

Original Research

Acceptance of Serious Games in Psychotherapy: An Inquiry into the Stance of Therapists and Patients

Christiane Eichenberg, Prof. Dr.,¹ Gloria Grabmayer, BSc,¹
and Nikos Green, BSc, MSc, PhD²

¹Department of Psychology, Sigmund Freud University,
Vienna, Austria.

²Department of Education and Psychology, Freie Universität Berlin,
Berlin, Germany.

Abstract

Background: Serious games are computer or video games that contain elements that are specifically designed for the purpose of education or training. Serious games are increasingly being used within healthcare, but their introduction into and application in psychotherapeutic settings as an e-mental health treatment modality raises questions for both patients and therapists. Current research demonstrates the potential role and effectiveness of serious games within a psychotherapeutic context. However, a limited understanding of patients' and therapists' existing knowledge and experience of serious games, as well as of their readiness to utilize and apply them for the treatment of psychological conditions, requires further investigation. **Materials and Methods:** Acceptance, experience, and requirements for the utilization of serious games in therapeutic contexts were assessed through online surveys with German-speaking patients (n=260) and psychotherapists (n=234). Respondents' answers were analyzed by a combination of descriptive and inferential statistics by using SPSS. **Results:** Current knowledge regarding serious games was very limited, with only 10.4% of patients and 11.5% of therapists reporting existing knowledge. However, a general openness toward the concept was observed: 88% of patients and 90% of therapists could envisage a therapeutic use. Patients ($r_s = 0.169$, $p = 0.006$) who self-rated their level of computer and video game expertise as high were more likely to consider use within psychotherapy, compared with patients who self-rated their expertise as low. Therapists who currently play computer and video games perceive fewer disadvantages of serious game application in a psychotherapeutic context ($p = 0.097$). Consideration of serious game use was differentiated by the therapeutic approach ($p = 0.003$), specific mental disorders (highest rated relevant cases: anx-

ety disorders, affective disorders, disorders regarding impulse control, and adjustment disorders), and patient age (i.e., use with young adults was deemed the most appropriate by 91.8% of therapists). **Conclusion:** The application of serious games is conceivable for patients and therapists, especially as a complementary element to traditional face-to-face psychotherapy. Acceptance is strongly related to therapeutic context. Only a small number of therapists and patients agree on the possibility of using a serious game instead of face-to-face therapy.

Key words: serious games, psychotherapy, patients' and therapists' viewpoint, e-mental health

Introduction

Serious games are computer or video games with an educative component.^{1,2} These games are increasingly applied in various healthcare settings,² such as in the promotion of healthy lifestyles,³ rehabilitation,⁴ or patient education.^{2,5} Within such settings, serious games have a wide variety of functions, including cognitive training,⁶ disease awareness and prevention,⁷ impulse control and emotion regulation,⁸ promotion of pro-social behaviors,⁹ rehearsal of relaxation techniques through biofeedback,¹⁰ as well as physical therapy.¹¹

Game-based interventions have also been applied as specific treatment modalities for psychological disorders and represent just one of the growing number of e-mental health applications.¹² Serious games have, for example, been used in the treatment of phobias,^{2,10} depression^{13,14} as well as for the training of specific social abilities such as emotion recognition for autistic spectrum disorders.¹⁵

However, research concerning the relatively new application of serious games within a psychotherapeutic context is limited. Nonetheless, a number of reviews have sought to evaluate the effectiveness of serious games as an e-mental health intervention. A recent review by Eichenberg and Schott¹⁶ showed that serious games contain successful therapeutic components and appear to be a valid treatment modality. Specifically, the review examined 17 studies that implemented serious games that were effective in the treatment of conditions, including post-

traumatic stress disorder, anxiety disorders, depression, Asperger syndrome, attention deficit disorders, impulse disorder, and cancer rehabilitation, as well as the use of serious games for general psychotherapy. A further two reviews by Fleming et al.¹³ and Li et al.¹⁷ specifically focused on the validity of serious games as a treatment modality for depression. Fleming et al. demonstrated that serious game interventions are able to reduce depressive symptoms and reported patients' positive adherence.¹³ Similarly, the findings of a meta-analysis by Li et al.¹⁷ reported the effectiveness of serious games as comparable to other (non game based) computerized interventions. However, despite their effectiveness, essential components of psychotherapy such as the formation of interpersonal relationships are often not a part of serious game interventions, and therefore recommendations are made that they are used in conjunction with face-to-face psychotherapy.¹⁶

