

Perceptions of people with schizophrenia regarding digital interactive games

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Abstract:

The purpose of this study was to investigate the perceptions of people with schizophrenia regarding digital interactive games (DIG). The sample of the study was 8 adults with schizophrenia, aged 35 to 63 years old. During the exercise sessions, the DIG that operates in Nintendo Wii device was used. The involvement with the DIG was 3 times per week and the participants played for 45 minutes during each session. A private structured interview was carried out by a psychiatrist for the evaluation of mood and emotional state of the participants from their involvement with the DIG. The main conclusion of the study was that people with schizophrenia had positive perceptions and attitudes regarding the DIG. Overall, the participants displayed enthusiasm with the game and stated that they intended to continue to exercise with DIG, in the future.

Key Words: perceptions, schizophrenia, digital interactive games.

Introduction

Schizophrenia is a chronic, severe mental disease from which suffers the 0.5 to 1% of the population worldwide (Nemade & Dombeck, 2009). Schizophrenia usually affects younger people, fragmenting the most productive and creative years of their life (Christodoulou & Rabavilas, 2006). The consequences, if not addressed, are devastating for both the patients and their families. Individuals with schizophrenia face several challenges and difficulties in maintaining their health and quality of life. The risk from diseases related to obesity is 2.8 to 3.5 times higher than the general population, diabetes 2 to 3 times higher and respiratory, cardiovascular diseases 2 to 3.6 times higher, respectively (Leucht, Burkard, Henderson, Maj & Sartorius, 2007). Finally, hypertension appears to more than 62% of the patients (Osborn, Nazareth & King, 2007).

Schizophrenia is a psychotic disorder and displays a premorbid, a prodromal and a phase of psychosis without treatment. There are periods of disease exacerbation alternating with a residual phase (McGlashan & Johannessen, 1996). The cognitive decline of the individual and reduced social activity is usually displayed from the onset of the disease. In schizophrenia, many of the basic mental and cognitive functions of individuals are dramatically distorted, such as perception, cognition, reality testing and emotions. Symptoms usually first appear in young adulthood. These include disorganized and irrational thinking and speech, hallucinations and delusions. Often, social withdrawal, apathy and lack of will are present. Particular attention has been given in the recent years for the cognitive deficits and affective flattening (expressionless face-mask, reduction of spontaneous movements, lack of expression) that patients with schizophrenia are showing, which result in a significant decline of their functioning (Panagis, 2008).

According to Logde (2006), the participation of people with schizophrenia in exercise programs effects in the reduction of cardiovascular problems, diabetes and obesity and they increase muscle strength, flexibility and energy levels. There is a positive effect on mental health, with mood improvement, an increase of self-confidence and social skills and reduced stress and negative symptoms of the disease.

Digital games are the new innovative technologies, providing an interactive environment that requires the user to perform movements of arms and legs in order to achieve simulation of the game screen (Vernadakis, Gioftsidou, Antoniou, Ioannidis & Giannousi, 2012). Digital games available on the market are different from the older ones where physical motion was absent, because they require from the user to be active during the game (Russell & Newton, 2008).

In the new generation of video game consoles, the innovative component is the physical activity, compared to the older generation video games that lacked activity in the game environment (Trout & Christie, 2007). Based on research findings, their impact in maintaining fitness and improving the health of individuals is proven positive (Sinclair, Hingston & Masek, 2007). Because of their attractiveness, they offer the user an alternative way to increase their levels of physical activity, thereby helping to maintain and improve their overall state of health (Hamilton, Healy, Dunstan, Zveric & Owen, 2008; Lam, Sit & McManus, 2011). They are a

popular leisure activity for all people, as the use of the game digital environment provides the opportunity to participate in games on equal terms, regardless of their academic performance and the type of disability some individuals may suffer (Russell & Newton, 2008).

