Successful aging through digital games: Socioemotional differences between older adult gamers and Non-gamers

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A R T I C L E   I N F O

Article history:

Keywords:
Aging
Digital games
Well-being
Depression

A B S T R A C T

The purpose of this investigation was to examine differences in psychological functioning (e.g., well-being, affect, depression, and social functioning) between older adults who play digital games compared to those older adults that do not play digital games. Analysis was conducted on a sample of 140 independently living older adults with an average age of 77.47 years (SD = 7.31). Participants were divided into three groups (Regular, Occasional Gamers, and Non-gamers) - 60% of the sample was either a Regular or Occasional Gamer. Differences among the groups were found for well-being, negative affect, social functioning, and depression with Regular and Occasional Gamers performing better, on average, than Non-gaming older adults. Findings suggest that playing may serve as a positive activity associated with successful aging.

1. Introduction

Most psychological research on digital games has focused on cataloguing the potential negative outcomes associated with playing commercially available digital games. The majority of this research has centered on children and adolescents where the concern is that playing digital games, particularly violent games, can have an impact on the development of negative behaviors such as aggression (Anderson & Bushman, 2001). However, there is a growing body of research examining the extent to which commercially available digital games are associated with positive psychological outcomes across the lifespan (Ferguson, 2010; Primack et al., 2012; Spence & Feng, 2010). This change in focus is likely due to three developments in games: (1) playing digital games has become a more normative activity with over half of all Americans engaging in some form of digital gaming (Entertainment Software Association [ESA], 2005); (2) games now have multiple methods of interaction, ranging from the traditional keyboard or console to the Microsoft Kinect, where body movement controls in-game action; and (3) games increasingly allow for social interaction. Such differences change the potential game playing population from a selected sample to a wide variety of players.

1.1. Positive benefits of digital games

Most studies examining the psychological benefits of video gaming have focused on the association between gaming and cognitive functioning, such as executive control and spatial ability. For example, adolescent gamers typically perform better on tests of processing speed and visuospatial functioning than Non-gamers (De Lisi & Wolford, 2002; Green & Bavelier, 2003, 2006a, 2006b). In addition, studies employing an experimental intervention design have found that playing digital games, particularly first-person shooters, leads to gains in many cognitive abilities in children and adolescents (Barlett, Harris, & Baldassaro, 2007; Feng, Spence, & Pratt, 2007; Green & Bavelier, 2003, 2006b). In a recent meta-analysis of intervention studies that utilized digital games, Primack and colleagues (2012) reported significant gains in outcomes including psychological therapy, physical therapy, and physical activity after playing digital games. Thus, the benefits of gaming, at least in some cases, can be attributed to the games themselves rather than self-selection of the players compared to non-players. Gains in non-cognitive domains are also apparent.

1.2. Older adults and digital games

Inspired by these and other findings, researchers in the field of aging have begun to examine digital game playing in older adults. Although the general perception is that older adults might not play digital games, published statistics suggest otherwise. First, in the United States alone, one million individuals turn 65 each year.
and by the year 2020 almost 30% of the population will be over 65 (U.S. Census Bureau, 2004). Second, the aging baby boomer generation has the highest amount of disposable income and leisure time, both of which could be spent on digital games. Third, the average age of gamers is estimated at 34 years and 26% of Americans who play digital games are over the age of 50 years old (ESA, 2009). Fourth, 53% of adults over the age of 65 report using the internet and two-thirds of these older adults own a desktop or laptop computer. These factors listed above, and the sales figures of Nintendo’s Brain Age, suggest a dislike of gaming related to age is perhaps just a stereotype.

However, research on older adults’ experiences with digital games is limited. Similar to the research on the earlier portion of the lifespan, most of the aging research has focused on the efficacy of playing digital games to improve the cognitive abilities that tend to decline with age. These studies have reported that playing digital games can be associated with significant gains in certain cognitive abilities such as visuospatial ability, processing speed and attentional control (Basak, Boot, Voss, & Kramer, 2008; Boot et al., 2010; Lee et al., 2012; Stern et al., 2011; Whitlock, McLaughlin, & Allaire, 2012). However, the improvement of cognitive abilities is only one question related to older adults and digital games, and to date there is no research examining whether or not older adult gamers are different than Non-gamers in domains such as emotional health and well-being.

1.3. Hypotheses

The overarching goal of the current study was to examine differences between older adult gamers and Non-gamers in a number of psychological domains assessing socio-emotional functioning; specifically, we examined well-being, positive affect, negative affect, and depression. These domains were selected given their central role in theories of successful aging (Rowe & Khan, 1998). Specifically, the current study addressed three questions. First, what is the frequency of digital game playing in a sample of older adults? Second, are there demographic differences between older adults who play digital games compared to those who do not? Finally, are there socioemotional differences (e.g., well-being, affect, depression, social functioning) between older adult gamers and Non-gamers?