The general success of serious games can, in part, be attributed to their ability to increase motivation and engagement.¹⁸ Further mechanisms such as immediate positive and negative reinforcement, or the ability to monitor emotional reactions via biofeedback, appear to contribute to their effectiveness as a treatment modality.¹⁹ Individual psychological factors such as gaming mindsets,²⁰ or attitudes and expectations²¹ also contribute to intervention outcomes. Consequently, effective design for serious games has received considerable attention.²²

Despite the apparent benefits of Schott as a treatment modality²³, the acceptance and potential uptake of serious games among patients and therapists as a mental health intervention remains unclear.

One exploratory focus-group study that specifically examined the potential patient acceptance of the game-based therapy Smart, Positive, Active, Realistic, X-factor thoughts (SPARX) found general support for the intervention among children and adolescents.²⁴ In particular, respondents reported the benefits of increasing access to mental health services as well as the protection of identity afforded by computer-based therapy.²⁴ Moreover, a nationwide study demonstrated a general readiness for the application of e-mental health interventions among adults.⁶

Although the acceptance and potential uptake of serious games among therapists is unclear, concerns about other e-mental health applications such as virtual reality therapy, due to the potential cost and training implications, have been raised.²⁵ Further challenges, preventing the uptake of e-mental health interventions among therapists, may also lie with the many legal, ethical, and procedural considerations. Of particular significance is the current lack of specific practice guidelines, standards, and policies related to e- and m-health.²⁶

Current research is beginning to consider the application of serious games, investigate potential mechanisms, as well as evaluate their effectiveness within the context of e-mental health. However, many studies to date, particularly concerning effectiveness, have been conducted by the developers of the interventions and have solely focused on the use of serious games among child and adolescent populations.^{13,17} Moreover, there is currently a gap in research surrounding the acceptance and readiness of serious games as e-mental health applications. Identification of crucial opinions, preconditions, expectations, and general readiness of all stakeholders is essential for the successful development and implementation of serious games for therapeutic purposes. The aim of this study, therefore, was to gain an increased understanding about the acceptance of serious games as an e-mental health application in psychotherapy.

Materials and Methods

This study was authorized by the ethics commission of the Sigmund Freud University Vienna and was conducted through a newly developed online survey targeting two groups independently—German-speaking psychotherapists and patients with experience in psychotherapy. Therapists were contacted via various therapy associations and unions based in Austria, Germany, and Switzerland. Patients were recruited through German-speaking self-help forums for psychological disorders and difficulties. The survey was completed by a total of $n = 260$ patients and $n = 234$ psychotherapists over the course of 5 weeks in February 2015. The surveys consisted of seven sets of questions (see Supplementary Data; Supplementary Data are available online at www.liebertpub.com/tmj). Additionally, introductions to three serious games for therapeutic use were included: (1) SPARX: <https://research.sparx.org.nz>; (2) SCOTT-Social Cognition Training Tool: www.scott-training.de; and (3) Mobility Motivator: www.mobility-motivator.uvsq.fr. This provided participants with an insight into the functions and possibilities of serious games in healthcare settings. Participants were asked to include: (1) information about their general use of electronic devices and (2) their experience with playing computer and video games, followed by (3) an inquiry into whether they had prior experience of a similar game. The questions pertaining to serious games included a variety of parameters to ask participants in detail as to under what circumstances they could imagine utilizing such digital applications. For instance, participants were asked (1) for what psychological disorders they could envisage a use, (2) at which point in the treatment process serious games would be useful, or (3) for essential criteria of serious games for psychotherapy. Further questions addressed the desired access (e.g., online or

offline), who should have access to the game data, and how much time they would invest in playing on a weekly basis. Therapists were also asked about what disorders and which age group would be suitable for the use of serious games as an e-mental health treatment modality. Both groups' attitudes were compiled by using 16 statement items in which responders had to rate statements on a five-point scale. Analyses were performed by using IBM SPSS Statistics 19. Standard statistical correlations as well as group comparisons were computed by using parametric as well as nonparametric models. Open questions were analyzed by using frequency analysis.²⁷