One of the most modern and popular digital interactive game console is the Wii Sports Game (WiiSG), which incorporates motion sensors through a wireless controller and it converts the actual users' movements to movements of the characters in the game (Fatsea & Antoniou, 2010). The Nintendo Wii is already being used in exercise programs for people with disabilities. The Wii is a console for DIG that allows players to guide their Mii (game characters), performing basic movements. The Wii-habilitation (Wii-hab) is being used as a rehabilitation tool for disabled people of all ages. Hospitals use the game as a rehabilitation therapy for people who have suffered a stroke, fractures or surgery (Gately, 2009).

Thus, the purpose of the present study was to investigate the perceptions of people with schizophrenia from their involvement with the DIG Nintendo Wii.

Method

Participants

The sample of the study was 8 people with schizophrenia aged from 35 to 63 years old, who lived semi-independently, in a community psychiatric hostel.

Procedure-Intervention

The participants were involved only with the DIG and had no other physical activity. The duration of the study was 18 weeks. Each participant played with the DIG 3 times/ week for 45 minutes.

Measurement

A psychiatric interview was carried out at the end of the study by the psychiatrist who treated the participants. The participants were asked to answer specific questions, which were selected by the psychiatrist and the researcher. The interview included 9 questions:

1. How is your mood and your feelings from your involvement with the DIG? (Mood and Emotion)
The involvement with the DIG
2. Made you feel tired? (Fatigue)
3. Caused you feelings of anxiety? (Stress)
4. Helped you quit smoking? (Smoking)
5. Helped you to watch out your eating habits? (Diet)
6. Helped you to improve your social relations with the other people in the psychiatric hostel? (Social relationships)
7. Did you preferred to exercise with the DIG or with an exercise program? (DIG or exercise program)
8. Will you continue to play with DIG after the end of the study? (Involvement with the DIG)
9. Would you like to exercise with sports in real environment? (Exercise in real environment)

The DIG Nintendo Wii Sports and Nintendo Wii Sports Resort was used. Each participant had his own Mii character (virtual self), according to their characteristics. However, some participants (mainly women), created the Mii character of the game according to the appearance they would like to have. Participants played tennis, boxing, table tennis, fencing, cycling, bowling, archery and canoeing. For the study the most intensive games were selected, such as tennis, boxing, cycling and fencing. Participants played for 45 minutes and specifically: 15 minutes of tennis, 10 minutes boxing, 10 minutes table tennis and 10 minutes a game of their choice.

Statistical analysis

For the data analysis of the psychiatric interview, a qualitative analysis was carried out by the psychiatrist of the psychiatric hostel. The psychiatrist created nine questions for the interview with the help of the researcher. The psychiatrist carried out the interview with each participant separately after the end of the study and only for one session. The nine questions of the interview regarded: a) the mood state and the emotions of the participants from the involvement with the DIG, b) fatigue, c) stress, d) smoking, e) diet, f) social relationships, g) the preference to exercise with DIG or with the exercise program of the psychiatric hostel, h) the intention to continue to play DIG after the end of the study and i) the intention to exercise with sports in real environment. Participants answers were recorded and analyzed. The experience and ability of the psychiatrist was an important factor for the interpretation and understanding of their responses.

Results

Participants answers in question number 1:

Table 1: Mood and emotion

Participants	Answers
No 1	Very good mood and pleasant emotions
No 2	Very nice, it makes me feel good to play with the game
No 3	My mood is very good, generally I like it

No 4	Pretty good, I love the game
No 5	My mood is fine, the involvement with the game makes me feel good
No 6	Pretty good
No 7	Very nice
No 8	Pretty good

All the participants had a very good mood, positive responses, pleasant feelings and most of the times they maintained a positive attitude regarding the DIG.

Participants answers in question number 2:

Table 2: Fatigue

Participants	Answers
No 1	No (positive attitude regarding the DIG)
No 2	A little (The 2 nd participant were consistent and maintained positive attitude)
No 3	No (The 3 rd participant always smiled)
No 4	Not at all (The 4 th participant was always consistent and happy to play with the DIG)
No 5	A little (The 5 th participant always tried to improve his performance)
No 6	A little
No 7	Not at all
No 8	Not at all

Most of the participants answered negatively in the question. In general, they did not protest about their involvement with the DIG. They all were dedicated and focused in the DIG.