2. Method

2.1. Participants

The sample consisted of 140 independently living older adults ranging in age from 63 to 92 years with an average age of 77.47 years (SD = 7.31). The sample was 70% female and 111 participants identified themselves as European American, 24 as African American, and one participant was Asian American/Pacific Islander. Seventy-one percent reporting having earned at least a college degree.

2.2. Design and procedure

Older adults were recruited from local senior centers, religious centers, and senior living apartments, and were told they would be participating in a study of cognitive training via games. The design of the overall study was a pre-test-post-test treatment control group design. After providing informed consent, all participants completed a battery of perceptual, cognitive, and affective tests in a 2-h pre-test session after which those participants assigned to the treatment group participated in a memory intervention the included playing the Nintendo Wii for 1 h a day for 15 days.

Data for the current paper come from participants who completed both the pre-test session and questions regarding their frequency of digital game play – continuing through the intervention study was not a prerequisite for the current analyses. Note that analysis was conducted using pre-test data only.

2.3. Materials

2.3.1. Medical outcomes Study Short Form-36 (SF-36; McHorney, Ware, & Raczek, 1993)

Three domain scores derived from the SF-36 were used to assess self-reported General Health (α = .76), Social Functioning (α = .68), and Emotional Well-Being (α = .76). Participants’ responses to items in each domain are captured using a Likert-type scales in response to items such as “How much of the time during the past 4 weeks have you felt so down in the dumps nothing could cheer you up?”; “Compared to one year ago, how would you rate your health in general now?”; and “During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?” Higher scores reflect better functioning.

2.3.2. The Center for Epidemiological Studies-Depression (CES-D) scale (Radloff, 1977)

The CES-D is well-validated self-report measure designed for use in the general population for the assessment of depressive symptomatology and is one the most commonly used measures of depression. The 20-item measure had strong internal consistency (α = .83) and higher total scores reflected more depressive symptomatology.

2.3.3. Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988)

This measure includes 10 positive (e.g., enthusiastic, alert) and 10 negative (e.g., hostile, distressed) adjectives describing mood states. Participants rated the extent to which they had experienced each emotion during the past 24 h on a scale ranging from 0 (not at all) to 4 (very much). Separate composite scores for positive affect (PA; α = .90) and negative affect (NA; α = .84) with higher scores indicating higher PA and NA respectively.

3. Results

3.1. Classifying digital game playing

The first aim of the study was to examine the extent to which older adults reported playing digital games. As can be seen in Table 1, almost a third of the sample reported playing digital games every day, several times a week, or once a week. Adults who played digital games but only did so a couple of times a month or less constituted a quarter of the sample. Older adults who never played digital games made up the remaining 39% of the sample. Given the non-normal distribution of the digital game playing variable and in order to capture meaningful differences, it was recoded to represent three levels of digital game playing involvement: Regular Gamers (n = 48), Occasional Gamers (n = 37), and Non-gamers (n = 55). This recoded digital game playing (DGP) variable was used in the remainder of the analysis.

Participants who reported playing digital games were also asked to list the games they had played over the past 6 months. These games generally fell into three categories with digital card games (e.g., solitaire, free cell) being the largest followed by Wii games (e.g., Wii bowling), and finally puzzle games (e.g., cross-words, sudoku).
3.2. Demographic differences among Digital Gaming Groups

Next, the extent to which demographic characteristics differed between the three gaming groups was examined. Surprisingly, there was no evidence of age differences among Regular, Occasional, and Non-gamers, $F(2,137) = .19, p > .05, \eta = .003$. Similarly, there were no differences between the three groups with respect to education, $F(2,137) = .40, p > .05, \eta = .01$. Interestingly, gender and gaming group were not independent [$\chi^2(2) = 6.6, p < .05$]. There were more females than males in the Regular Gamers (female $n = 38$; males $n = 40$) and Non-gamers (female $n = 40$; males $n = 15$) whereas the ratio of males to females was similar in the Occasional Gamers group (female $n = 20$; males $n = 17$).

3.3. Socio-emotional differences among Digital Gaming Groups

We next examined differences between the three groups with respect to self-reported health, emotional functioning, and social functioning. To aid comparison across measures, all dependent variables were standardized to a mean of 50 and standard deviation of 10. One-way analysis of variance (ANOVA) was used to test for differences and follow up tests contrasting the Regular and Occasional Gamers groups to the Non-gamers group. As can be seen in Table 2, significant differences were found for well-being and negative affect. Mean levels of depression varied marginally among the group. Regular, Occasional, and Non-gamers did not significantly differ in social functioning, self-reported health, or positive affect.

Given the significant main effects for well-being and negative affect as well as the marginal effects for depression, planned comparisons (see Table 3) were conducted to determine if Regular and Occasional Gamers significantly differed from Non-gamers. The results of the planned comparisons are presented in Table 3 and the means for each variable by group are presented in Fig. 1. Regular and Occasional Gamers had significantly better Well-Being compared to Non-gamers. With respect to Negative Affect, Regular and Occasional Gamers had significantly lower mean levels (i.e., less negative affect) than Non-gamers. Regular Gamers also had, on average, significantly less depression than Non-gamers. Occasional Gamers also had less depression than Non-gamers though the difference fell just shy of statistical significance. Finally, Regular and Occasional Gamers reported significantly better instrumental/everyday functioning than Non-gamers.