SAMPLE

The patient sample. Two hundred sixty patients with experience in psychotherapy completed the survey. Three quarters (73.1%) of them were women with a mean age of 36 years ($SD = 13.18$), and 74.6% of the respondents had completed at least their A-levels or held a higher certificate of education, with 32.7% of them holding a university degree. Nearly two thirds (60.4%) had attended psychotherapy in the past, and 39.6% were currently in therapy. Most (81%) of the respondents stated that they used a smartphone on a daily basis, 50% stated using laptops, and 27% specified using desktop computers daily. Only 10% of the patients reported using game consoles on a regular basis (weekly or more frequently), whereas the majority (72%) reported that they never used game consoles.

The therapist sample. Two hundred thirty-four individual therapists completed the survey (71.4% of them were women), with a mean age of 44 years ($SD = 11.82$). Most (83.8%) of them had completed their psychotherapy training with the remaining participants in training and under supervision. One third (34.2%) of the respondents were psychoanalysts, 21.4% were humanistic-existentially trained therapists, 16.2% were systemic therapists, and 7.7% were trained in behavioral therapy. Among them, 15.5% were trained in multiple therapeutic methods. The average work experience was 17 years ($SD = 11$). Therapists showed comparable rates to patients with respect to utilization of electronic devices: 78% used smartphones on a daily basis, 56% used laptops, and a third of the therapists (30%) used a desktop computer on a daily basis. Only 3% used game consoles at least once a week, and the majority (89%) reported never using these devices.

Prior computer and video game experience. One third (37.3%) of the patients reported an advanced knowledge of computer and video games compared with only 22.2% of the therapists. The biggest group in both samples comprised participants who had

beginner-level experience of computer and video games (46.5% of patients and 59.4% of therapists). The next group comprised 41.5% of patients and 22.7% of therapists who reported that they currently play computer games.

Prior experience with serious games. Only 10.4% of patients had previously heard of serious games, and 5.8% had personal experience using them. One tenth (11.5%) of therapists confirmed to have heard of serious games. A small fraction (1.7%) reported the current use of serious games in therapy with patients.

Results

PRIMARY RESEARCH FINDINGS

In general, patients who self-rated their own level of expertise with computer and video games as high were more likely to consider using a serious game within psychotherapy, compared with patients who self-rated their expertise as low ($r_s = 0.169$, $p = 0.006$). This suggests that increased engagement and experience leads to more readiness to use serious games. The therapist sample did not reveal any correlation between experience levels of computer and video games and the likelihood to consider using serious games in psychotherapy ($r_s = 0.042$, $p = 0.520$). In comparison to patients who do not currently play computer or video games, patients who currently play (41.5%) perceive more benefits ($p = 0.004$, $U = 59,999.00$, $z = -2.881$; $MR_{\text{players}} = 141.76$, $MR_{\text{non-players}} = 115.03$) and less disadvantages ($p = 0.052$, $U = 6,536.00$, $z = -1.94$, $MR_{\text{players}} = 136.54$, $MR_{\text{non-player}} = 118.66$) of using serious games in a psychotherapeutic context. Therapists who currently play computer and video games perceive fewer disadvantages of using serious games in a psychotherapeutic context ($p = 0.097$, $U = 3,659.00$, $z = -1.661$, $MR_{\text{players}} = 125.32$, $MR_{\text{non-players}} = 108.15$). Thus, personal experience might also increase the willingness to use serious games.

