



# Smartphone and video game use and perceived effects in a community mental health service

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## Abstract

**Background** Gaming is a growing area and there are conflicting reports on its harms and benefits. There is also increasing interest in the use of gaming clinically.

**Aims** This research aims to enhance our understanding of video and smartphone game use, and perceptions, among outpatients attending an Irish general adult mental health service.

**Methods** An anonymised, opportunistic survey of outpatients attending an Irish general adult mental health service was completed. Respondents were self-selecting and self-administering of the survey.

**Results** The response rate was 13% ( $n = 93$ ). Younger patients were significantly more likely to own a smartphone ( $p = 0.00$ ). Those who played videogames were significantly younger than those who did not ( $p = 0.00$ ). Younger age groups were significantly more likely to have heard of ( $p = 0.00$ ), and used ( $p = 0.01$ ), Pokémon GO. Over 19% ( $n = 18$ ) of respondents played video games. Nearly 24% ( $n = 16$ ) of those with a smartphone played games on it daily. No respondents reported specifically using games for health reasons. The two individuals who found Pokémon GO usage increased their exercise levels, also reported mental health benefits from it. Individuals' gaming use and age did not significantly impact on whether they were positive or negative in their opinions towards video and smartphone games.

**Conclusions** There is an opportunity to deliver interventions to Irish mental health service outpatients through smartphone and video games. Our small study suggests this to be underutilised currently. As more frequent users, perhaps younger individuals would most benefit from gamification of interventions and the use of existing games that have possible physical and mental health benefits. This requires further research.

**Keywords** Mental health · Outpatient · Pokémon GO · Psychiatry · Smartphone · Video game

## Introduction

Gaming is a broad term. Depending on the game and the platform, it can be a solitary experience or involve interaction with friends or people from across the world. It can involve different mediums such as simple phone-based games, handheld consoles or sophisticated consoles employed through large screen TVs. Gaming is a rapidly growing area and

interest in its use clinically is increasing [1]. Serious video games for health are designed to entertain while attempting to change areas of health behaviour [2]. They can have therapeutic uses and can assist in medical training [3, 4]. In University College Dublin, the Pesky gNATs computer game was developed to deliver cognitive based therapy (CBT) to children and adolescents with anxiety or depression [5]. There are CBT-based mobile apps available also [6–8], many of which use gamification techniques. Mental health and healthy eating apps account for over 30% of health apps on the Apple App Store [9].

One recent game which garnered a lot of attention is Pokémon GO. In its first week, it became the most downloaded app in history [10]. The concept is that players use their mobile phones to walk around their real environment, which is represented as a map on their device, in search of various Pokémon. Adverse effects reported from its use

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include higher injury rates, kidnappings, trespassing, aggression, and financial problems [11, 12]. However, benefits are also reported. There are suggestions of increased exercise in those playing this game both anecdotally [13, 14] and in research completed [15]. However, one study found that exercise gains reduced back to baseline levels 6 weeks after initial game installation [16]. There have been anecdotal reports that Pokémon GO can have beneficial effects in treating anxiety and depressive symptoms [17]. A Japanese study showed significantly reduced psychological distress among Pokémon GO players when compared with non-players [18]. Increased exercise, combined with the incentive provided to leave the house [19], may be among the reasons for the benefits noted.

To date, there has been little formal research on gaming use in those attending Irish mental health services and, to our knowledge, there has been no research carried out on the use of Pokémon GO in an Irish community mental health service population. This study aims to investigate awareness of, usage of, and perceived effects of smartphone and video games in an Irish community mental health service population.

## Methods

The study involved an opportunistic, anonymised, cross-sectional survey of outpatients attending an Irish general adult mental health service over a 4-week period. Respondents were self-selecting and self-administering of the questionnaires, which were advertised and available in the waiting room of the outpatient department. Data collected included demographic information (gender, age, relationship, and employment status), smartphone ownership, games played on smartphones, and those played using other platforms. Respondents were asked whether they had heard of Pokémon GO. If they had played it, they were asked to quantify daily time spent playing, whether it had impacted on exercise and mental health or had any negative repercussions. Respondents' opinions on gaming were explored by requesting them to rank their responses to five statements on a Likert-type scale. Games named were divided into genre categories, and multiplayer availability was noted based on product information available online. Data were analysed using SPSS version 24 (IBM Corp., 2016). Approval for the study was granted by the local ethics committee.

## Results

Ninety-three patients responded. This was a response rate of 12.9% from all of the patients that attended outpatients during the study period. The mean age was 40.04 years (min. 19;

max. 71; SD 14.4.). Please see Table 1 for further demographic information.

