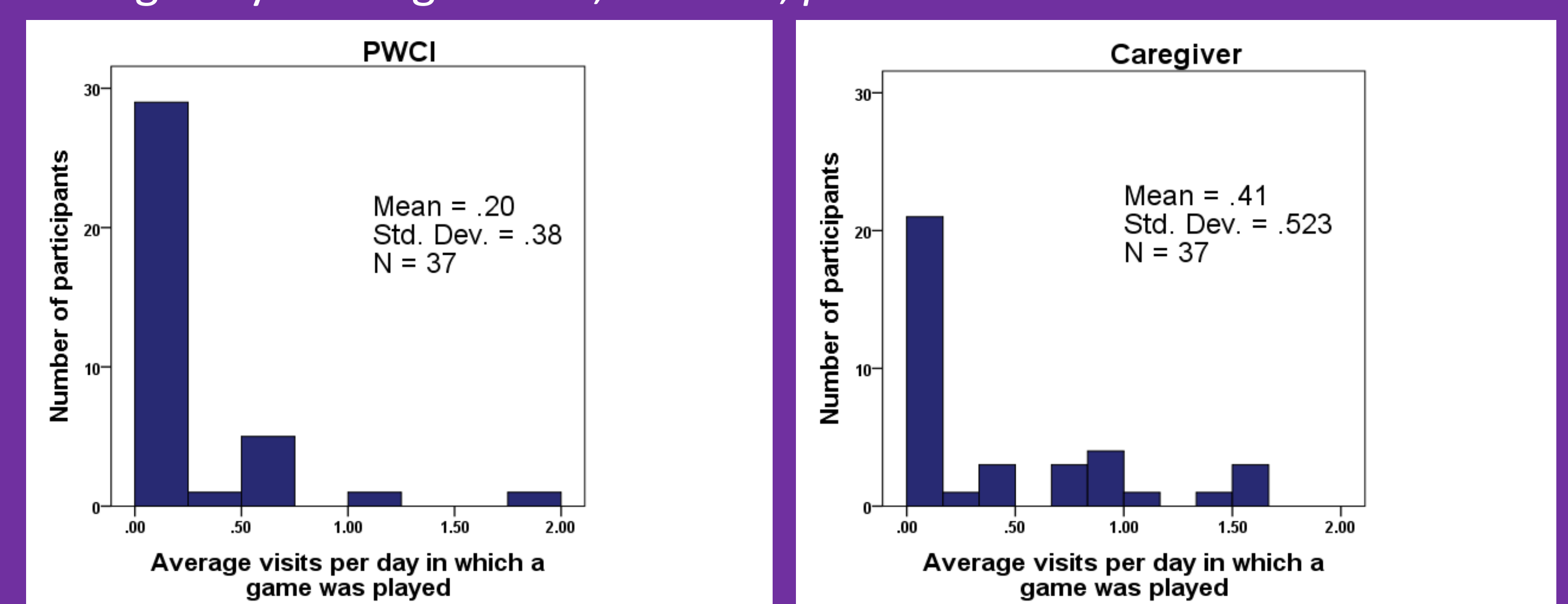
- (1) McCallum, S., & Boletsis, C. (2013). Dementia Games: a literature review of dementia-related Serious Games. In *International Conference on Serious Games Development and Applications* (pp. 15-27). Springer, Berlin, Heidelberg.
- (2) Narme, P. (2016). Benefits of game-based leisure activities in normal aging and dementia. *Geriatric et psychologie neuropsychiatrie du vieillissement*, 14(4), 420-428.
- (3) Reinwand, D. A., Crutzen, R., & Zank, S. (2018). Online activities among elder informal caregivers: Results from a cross-sectional study. *DIGITAL HEALTH*, 4, 2055207618779715.

Results

In the specified time period, PWCI logged a total of **2870** visits to the CGP website, while CGs logged a total of **4540** visits.

- 1201 (41.85%) PWCI visits involved playing a game.
- 2560 (56.39%) CG visits involved playing a game.

The **average number of visits to the website per day in which a game was played** was computed for each participant (*see below for distributions*). This data was positively skewed for both PWCI and CGs. A Mann-Whitney U test revealed that the difference between PWCI and CGs in average visits per day involving a game was marginally non-significant, $U = 278, p = .062$.



Both PWCI and CGs rarely engaged with the in-built games.

- 70% of PWCI and 78% of CGs accessed the in-built between 0 and 2 times.
- The most visits a participant made to the in-built games was 12.

The majority of games engagement was with browser games, which were highly popular with a subset of PWCI and CG participants:

	Visits involving browser games				
	Mean (SD)	Range	Skew	Median	75 th Percentile
PWCIs	30.24 (62.35)	0 – 289	2.93	2	28.50
CGs	67.59 (96.66)	0 – 374	1.52	10	140

The number of visits to games did not correlate significantly ($p > .05$) with sociodemographic variables such as **age, level of education, prior frequency of internet use, or MMSE score (PWCI participants only)**. This was the case when analyzing the sample as a whole, as well as when analyses were conducted separately for in-built games, and separately for PWCI and CGs.

Conclusions

- The greater engagement with browser games relative to the custom in-built memory games (which qualitative data suggests participants found “childish” and “repetitive”) suggests that to maximise the engagement of PWCI and CGs with games, developers should avoid making games overly simplistic with a limited range of responses.
- The popularity of the browser games with a subset of both PWCI and CGs also suggests that prior familiarity with the games may be an important factor in engagement.
- The fact that none of the demographic factors analysed correlated with game engagement suggests that both PWCI and CGs with a wide range of abilities and prior experience with the internet can be engaged in certain online games.