Results showed a significant correlation between therapists' consideration of serious game use and the therapeutic approach [χ^2 ($df(3)$, $n = 186$) = 13.61; $p = 0.003$]. Psychodynamic therapists could envisage the use of serious games to a significantly lesser extent than therapists with a humanistic-existential orientation. The most notable support came from behavioral therapists who were unable to identify a situation within the psychotherapeutic context where serious games could not be applied.

Overall, patients and therapists did not differ in their consideration of serious game application within a psychotherapeutic context ($\Phi = 0.026$, $p = 0.557$).

THE PATIENTS' POINT OF VIEW

Easy accessibility was regarded as the most important criterion (91%) when considering essential characteristics for serious game

application. This was followed by the entertainment value of the game (85%) and the possibility of using such computer-based programs anonymously (74%). Evidence regarding the clinical success of a game was only considered important by 58% of patients. The average willingness to spend time playing a serious game was stated as “up to 3 h a week” by 43% of participants, and 20% would play a serious game up to 5 h a week. Almost two thirds of participating patients stated their willingness to play a serious game on a regular weekly basis (an essential aspect in the permanency of attained treatment effects). The majority of patients (61.9%) reported that they would be prepared to independently purchase and use a serious game outside of a therapeutic context.

THE THERAPISTS' POINT OF VIEW

Most (95%) therapists considered easy accessibility as essential for the successful application of serious games, followed by clinical evidence concerning their effectiveness, which was considered essential by 77% of therapists. Therapists perceived serious games as a suitable e-mental health application for one fifth of their patients ($M=20$, $SD=21.75$). Particular psychological disorders were selected as appropriate for serious game utilization: Anxiety disorders (73.9%), affective disorders (69.6%), disorders regarding impulse control (59.9%), and adjustment disorders (54.6%) were the highest rated relevant cases. Half of the therapists could imagine using a serious game as a supportive measure with somatic disorders, that is, as an adjunctive therapy to cancer

treatment, eating disorders, or obsessive-compulsive disorders. The application of serious games was perceived the least suitable for factitious disorders, schizophrenia, and dissociative disorders. A detailed list of application areas and the applicability of serious games from the therapists' stance can be found in *Table 1*.

Regarding the severity of a particular psychological disorder, most therapists could imagine using a serious game with a mild form of a disorder (89.2%), whereas only 19.9% of the therapists could envisage using a serious game for severe cases. Regarding the age group in which therapists would contemplate the use of serious games, young adults were rated as the most suitable by 91.8% of therapists, followed by adolescents (84.5%) and adults (76.7%). Note that more than half of the therapists could imagine the successful application of serious games with seniors (57.3%) and children (53.4%).

COMPARATIVE RESULTS OF PATIENTS AND THERAPISTS

Patients and therapists had a similar stance toward the application of serious games: 50% of both groups could conceive using a serious game as a preventive measure, and 43% could consider it a part of a consultation. The majority of the participants in both groups could imagine using a serious game as a complementary tool during psychotherapy. The biggest relative differences existed in the application of serious games before a consultation ($\Phi=-0.128$, $p=0.005$), as assistance after the completion of psychotherapy ($\Phi=-0.095$, $p=0.035$), and instead of psychotherapy: 10% of patients but only 2% of therapists could imagine using a serious game instead of psychotherapy ($\Phi=-0.167$, $p<0.001$). Overall, only a small number of participants could not imagine using a serious game at all within psychotherapy (see *Fig. 1* for details).

Reasons given by the patients as to why the application of serious games was not conceivable were as follows: discomfort with the thought of computers helping people with psychological difficulties (5.8%) and disbelief about a serious game being able to help them (5%). The incompatibility with their therapeutic approach (6.8%) and not having enough information about serious games (3.8%) were some reasons given by therapists that support the lack of consideration to utilize serious games as an e-mental health application. The argument used most commonly by patients—the disagreement of the idea that computers can help people with psychological difficulties—was selected by 3% of the therapists who could not imagine using a serious game at all.