Participants answers in question number 3:

Table 3: Stress

Participants	Answers
No 1	A little (stress about the performance)
No 2	Not at all (positive attitude)
No 3	No (the 3 rd participant always smiled)
No 4	Not at all (Involvement with the game without stress)
No 5	A little (The 5 th participant tried a lot)
No 6	It depends from my performance. When it decreased yes, When it increased no
No 7	A little (Stress about the performance)
No 8	Not at all

Some of the participants answered that they experienced anxiety and others that did not. They reported stress only when their performance in the game reduced. It was important to win the games, because they felt joy. One participant blamed the virtual opponent for his defeat. He mentioned that he was a bad person and he was responsible for his defeat. The researcher explained that the opponent was a fantastic character and that it was a different character in each game. Someone else, when his performance decreased in the games, especially in tennis that was his favorite, he was grumbling and trying to increase his performance. He tried to set a day goal in order to increase his performance.

Participants answers in question number 4:

Table 4: Smoking

Participants	Answers
No 1	Yes
No 2	Yes
No 3	No
No 4	I reduced it by myself
No 5	Not so much
No 6	Yes very much
No 7	Yes
No 8	Moderate

Generally the participants did not interrupt their involvement with the DIG in order to smoke. Eventually smoking was prohibited in the psychiatric hostel.

Participants answers in question number 5:

Table 5: Diet

Participants	Answers
No 1	Yes, very much
No 2	No
No 3	A little
No 4	No
No 5	No
No 6	No
No 7	Yes, very much
No 8	No

Participants mentioned to the researcher that their goal was to lose weight. Although they were would like to, they did not follow a healthy diet. They were frequently consuming foods with high sugar levels. Every afternoon they had the opportunity to go for a walk in the neighborhood and one of their favorite habits were the consumption of pastry from the neighborhood patisserie.

Participants answers in question number 6:

Table 6: Social Relationships

Participants	Answers
No 1	Yes
No 2	Yes (Interested about others)
No 3	Yes
No 4	Yes
No 5	Not so much (Isolation)
No 6	Yes, very much (Interested about others)
No 7	Yes, very much (Interested about others)
No 8	Enough (Interested about others)

All the participants reported that the involvement with the DIG, improved the relationships among them. This also happened because the involvement with the DIG was the only activity of the day in the psychiatric hostel.

Participants answers in question number 7:

Table 7: DIG of Exercise program?

Participants	Answers
No 1	DIG (Positive attitude)
No 2	DIG (Positive attitude)
No 3	With both programs
No 4	Exercise program
No 5	DIG (Positive attitude)
No 6	DIG (Positive attitude)
No 7	With both programs
No 8	With both programs

Half of the participants indicated that they would prefer to exercise with the DIG and others with both exercise programs. They mentioned that it was more pleasant to play with the DIG. Compared with the exercise program of the psychiatric hostel, the involvement with the DIG was a more pleasant procedure.

Participants answers in question number 8:

Table 8: Involvement with the DIG

Participants	Answers
No 1	Yes
No 2	Yes
No 3	No
No 4	No
No 5	Yes (Positive attitude)
No 6	Yes, very much (Positive attitude)
No 7	No
No 8	Yes, very much

Based on participants' responses it was obvious that their involvement with the DIG was a pleasant procedure and a way of engaging with physical activity.

Participants answers in question number 9:

Table 9: Exercise in real environment

Participants	Answers
No 1	Yes with fencing
No 2	Yes with archery
No 3	Yes with fencing
No 4	Yes with table tennis
No 5	Yes with tennis
No 6	I don't know
No 7	No
No 8	Yes with table tennis

Some participants played with tennis, table tennis and fencing, with great enthusiasm. Another participant answered that table tennis was his favorite. Actually, in the psychiatric hostel, there was a table tennis equipment but the desire for involvement with this sport was created during this procedure. One participant that was pretty consistent, mentioned that he wished to be involved with tennis sport in a real environment.