Sixty-eight (73.1%) respondents had a smartphone. There was a significant difference in the age profile of those who owned a smartphone (mean 37.39; SD = 14.54) compared with those who did not (mean 47.16; SD = 11.65);  $t(90) = 3.01$ ,  $p = 0.00$ . There was no significant difference between these groups as regards employment, gender, or relationship status.

Seventy-six percent of individuals ( $n = 52$ ) who owned a smartphone never played games on it. There was no significant difference regarding gender and smartphone game play,  $\chi(1) = 2.48$ ,  $p = 0.12$ . Neither was there a significant difference in age between those who played smartphone games ( $M = 31.9$ ,  $SD = 11.2$ ) compared with those who owned a smartphone but did not play ( $M = 39.1$ ,  $SD = 15.1$ );  $t(65) = 1.7$ ,  $p = 0.86$ . Sixty-three percent ( $n = 10$ ) of those who played did so for up to an hour daily. The rest ( $n = 6$ ) spent over an hour in play on a daily basis (mean 0.35 h; SD 0.91). Of games named, puzzle games were the most common genre ( $n = 4$ ) and the majority were single player only.

Seventy-five individuals had heard of Pokémon GO (80.6%) and, of these, 12% ( $n = 9$ ) had played it. There was a significant difference in age between those who had heard of Pokémon GO (mean 37.37; SD 12.167) and those who had not (mean 51.82; SD 12.167);  $t(90) = 4.028$ ,  $p = 0.00$ . There was a significant difference in the age of those who had heard of Pokémon GO and played it (mean 26.33; SD 8.109) compared with those who had heard of it but did not play (mean 38.88; SD 13.539);  $t(73) = 2.7$ ,  $p = 0.01$ . Of the nine individuals who had played Pokémon GO, one did not play daily, five played for an hour, or less, daily, and three played for over an hour daily (mean 1.2 h; SD 1.27). Two individuals reported that play had increased the amount of exercise they obtained. They reported play of 30 min and 2 h daily respectively and were the only participants to note a beneficial impact on their

**Table 1** Respondent demographics

Demographic	Response % [n]
Gender	Male 52.7 [49]
	Female 45.1 [42]
	Did not indicate 2.2 [2]
Employment status	Students 20.4 [19]
	Unemployed 28 [26]
	Homemaker 7.5 [7]
	Part-time employed 15.1 [14]
	Fulltime employed 17.2 [16]
Relationship status	Retired 11.8 [11]
	In a relationship 57 [53]
	Not in a relationship 36.6 [34]
	Did not indicate 6.5 [6]

mental health from their play. None of those who played Pokémon GO reported any negative repercussions on their mental wellbeing from play.

Ninety-two participants responded regarding video game use with nearly 20 % ( $n = 18$ ) using these. The mediums used to play on included personal computer ( $n = 5$ ), PlayStation ( $n = 6$ ), and Xbox ( $n = 6$ ). Most games named had multiplayer options ( $n = 20$ ) and first-person shooter was the most common genre of game ( $n = 7$ ). Other genres included: role play ( $n = 6$ ), action/adventure ( $n = 4$ ), simulation ( $n = 4$ ), and card games ( $n = 1$ ). Over 83 % ( $n = 15$ ) of those who played video games did so for an hour, or more, daily (mean 1.75 h; SD 1.406). Those who played video games (mean 29.44; SD 9.463) were significantly younger than those who did not play (mean 42.5; SD 14.365);  $t(89) = 3.7, p = 0.00$ . There were no significant differences between these two groups as regards gender, employment, or relationship status.

Ninety individuals responded to five Likert scale-type statements. Most respondents (63.3%) to our survey agreed that playing video or smartphone games was a waste of time. Forty-four percent were neutral regarding whether gaming could help players feel better in themselves, though 31 % agreed with this statement. Nearly 39% of respondents felt that gaming could help players develop skills that could be used in other areas of their life. However, nearly a quarter of respondents disagreed with this statement. Thirty-nine percent of those surveyed agreed or strongly agreed that gaming can make individuals more frustrated. Fifty-two percent felt that those who play games get less exercise. See Table 2 for more details on these responses. When the statements were analysed based on their being positive, negative, or neutral with regard to gaming, there was no significant difference in response attitudes between those who played video games or smartphone games and those who did not. There was also no significant difference regarding age between these groups.

## Discussion

In this study, of the 93 participants over 19% played video games and over 17% played smartphone games daily. This is less than in the 2015 Pew Research Center Study [20] which found that in the general American population 49% of individuals played video games, with similar figures for males (50%) and females (49%).

