

Serious Games in Mental Health Treatment: Review of Literature

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ABSTRACT

Serious games are considered as powerful tools in learning and instructional purposes. Besides, serious games also have gained their own popularity among children and adolescents. In these recent years, psychotherapists have realized the advantages of using games as the assistive tool in psychotherapy, so called therapeutic games. The use of serious games is already being applied in various types of mental illnesses, such as anxiety, depression, phobia, panic disorder, and eating disorder. This position paper describes the effectiveness of serious games in treating various mental illnesses among young patients. A systematic review points out the development and research in the circle of serious games for mental illnesses focusing on young patients. In this paper, the literature review consists of relevant serious games for therapeutic development since the year 2005.

Keywords: Serious games, therapeutic, mental illnesses.

I INTRODUCTION

In these recent years, mental health professionals have started seeking new alternatives based on technologies to improve the quality of mental illnesses treatment. Serious games are one of the special forms of the new technologies that can benefit the psychiatrists and psychotherapists (Fernández-Aranda et al., 2012). Serious games can be defined as a specific type of game, whereby the primary purpose is beyond pure entertainment by teaching knowledge or training skills (Fuchslocher, Niesenhaus, & Krämer, 2011).

Initially, games were developed only for entertainment purpose, but nowadays, serious games serve as valuable adjuncts in various areas, such as education (Cheng & Su, 2012), advertising (Grammenos, Margetis, Koutlemanis, & Zabolis, 2012), and simulation training (Douma, van Hillegersberg, & Schuur, 2012). Various benefits could be gained through the use of these games. They can offer an entertaining and interactive learning experience for children and adolescents. Using games

as the medium tool of communication among young people has been recognized for its effectiveness. The ability of games to capture their attention and enhance the communication process between adult and young people are some of the strengths in using games.

Serious games are also known as persuasive games that are purposely designed to deliver education to the players (Kalapanidas et al., 2008). This type of game is capable in engaging the players with the game content, hence can motivate the players towards positive attitude.

II TRADITIONAL PSYCHOTHERAPY

Common materials and techniques, such as paper, pencil, questionnaire, observation, and talk-based therapy are usually involved in traditional psychotherapy environment. However, using these methods is not very convenient to the young patients who often find it difficult to communicate their thoughts and feelings clearly due to their developmental constraints. They also have limitations to evaluate their behaviour as unhealthy or problematic (Bratton, Ray, Rhine, & Jones, 2005).

Furthermore, therapists also have found it difficult to obtain reliable data about their patients, especially when dealing with adolescents. Most of them fail to express themselves with words or verbal communication (Sá, Carriço, Faria, & Sá, 2010; Wilkinson, Ang, & Goh, 2008). In the traditional therapy, the therapist needs time to build trust and relationship among the young patients because they do not feel very comfortable talking with strangers about their problems (Matthews & Doherty, 2011; Sá et al., 2010).

Engaging the patients to the treatment sessions is the most challenging process to the therapists. Most of the time, the therapists also fail to meet the needs of the patients due to time and resource constraints (Coyle, Matthews, Doherty, & Sharry, 2010). This is proven with the high percentage of cases that have been dropped out of treatment (J. E. Wells et al., 2012). Apparently, the situation could contribute to the increment in the number of people affected by serious mental illnesses.

In addition, the implementation of traditional therapy is also time and cost consuming. Patients need to attend appointments at the therapy centre or hospital and it can take up to forty to fifty minutes for each session (Newman, Szkodny, Llera, &Przeworski, 2011). Traditional therapy is still being applied by most of the therapists worldwide. However, with the growing technology of serious games in these recent years has made the therapists to become aware that medication and psychotherapy consulting that rely on paper artefacts and questionnaires are not effective enough(Matthews & Doherty, 2011; Sá et al., 2010).

III SERIOUS GAMES AS THERAPEUTIC GAMES

Given the wide popularity and benefits that can be gained from serious games have increased the interest among researchers and health professionals to use serious games in treatments(Lavender &Gromala, 2012). To date, the use of serious games has already been utilized as an assistive tool in several mental illnesses, for instance during psycho-education in chronic disease management (Ceranoglu, 2010), physical therapy (Geurts et al., 2011), and also in mental health psychotherapy interventions (Stallard, Velleman, & Richardson, 2010). Previous studies also have proven the effectiveness of using games in therapy as an assistive tool in several mental illnesses(Fernández-Aranda et al., 2012). The use of serious games as an assistive tool in psychotherapyhas already been proven to promote recovery, especially for young patients (Connolly et al., 2012).