Discussion

In the present study a psychiatric interview was conducted by the psychiatrist of the psychiatric hostel in order to investigate the feelings, the mood and the mental state of participants from their involvement with the DIG. The results from the interview showed that all participants had a very good mood, positive attitudes regarding the DIG, felt joyful and were satisfied from their involvement. Similarly, Russell and Newton (2008) in their survey, examined the effects of DIG in peoples mood and the conclusion was that people kept a positive attitude for 10 minutes after the completion of the exercise (Lieberman, 2006).

The involvement with the DIG did not cause fatigue, as participants played with great joy and tried to improve their performance in games. Moreover, it did not cause them feelings of anxiety due to the fact that they became familiar with it very quickly. The only stress factor was the decrease in performance. DIG can be used not only for recreational purposes, but also as a mean to increase the involvement of people in physical activities related to health, the prevention of asthma, changing eating habits and finally the prevention of smoking (Wiemeyer, 2010).

DIG that promote activity, such as Wii Sports, are attractive tools for the improvement of the levels of daily activity and fitness for people with chronic physical disabilities (Hurkmans, Emons & Stam, 2010). They are considered a popular involvement since the use of digital gaming environment allows them to participate in games on equal terms regardless of their academic performance and the type of disability from which they may suffer (Russell & Newton, 2008). Finally, an important characteristic is the entertainment factor that is likely to motivate some people to play DIG than to deal with sports or physical activities in real environment. Based on the results of the study, most of the participants reported that they would choose to work out with both modes of exercise, while fewer only with the DIG. Participants stated that they would continue to play with the DIG and after the completion of the study. Moreover they would choose to work out with sports in a real environment. Engaging with table tennis urged them to play in real dimension as the psychiatric hostel had the equipment. The involvement of people with DIG can positively contribute to increased motivation for engaging in physical activities in natural environments (Staiano & Calvert, 2011). In another study, the researchers concluded that DIG are the ideal solution for systematic involvement with physical activities for people who did not exercised with traditional exercise (Chin, Paw, Jacob, Vaessen, Titze & Van Mechelen, 2008).

Conclusions

The main conclusion drawn from this present study was that the participants had positive perceptions and attitudes regarding the DIG. All of them answered that they experienced pleasant emotions and played with joy and usually had great mood. Three participants reported that sometimes they felt tired from the involvement with the DIG while five answered that they haven't felt tired at all. Generally, the failure in games made them have negative feelings. Moreover, three participants felt stressed and five did not feel stressed at all. The stress feelings were usually associated with the decrease of their performance in the games. When the participants won in the games, they felt quite joyfully. When they were losing, they mentioned that they felt sorrow and disappointment. In addition, the involvement with the DIG made them reduce the number of cigarettes they smoked. Four participants answered that the involvement with the DIG helped them to reduce smoking, three that it did not help them and one reported that he reduced it by himself. Nevertheless, we didn't count the number of cigarettes they smoked. It was noticed by the researcher, that in the first month of the study, participants smoked regularly during their involvement with the DIG. After a month, participants were dedicated in their task and didn't want to smoke. However, the involvement with the DIG did not help them to watch out their eating habits. Five participants answered that the involvement with the DIG did not helped them to watch out their diet and three participants mentioned that they were motivated to watch out their eating habits.

Seven participants answered that their social relationships improved and they also motivated each other to play with the DIG, while one participant answered that his social relationships did not improve from the involvement with the DIG. Four of them mentioned that they would prefer to deal with the DIG, two of them with both exercise programs and one of them with the exercise program of the psychiatric hostel. Moreover five of them answered that they would continue to play with the DIG and after the completion of the study and three of them that they would not. Finally, six of them answered that they would choose to exercise with a sport in a real environment, one of them weren't sure and another one answered negatively. Due to the involvement with the DIG, they wanted to exercise with new sports. The main conclusion of the study was that people with schizophrenia had positive perceptions regarding their involvement with DIG.

