Potential of digital games to cognitively engage people living with dementia A. Astell, M. Bhatia, A. Said, E. Dove *Gerontechnology* 25(s)

Purpose People living with dementia are perceived as unable to learn new skills, such as using digital technologies, which restricts opportunities for cognitive stimulation and engagement [1]. Cognitive engagement refers to mental effort that occurs while performing a task, such as attending to stimuli, making choices, problem-solving, and/or adapting behavior. Playing downloadable digital games demands a range of cognitive abilities (e.g., attention, perceptual-motor, and language) [2], and could provide cognitive engagement to people with dementia. The aim of this study was to examine the cognitive engagement of people living with dementia playing digital games. **Method** Data were collected in two studies, including 76 participants living with dementia who played a selection of 5 pre-selected, commercially available digital games (e.g., jigsaw puzzle, word search) previously identified as accessible for novice players [3]. Each participant was video recorded during their initial gameplay session to capture facial expressions and their interactions with the tablet screen (e.g., swiping, correct gameplay moves). The six cognitive domains of the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) [4] – complex attention, executive function, learning and memory, language, perceptual-motor function, and social cognition – were used to develop a video codebook. Operational definitions for each item in the codebook were developed by first examining the components involved in playing through a turn of each game, which identified that social cognition was not involved in any of the games when playing independently. Then, two undergraduate researchers with 1 year of coding experience independently analyzed the video data of each participant's initial gameplay session by applying the codebook and definitions to observable indicators of cognitive engagement evident from the videos (e.g., reading the screen, changing strategy) and mapping these observed behaviors to the cognitive domains in the DSM (e.g., language, executive function). Areas of discrepancy amongst the coders were resolved through consensus discussions with a more senior researcher (>10 years experience), with high inter-rater agreement overall (88.47%). Coded video data were analyzed descriptively to examine cognitive engagement (e.g., percentage of sessions where specific domains were engaged) when playing the five different games. **Results and Discussion** In all but one of the sessions analyzed (75/76), at least one cognitive domain was engaged during gameplay. Unsurprisingly, the number of cognitive domains engaged varied by game type. For example, a word search game had greater engagement of the language domain than a jigsaw puzzle game. Perceptual-motor function and complex attention domains were most frequently engaged, evident in at least 90% of gameplay sessions. In summary, mainstream digital games can provide accessible and affordable cognitive engagement for people living with dementia, including those with no prior digital experience. This is important given the benefits of cognitive engagement for promoting continued participation in everyday activities [5]. Awareness raising, guidance on finding accessible digital games, and ongoing training to support care partners (e.g., staff) to teach people living with dementia to play these games are needed to scale this resource in care settings for people living with dementia, where cognitive engagement may be limited.

References

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