There are ranges of advantages in utilizing serious games as part of therapeutic procedures. The patients can feel more immersed and engaged into the treatment sessions that can facilitate the therapists. It will be much easier to the therapists to gather required data about the patients, especially among children and adolescents(Clough & Casey, 2011; Coyle & Doherty, 2009). Indirectly, it can increase the patients' cooperation during the therapy processes. Thus, it can contribute to the positive relationship between the therapists and the patients(Szczesna et al., 2011). In addition, a new style of communication between the therapists and their patients also can be designed, which can decrease face-to-face therapist contact (Clough & Casey, 2011). If not contested, implementing the technology of serious games can avoid time and cost consumption.

Intriguingly, by converting therapeutic homework into therapeutic game, young patients can be easily

fascinated, which then can make them practice what they have learnt during the therapy session(Brezinka, 2008).They can perform home-based psychotherapy at anywhere and anytime. Besides, it can bring more flexibility to the children because they can do the psychotherapy session at their own comfort zone, such as at their homes and need not feel uncomfortable in the presence of strangers or therapists(Matthews & Doherty, 2011).

Based on the discussion above, the effectiveness of therapeutic games can be summarized as follows:

- i. Therapeutic game may facilitate in building positive relations between therapist-young patients.
- ii. Therapist can also clarify existing problems easily during the treatment process
- iii. Contribute to flexibility, where activities and homework involved can be formed based on the game's concepts
- iv. Improved accessibility, greater convenience, increased privacy and reduced embarrassment from meeting a mental health specialist and at the same time maintaining the treatment's fidelity

IV FINDINGS

This section presents the findings from the literature analysis based on criteria decided by the author. The articles selected in this section are based on their relevance to this study. There are three criteria determined in this analysis, and they are technologies classification, issues-addressed, and the therapeutic approach. All the articles selected in this analysis are related to serious games purposely developed for young patients (children and adolescents) in mental health treatment. These articles range from the year 2005 to 2014, which are from the first development of therapeutic game until current.

A. Technologies Classification

The most current technologies used in the development of therapeutic game can be categorized into four groups, as described in Table 1.

Table 1. Therapeutic Game Technologies Classification

Technologies	Author (Year)
Computer	Coyle et al., (2005)
	Brezinka, (2008)
	Coyle, Doherty, & Sharry, (2010)
	Szczesna et al., (2011)
	Merry et al., (2012)
Video	Cagatay et al., (2012)
	Brezinka, (2013)
	Lavender &Gromala, (2012)
Mobile	Fernández-Aranda et al., (2012)
	Botella et al., (2011)

Interactive Tabletop	Pykhtina et al., (2012)
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The most popular technology for therapeutic game is the computer, also known as the personal computer. Most of them also are available online for easy access between the therapists and their patients. The first therapeutic game is the Personal Investigator created by Coyle et al., (2005). Since this auspicious start, many researchers and therapists have started working on serious games in mental health care and treatment.

Video games also play its role in the healthcare area; not only for psychotherapy, but also in physiotherapy, and occupational therapy. Video gaming hardware that permits input from physical gesture makes video games really suitable for physical therapy compared to psychotherapy (Annema et al., 2010). In mental health care, video games assist in psycho-education to enhance social skills among children. As for the youth psychotherapy, video games promote positive two-way relationship between the therapists and the young patients through the use of console and screen (Ceranoglu, 2010).

Given the extensive attractiveness of mobile devices in these recent years, researchers and therapists have gained interest to deliver therapeutic games using mobile devices (Klasnja & Pratt, 2012). Mobile technology has opened a wide range of opportunities that could benefit the mental health area, mainly psychotherapy. Many benefits could be gained from mobile devices as they could offer flexibility and mobility. With these features, they could support greater convenience and increased privacy. Furthermore, mobile devices are the most familiar devices among children and adolescents (Matthews, Doherty, Coyle, & Sharry, 2008). The advent of sophisticated features in the mobile devices, such as internet access, wireless connectivity, and touch screen could serve as an effective assistant to the psychotherapy area (Klasnja & Pratt, 2012).