Patients considered both online (67%) and offline access, for example, via an app (65%) as equally important, whereas therapists equally preferred online (56%) and offline (54%)

Table 1. Therapists' Estimation of Usability of Serious Games with Different Clinical Pictures ($n=207$)

TYPE OF DISORDER	PERCENTAGE	FREQUENCY (n)
Anxiety disorders	73.91	153
Affective disorders	69.57	144
Impulse control disorders	59.90	124
Adjustment disorders	54.59	113
Supportive treatment with somatic diseases	50.24	104
Eating disorders	50.24	104
Obsessive-compulsive disorders	49.28	102
Somatic disorders	42.51	88
Psychologic disorders due to a medical condition	40.58	84
Sleep disorders	39.13	81
Personality disorders	36.23	75

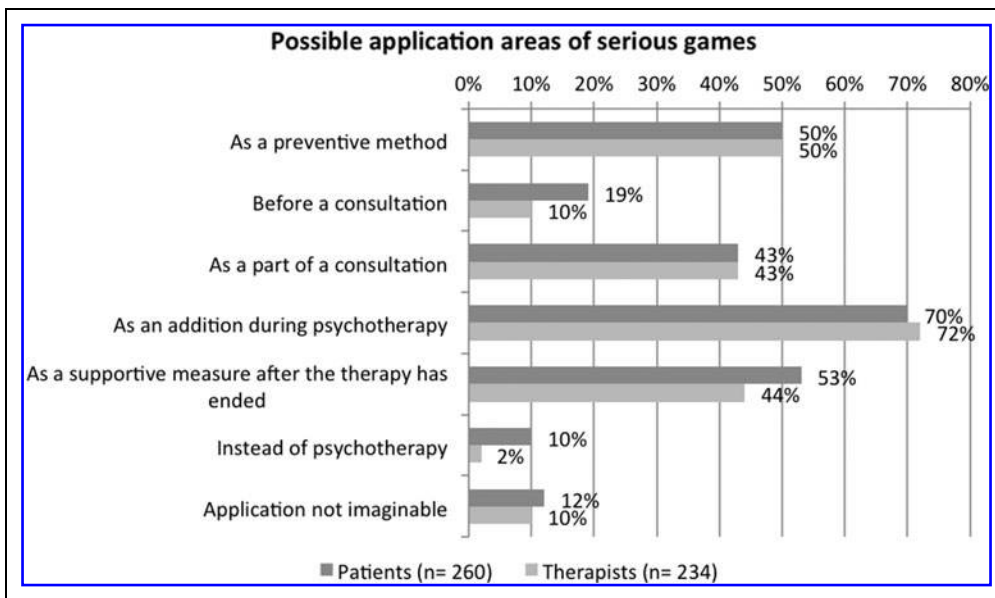


Fig. 1. Possible application areas of serious games from the patients' and therapists' perspective.

use. Regarding the accessibility to serious games, both therapists and patients prefer open accessibility (42% of patients and 36% of therapists). Preference clearly lies with open access in both groups. Only receiving limited access, that is, to a specific serious game via the therapist was selected by 32% of therapists but by only 18% of patients.

POSITIVE AND NEGATIVE ASPECTS OF SERIOUS GAMES IN PSYCHOTHERAPY

Positive aspects perceived by patients. Participants had the opportunity to report further benefits or negative effects concerning the use of serious games. The primary benefit stated by 27.8% of the 140 patients who responded to the open question was unrestricted availability and easier access of serious games compared to conventional face-to-face therapy. The additional use of serious games as an assistive element to psychotherapy was seen as beneficial by a quarter (24.3%) of the responding patients, specifically due to the additional training for certain exercises. The third most commonly stated positive aspect was the simplified opportunity to contemplate therapeutic content (22.1%). Both the options to complete exercises without time or therapeutic pressure and to be able to repeat specific exercises as often as desired were regarded as widely beneficial. Another important benefit, stated by 18.6% of the respondents, was the additional engagement with the therapeutic content outside of therapy. Further perceived benefits were the special suitability of serious games to simplify the access to therapy for specific groups such as children or adolescents (11.4%), the playful approach that can facilitate dealing with psychological diffi-

culties (10.7%), and improvement of the patients' independence and self-confidence (10.7%).