4. Discussion

4.1. Theoretical contributions

The overarching purpose of the current study was to determine if there were differences in psychological functioning between older adults who played digital games compared to non-gaming older adults. Results suggested that almost half of our sample reported playing digital games over the past year, and a third of the sample was classified as playing digital games at least once a week. There were no differences in age or education of the gamers relative to Non-gamers; however, women were more likely to play games regularly or not play games than they were to play games occasionally. Compared to older adults that did not play digital games, Regular and Occasional Gamers reported significantly higher levels of well-being, lower levels of negative affect, and to some extent less depression. The three groups of participants did not differ in their average level of positive affect, social functioning, or self-reported health.

Given stereotypes related to aging, it may be surprising that such a large proportion of our older adult sample reported playing digital games. However, the proportion of older adults that own computers and use the internet has increased dramatically over the past 10 years. Most of the games that older adults indicated they played were “casual” games that are generally played on computers and use the internet has increased dramatically over the past 10 years. Most of the games that older adults indicated they played were “casual” games that are generally played on the PC (e.g., card games, puzzle games). Looking toward the older adults of the future we must consider the large cohort of baby boomers, who spent most if not all of their professional life during the emergence, growth, and now ubiquity of computers and digital games. It can be expected that proportion of older adults playing digital games will only increase. In the current sample, which spanned a 30 year age range, playing digital games was age-invariant. One might have expected that game playing groups would have been comprised mostly of individuals at the younger end of our age distribution, but this was not the case. Additionally, the
gender profile of the three groups of older adults differed with a greater proportion of females relative males in the Regular and Non-gaming groups. One possibility is that older females tend to either play digital games on a rather consistent basis or not at all. However, a clear interpretation of this relationship is difficult to make given that in the overall sample the proportion of females was much greater than males.

As mentioned previously, much of the psychological research conducted on the impact of digital games has focused on the possible adverse effects of playing digital games. Contrary to these and other studies, the findings of the current investigation suggest that older adults who reported playing digital games score, on average, significantly better than non-digital game playing on measures assessing a number of domains of successful aging. Specifically, older adults who were classified as Regular and Occasional Gamers reported less depression and lower negative affect as well as higher well-being than their non-gaming counterparts. One possibility for these findings is that digital games serve as a source of entertainment which may lower negative affect and depression and increase well-being. In support of this interpretation, previous studies have found that adults who engage in more leisure activities report better emotional outcomes (Hultsch, Hertzog, Small, & Dixon, 1999).

Even though a number of significant differences between Regular, Occasional, and non-gaming older adults were found, it should not be overlooked that the three groups did not differ on a number of key variables. Specifically, no significant differences were found for positive affect, social functioning, and self-reported health. However, for all three variables the pattern of results was the same: Older adults who played games scored better than non-digital game playing older adults.

4.2. Limitations

Though the current study has highlighted a number of significant differences among gaming and non-gaming older adults the results must be interpreted alongside a number of caveats. First, during recruitment participants were informed that (1) they were signing up for a study that was testing a memory intervention and (2) the intervention was a digital game. While this recruitment strategy was necessary to meet the needs of the overarching study, it may have served to introduce a level of selectivity into our sample. That is, older adults who already played or who were interested in playing digital games might have been more likely to volunteer. Second, though almost half of the study sample reported playing digital games to some degree, most of the games nominated were digital version of card games (e.g., solitaire) or puzzles (e.g., sudoku, crossword) and not “digital games” in the traditional sense. It is possible that if more dynamic and immersive games were played that the differences may have been more pronounced. Third and most importantly, we have inferred a causal relationship between playing digital games and the observed differences using a cross-sectional research design. It is possible that these differences are not a result of playing digital games but represent preexisting differences which lead to the adoption or avoidance of playing digital games. In this way, differences between gamers and Non-gamers may not be an outcome but a contributing factor to the initiation and continued playing of digital games. However, given that the early findings of mean differences in cognition between gamers and Non-gamers was followed up with experimental evidence of gains in cognition due to gaming, it is very likely that future intervention research will also find experimental gains in non-cognitive domains.

4.3. Conclusions

Regardless of the directionality of the relationship, the current study represents one of the first attempts to examine differences among older adults based on their participation in digital games. The results highlight that, contrary to perhaps popular belief, older adults play digital games. Furthermore, older adults who do play digital games, even only occasionally, perform better than non-gaming adults on a number of variables reflecting successful aging. These findings also suggest that the therapeutic effects of digital gaming may not be limited to improvements in cognitive functioning. Therefore, as previously mentioned future intervention research should establish the casual role digital games might play in improving socio-emotional outcomes. As the proportion of older adults begins to swell over the next five years with the aging baby boomers, digital games may represent a viable activity associated with not only maintenance of cognitive functioning but also well-being and happiness.

Acknowledgement

This research was supported by Grant #0905127 from the National Science Foundation.

References