Video game use was more frequent in younger individuals in our survey. The Pew Research Center Study [20] found that 67% of young American adults (aged 18–29 years) play video games. Younger age groups were more likely to have heard of, and used, Pokémon GO in our survey. This fits with the results of a Japanese study where players of Pokémon GO were younger than non-players [18].

Gaming can take up a lot of time, evidenced by the results from our study with nearly 9% of those who used smartphone games and over 83% of those who used video games spending an hour, or more, playing daily. Granic et al. noted that 97% of children in the USA spend at least an hour playing computer games daily [21]. The National Longitudinal Study of Children in Ireland found that 74% of boys and 54% of girls spent some time each day playing video games [22].

Negative effects of gaming have been reported [23–26]. Benefits have also been noted [21, 27] including in the treatment of, among other conditions, schizophrenia [28, 29], depression [30], impulse-control disorders [31], anxiety disorders [32], and negative psychological symptoms [33]. One study that reviewed the use of electronic games in therapy, found them to be equivalent in efficacy to traditional treatments for a broad range of medical and mental health difficulties [34]. A Cochrane Review noted that internet-based CBT for anxiety was more effective than wait-listing and not different from face-to-face treatment in reducing anxiety symptoms [35]. In our study, the two individuals who used Pokémon GO, who found that it increased their exercise levels, also reported mental health benefits.

**Table 2** Respondents’ opinions on gaming

Statement no.	Statement	Strongly agree % (n)	Agree % (n)	Neutral % (n)	Disagree % (n)	Strongly Disagree % (n)
1	Playing video or smart phone games can help individuals to feel better in themselves.	1.1 (1)	30.0 (27)	44.0 (40)	15.6 (14)	8.9 (8)
2	Playing video or smartphone games can make individuals feel more frustrated in themselves.	6.7 (6)	32.2 (29)	37.8 (34)	17.8 (16)	5.6 (5)
3	Playing video or smart phone games are a waste of time.	21.1 (19)	42.2 (38)	27.8 (25)	5.6 (5)	3.3 (3)
4	By playing video or smartphone games, individuals develop skills that can help in other areas of life.	3.3 (3)	35.6 (32)	35.6 (32)	17.8 (16)	7.8 (7)
5	Individuals who play video or smartphone games get less exercise than those who do not play them.	17.8 (16)	34.4 (31)	34.4 (31)	11.1 (10)	2.2 (2)

Most respondents (63.3%) to our survey strongly agreed or agreed that playing video or smartphone games was a waste of time. This contrasts with the Pew Research Center Survey which found that while 26% of respondents felt that most video games were a waste of time, 24% of respondents disagreed with this [20]. 38.9% of respondents to our survey felt that gaming could help players develop skills that could be used in other areas of their life. Nearly 25% disagreed with this statement. The Pew Research Center Study found that 17% of the general adult population in the USA felt most video games promote problem solving and strategic thinking skills, but a roughly equal proportion, 16%, felt this was not true [20]. In our study, we found that participation in gaming, gender, and age was unrelated to whether positive or negative opinions were held about gaming. This contrasts with the Pew Research Center Study which found that those who played video games were more likely to respond to the positive aspects of their pastime and disagree with negative portrayals [20]. They also found that certain groups—namely, men and young adults—had particularly affirming beliefs about gaming [20]. The opinions gleaned from our study are important as, although small numbers of participants are involved, they may give a guide to viewpoints which could impact on the success, or failure, of promoting use of serious games in mental health within an Irish population.

There are limitations to this study. It involved only a small number of respondents. Also, the information collected was limited. Details including educational level and psychiatric diagnosis may have contributed further to the analysis. Individuals' opinions were gathered through a series of Likert-type questions. Likert scales are subject to distortion from several biases. That the survey was anonymised reduces some of these biases.

Gaming can have positive impacts on health [36, 37]. It can be an acceptable intervention to some patients [38]. Further development of empirically supported game-based mental health assessments and interventions is likely to help promote mental health research and practice in the ever-expanding digital world. Perhaps young people, who in this study as in other research, as well as those reluctant to access mental health supports, would most benefit through gamification of interventions and the use of existing games that have possible physical and mental health benefits. Our study involved small numbers; however, it was interesting that no participant reported use of any serious games. Perhaps this suggests that we also need to improve our signposting of currently available gaming interventions.

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## Compliance with ethical standards

**Conflict of interest** The authors declare that there no conflicts of interest.

**Ethical standards** The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008. The authors assert that ethical approval for publication of this research has been provided by their local Ethics Committee.

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