Positive aspects perceived from the therapists' point of view. One hundred seventeen therapists answered the open questions. The most commonly perceived benefits were additional exercise and training possibilities of therapeutic content through serious games (24.8%). Second, 23.1% named the increase in self-efficacy, self-responsibility, and independence of the patients as a primary benefit. The simplified access to therapy through serious games for specific patient and age groups was the third most commonly

stated benefit (18.8%), followed by the prospect that serious games could support therapy through more rapid therapeutic progress (17.9%), as well as the use of information gained from gameplay and results to reflect on the therapeutic process (16.2%). The playful approach and fun factor were also considered positive aspects for the use of serious games in psychotherapy (16.2%). Some therapists also valued a possible increase in patient motivation for therapy (15.4%), and 12.8% named the improvement of specific abilities such as social and emotional competences through the use of serious games as a possible benefit.

Negative aspects perceived by patients. Negative aspects were reported by 124 patients. The most important aspect was the possibility of being distracted from therapy (20.2%), and that some patients might try to substitute therapy entirely. Furthermore, a possible increase in social isolation (16.9%), the risk of addiction and dependency (13.7%), and a further increase of time spent with virtual media (11.3%) were reported. Other aspects that were addressed by the patients were the danger of losing touch with reality (11.3%), the disregard of the individuality of patients (10.5%), and the risk of using a serious game with an unsuitable age group or disorder (10.5%).

Negative aspects perceived by therapists. Perceived negative aspects were reported by 115 therapists. The primary aspect was the neglect of relationship and communication components within therapy (22.6%). Further negative aspects were an increase in the avoidance of personal interactions, isolation, and a possible flight from reality (20%) by patients using

serious games. Nearly one fifth (18.3%) of responding therapists named the promotion of gambling addictions and dependence as possible negative aspects. Overall, 9.5% stated their concern about the devaluation of therapy or the therapists' competence in general through the use of serious games, or the replacement of therapy through digital technology.

Discussion

This study set out to address the current lack of research surrounding patients' and therapists' existing knowledge and experience of serious games, as well as their readiness to utilize serious games as an e-mental health treatment modality. The present results demonstrate patients' and therapists' general openness toward the use of serious games in psychotherapeutic settings. This openness continues as long as the individual situation of the patient (e.g., severity of the disorder) is evaluated. However, a widespread application seems to contradict the individualistic character of psychotherapy, especially from the therapist's point of view. Previous research has shown that individual factors such as attitudes toward gaming ability can determine learning behavior achieved from serious games.²⁰ This study shows that individual factors such as personal experience of gaming can affect whether individuals would even contemplate the utilization of serious games within therapy. These findings can, therefore, be used to help identify suitable patient groups for serious games as a treatment modality.

Another factor that appears to affect the readiness and potential uptake of serious games is the therapeutic approach, with the most support from behavioral therapists. This echoes previous research findings, where psychodynamic therapists reported a more negative stance toward the use of electronic media.^{28,29} In contrast, therapists from cognitive models have been shown to demonstrate a more positive stance.³⁰ One explanation for this difference is that serious games tend to employ cognitive behavioral techniques.¹⁶

The current knowledge about the existence and application of serious games is still quite limited with only 10.4% of patients and 11.5% of therapists reporting knowledge of serious games. The current use is even more infrequent with only 1.7% of therapists presently using serious games as an intervention. However, the demand is apparent, especially with regard to the therapists' estimation that the use of serious games would be a suitable adjuvant treatment modality for 20% of their patients. These findings support previous research that has highlighted the disparity between a lack of knowledge surrounding e-mental health applications and a desire to see more widespread integration.⁶ One possible solution is the integration of e-mental health applications within

psychotherapy training as well as the provision of professional development opportunities for qualified clinicians.²⁶

Part of the desire to see more widespread integration of serious games may derive from the perceived benefits, notably the unrestricted availability and easier access to serious games. This, in turn, leads to the possibility of further advantages such as additional training opportunities outside of face-to-face therapy, therefore assisting the therapeutic process.