References

- Chin, M., Paw, A., Jacobs, W., Vaessen, E., Titze, S. & Van Mechelen, W. (2008). The motivation of children to play an active video game. *Journal of Science and Medicine in Sports Medicine Australia*, 11(2), 163–166.
- Christodoulou, G. & Rabavilas, A. (2006). Psychiatry: 1st volume, Athens: VITA. (In Greek).
- Fatsea, A. & Antoniou, P. (2010). The recording of the effect of digital interactive games in users. *Proceedings of the 2nd Hellenic Educational Congress in Imathia with subject: Digital and Internet Applications in Education*. Veroia-Naousa, Ministry of Education, Lifelong learning and Religion. (In Greek).
- Gately, J. (2009). Video Gaming: Access for all. *Special Education Technology-Special Interest Group for Special Education Technology News*, 1(2), 2-5.
- Hamilton, M.T., Healy, G.N., Dunstan, D.W., Zveric, T.W. & Owen, N. (2008). Too little exercise and too much sitting: inactivity physiology and the need for new recommendations on sedentary behavior. *Current Cardiovascular Risk Reports*, 2, 292-298.
- Hurkmans, H.L., Emons, R.J. & Stam, H.J. (2010). Energy Expenditure in Adults With Cerebral Palsy Playing Wii Sports. *Archives of Physical Medicine and Rehabilitation*, 91, 1577-1581.
- Lam, J.W.K., Sit, C.H.P. & McManus, A.M. (2011). Play Pattern of Seated Video Game and Active “Exergame” Alternatives. *Journal of Exercise Science and Fitness*, 9(1), 24-30.
- Leucht, S., Burkard, T., Henderson, J., Maj, M. & Sartorius, N. (2007). Physical illness and schizophrenia: a review of the literature. *Acta Psychiatrica Scandinavica*, 116, 317–333.
- Lieberman, D.A. (2006). What can we learn from playing interactive games? In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 379-397). Mahwah, NJ: Erlbaum.
- Lodge, P. (2006). *Physical activity as a treatment strategy to alleviate negative symptoms in Schizophrenia and other psychotic disorders*. Unpublished Doctoral Dissertation, University of Seattle, Seattle, USA.
- McGlashan, T.H. & Jojannessen, J.O. (1996). Early detection and intervention with schizophrenia: rationale. *Schizophrenia Bulletin*, 22(2), 201-222.
- Nemade, R. & Dombeck, M. (2009). Schizophrenia Symptoms, Patterns and Statistics and Patterns. Retrieved at 01/02/2015 from: www.mentalhelp.net/poc/view_doc.php?type=doc&id=8805
- Osborn, D.P., Nazareth, I. & King, M.B. (2007). Physical activity, dietary habits and coronary heart disease risk factor knowledge amongst people with severe mental illness: A cross sectional comparative study in primary care. *Social Psychiatry and Psychiatric Epidemiology*, 42(10), 787-793.
- Panagis, G. (2008). Schizophrenia: A disorder with biological base that can be treated. *I hear VOICES*, (1), 12-13. (In Greek).
- Russell, W.D. & Newton, M. (2008). Short-term psychological effects of interactive video game technology exercise on mood and attention. *Educational Technology & Society*, 11, 294–308.
- Sinclair, J., Hingston, P. & Masek, M. (2007). Considerations for the design of exergames. *Proceedings of the 5th international conference on Computer graphics and interactive techniques*, Australia and South East Asia. New York, USA, ACM.
- Staiano, A.E. & Calvert, S.L. (2011). Exergames for physical education courses: physical social, and cognitive benefits. *Child Development Perspectives Journal*, 5(2), 93-98.
- Trout, J. & Christie, B. (2007). Interactive video games in physical education. *The Journal of Physical Education, Recreation & Dance*, 78(5), 29-45.
- Vernadakis, N., Gioftsidou, A., Antoniou, P., Ioannidis, D. & Giannousi, M. (2012). The impact of Nintendo Wii to physical education students' balance compared to the traditional approaches. *Computer & Education*, 59, 196-205.
- Wiemeyer, J. (2010). Serious Games—The Challenges for Computer Science in Sport. *International Journal of Computer Science in Sport*, 9(2), 67.