The tabletop technology uses finger touch screen as the input. It could encourage a group of people to communicate and interact to each other around one interface. Moreover, this technology has multiple simultaneous inputs from multiple users and thus, could support interactive face-to-face communication (Piper, Brien, Morris, & Winograd, 2006).

B. Issues-addressed

Previous researches show that serious game based therapy has been developed for a range of mental illnesses, as portrayed in Table 2. Numerous games have been designed and developed to focus on specific mental illnesses and target users. Nevertheless, there also games that cover a range of

mental disorders and used by various target users. Based on the review, most of the therapeutic games have been developed for people with depression. This may be due to the increment in the number of people affected by depression worldwide (Rocha et al., 2012).

Table 2. Types of Mental Illnesses

Types of illnesses	Authors (Year)
Depression	Coyle et al., (2005)
	Rusch, (2012)
	Merry et al., (2012)
	Coyle et al., (2010)
Eating Disorder	Fernández-Aranda et al., (2012)
Phobia	Botella et al., (2011)
Obsessive-Compulsive Disorder	Brezinka, (2013)
Behavioural Disorder	Fernández-Aranda et al., (2012)
Fear	Szczesna et al., (2011)
Speech disorder	Cagatay et al., (2012)
	Lavender & Gromala, (2012)

C. Therapeutic Approach

There are various types of therapeutic approaches that are adopted by therapists, as listed in Table 3. Among of these approaches, the cognitive behaviour therapy is the most effective approach that is acknowledged by most therapists and researchers in this field.

Table 3. Types of Therapeutic Approaches

Therapeutic Approaches	Games (Source)
Cognitive Behaviour Therapy	Treasure Hunt (Brezinka, 2014)
	PlayMancer (Fernández-Aranda et al., 2012)
	SPARX (Merry et al., 2012)
	Mission – Master Your Fear (Szczena et al., 2011)
	gNats island (Coyle, McGlade, Doherty, & O'Reilly, 2011)
Solution Focused Therapy	Personal Investigator (Coyle et al., 2005)
Non-directive Play Therapy	Magic Land (Pykhtina et al., 2012)

Cognitive behavioural therapy (CBT) is action-oriented therapy that is widely utilized for major disorders (Principles & Advances, 2006). CBT is a therapeutic model that was originally developed by Dr. Aaron T. Beck to treat depression. This approach is a combination of the behavioural therapy and cognitive therapy (Beck, 2011; Blenkiron, 2010; Wells & Albano, 2005). CBT can be interpreted as a talking therapy or a structured psychotherapy that assists patients to develop skills to modify their

cognition and behaviours in order to solve problems (Wenzel, Brown, & Karlin, 2011). CBT is also capable in bringing positive results for many psychological problems, such as anxiety, eating disorders, and alcohol problems (Doherty, Coyle, & Sharry, 2012). Other therapeutic approach is solution focused therapy and non-directive play therapy.

V CONCLUSION AND FUTURE WORKS

The use of serious games in psychotherapy processes can promote fast recovery to the young patients by combining two methods; games and therapeutic approach. The level of engagement also can be enhanced compared to the traditional therapy without therapeutic games. Serious games provide a range of great advantages to be manipulated by the therapists to improve their services.

When involving children and adolescents in the psychotherapy processes, an interactive and entertaining method should be applied to ensure their participation throughout the process. Serious games can fulfil this requirement in psychotherapy. Moreover, using serious games as a therapeutic tool could enable therapists to structure the therapy sessions based on their patients' customization.

In this paper, a systematic review of serious games in mental health treatment is deliberated. In the literature analysis, studies have shown that a combination of serious games, technology of computer, and CBT has been among the most researched between 2005 until 2014. Most of the researches also have focused on the depression treatment involving children and adolescents. Future research is needed in this area in order to understand the desires and needs of young patients when involving serious games as therapeutic tools such as online system support. There is also a need to identify other available game technologies that could support the therapists during the psychotherapy session.

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