However, concerns surrounding the possible distraction from or substitution of therapy through serious games are apparent. According to participants, this could lead to a neglect of relationship and communication components of therapy. Relationship and communication components have, however, been successfully integrated into non game-based e-mental health treatment modalities.³¹ Therefore, these central concerns should be considered and addressed when evaluating and developing serious games for psychotherapy. More collaboration between games development and users could facilitate this process. In parallel, the evaluation of serious game use in therapeutic contexts—including evaluation of failed usage attempts³⁰—would contribute significantly to (1) the identification of relevant patient-treatment contexts and (2) the specific properties of serious games that make them effective in those situations.

Some limitations as well as opportunities for future research need to be considered. First, this study employed an online-survey methodology and, therefore, the results cannot be generalized to all populations due to known limitations (i.e., biased sample of media affine subjects). Moreover, further investigation is required to establish potential cultural differences in the readiness to utilize serious games within e-mental health. Finally, this study demonstrates that the therapeutic approach can influence therapists' readiness to utilize serious games. However, a clearer understanding of this influence requires further in-depth research focusing on the difference in opinion between therapeutic approaches.

Acknowledgment

The study was funded by the Cultural Department of Vienna (Promotion of Science and Research).

Disclosure Statement

No competing financial interests exist.

REFERENCES

1. Marsh T. Serious games continuum: Between games for purpose and experiential environments for purpose. *Entertain Comput* 2011;2:61–68.
2. Michael DR, Chen S. *Serious Games: Games that educate, train and inform*. Boston: Thomson Course Technology, 2006.

3. DeSmet A, Van Ryckeghem D, Compennolle S, Baranowski T, Thompson D, Crombez G, et al. A meta-analysis of serious digital games for healthy lifestyle promotion. *Prev Med* **2014**;69:95–107.
4. Rego P, Moreira PM, Reis LP. Serious games for rehabilitation: A survey and classification towards a taxonomy. *Information Systems and Technologies (CISTI), 2010 5th Iberian Conference*. New York: IEEE, **2010**:1–6.
5. Djaouti D, Alvarez J, Jessel J-P, Rampoux O. Origins of serious games. In: Ma M, Oikonomou A, Jain LC, eds. *Serious games and edutainment applications*. London: Springer, **2011**:25–43.
6. Eichenberg C, Wolters C, Brähler E. The Internet as a mental health advisor in Germany—Results of a national survey. *PLoS One* **2013**;8:e79206.
7. Aljafari A, Rice C, Gallagher J, Hosey M. An oral health education video game for high caries risk children: Study protocol for a randomized controlled trial. *Trials* **2015**;16:237.
8. Tárrega S, Castro-Carreras L, Fernández-Aranda F, Granero R, Giner-Bartolomé C, Aymami N, et al. A serious videogame as an additional therapy tool for training emotional regulation and impulsivity control in severe gambling disorder. *Front Psychol* **2015**;6:1721.
9. Bowen E, Walker K, Mawer M, Holdsworth E, Sorbring E, Helsing B, et al. "It's like you're actually playing as yourself": Development and preliminary evaluation of 'Green Acres High', a serious game-based primary intervention to combat adolescent dating violence. *Psychoso Interv* **2014**;23:43–55.
10. Khanna MS, Kendall PC. Computer-assisted cognitive behavioral therapy for child anxiety: Results of a randomized clinical trial. *J Consult Clin Psychol* **2010**;78:737–745.
11. Bower K, Louie J, Landesrocha Y, Seedy P, Gorelik A, Bernhardt J. Clinical feasibility of interactive motion-controlled games for stroke rehabilitation. *J Neuroeng Rehabil* **2015**;12:63.
12. Schmidt U, Wykes T. E-mental health—A land of unlimited possibilities. *J Mental Health* **2012**;21:327–331.
13. Fleming TM, Cheek C, Merry SN, Thabrew H, Bridgman H, Stasiak K, et al. Serious games for the treatment or prevention of depression: A systematic review. *Rev Psicopatol Psicol Clin* **2014**;19:227–242.
14. Merry SN, Stasiak K, Shepherd M, Frampton C, Fleming T, Lucassen MFG, et al. The effectiveness of SPARX, a computerized self help intervention for adolescents seeking help for depression: Randomized controlled non-inferiority trial. *BMJ* **2012**;344:e2598.
15. Kandalaf MR, Didehban N, Krawczyk DC, Allen TT, Chapman SB. Virtual reality social cognition training for young adults with high-functioning autism. *J Autism Dev Disord* **2012**;43:34–44.
16. Eichenberg C, Schott M. Serious Games for Psychotherapy and Psychosomatic Rehabilitation: A Systematic Review of their Effectiveness. International Society for Research on Internet Interventions, 7th Scientific Meeting, Valencia, Spain. 23–25 October, 2014.
17. Li J, Theng Y, Foo S. Game-based digital interventions for depression therapy: A systematic review and meta-analysis. *Cyberpsychol Behav Soc Netw* **2014**;17:519–527.
18. Kato P. Video games in health care: Closing the gap. *Rev Gen Psychol* **2010**;14:113–121.
19. Fernández-Aranda F, Jiménez-Murcia S, Santamaría J, Gunnard K, Soto A, Kalapanidas E, et al. Video games as a complementary therapy tool in mental disorders: PlayMancer, a European multicentre study. *J Mental Health* **2012**;21:364–374.
20. Lee Y, Heeter C, Magerko B, Medler B. Gaming mindsets: Implicit theories in serious game learning. *Cyberpsychol Behav Soc Netw* **2012**;15:190–194.
21. Kreutzer C, Bowers C. Attitudes toward a game-based approach to mental health. *Cyberpsychol Behav Soc Netw* **2015**;18:20–24.
22. Annetta L. The "I's" have it: A framework for serious educational game design. *Rev Gen Psychol* **2010**;14:105–112.
23. Eichenberg C, Marx S. Serious games: Zum einsatz und nutzen in der psychotherapie. *VPP* **2014**;4:1007–1017.
24. Cheek C, Bridgman H, Fleming T, Cummings E, Ellis L, Lucassen M, et al. Views of young people in rural Australia on SPARX, a fantasy world developed for New Zealand youth with depression. *JMIR Serious Games* **2014**;2:e3.
25. Schwartzman D, Segal R, Drapeau M. Perceptions of virtual reality among therapists who do not apply this technology in clinical practice. *Psychol Serv* **2012**;9:310–315.
26. Maheu M, Pulier M, McMenamin J, Posen L. Future of telepsychology, telehealth, and various technologies in psychological research and practice. *Prof Psychol Res Pract* **2012**;43:613–621.
27. Mayring P. *Qualitative inhaltsanalyse: Grundlagen und techniken*. Weinheim: Beltz, **2015**.
28. Wangberg S, Gammon D, Spitznogle K. In the eyes of the beholder: Exploring psychologists' attitudes towards and use of e-therapy in Norway. *Cyberpsychol Behav* **2007**;10:418–442.
29. Eichenberg C, Kienzle K. Psychotherapeuten und Internet: Einstellung zu und nutzung von therapeutischen online-angeboten im behandlungsaltag. *Psychotherapeut* **2013**;58:485–493.
30. Rozental A, Andersson G, Boettcher J, Ebert DD, Cuijpers P, Knaevelsrud C, Carlbring P. Consensus statement on defining and measuring negative effects of Internet interventions. *Internet Interv* **2014**;1:12–19.
31. Johansson R, Frederick R, Andersson G. Using the Internet to provide psychodynamic psychotherapy. *Psychodyn Psychiatry* **2013**;41:513–540.

Address correspondence to:
Prof. Dr. Christiane Eichenberg
 Department of Psychology
 Sigmund Freud University
 Freudplatz 1
 Vienna A-1020
 Austria

E-mail: eichenberg@sfu.ac.at

Received: January 2, 2016
 Revised: February 13, 2016
 Accepted: February 13, 2016