Gaming the Brain: An Exploration of Video Games in Therapy

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction:

Every year, there are breakthroughs in life-saving technologies to combat the many infections, disorders, and diseases that the human race faces. In the few past decades cancer survivability has risen from 49% to 70% (Hassan, 2022) in the past few years deaths from infectious disease has fallen by 19% (Soucheray, 2018) and over roughly 2 years the Covid-19 death rates have fallen from 6.24% to 1.10% (Mathieu et al., 2022). However, one field seems to be lagging: mental health treatment. Suicide rates have been rising over the past two decades, going up 35% since 1999 (Galvin, 2020), and from 2007 to 2017, mental health issues rose 13% ('Mental Health', n.d.). Furthermore, most antidepressants only outperform placebo by about 10 percentage points (Khan & Brown, 2015). Most of the significant technological breakthroughs in mental health treatment have just been ways to make current therapy methods more accessible, like telemedicine, smartphone apps, and hotlines (Thompson, 2022). While these advances are incredibly beneficial, there is a need for more innovation in mental health treatment.

Though often dismissed as childish or vulgar, video games have incredible power in engaging, immersing, and affecting players. In the field of mental and emotional therapy, these features could fill a hole in innovation, so the question arises: How can video games be used in mental and emotional therapy? One option is using video games' immersive quality for exposure therapy for people with extreme phobias. Video game therapy could also be especially effective for young children by helping them process their emotions through artistic narratives that could unpack heavy subjects in a way that's engaging. I hope to explore the viability of these options and determine how exactly they might be best implemented.

In this paper, I first discuss the history of video games and cultural perceptions of the medium to provide societal context to the possibility of therapeutic video games. I then discuss previous works on the topic. Some studies have even conducted reviews similar to mine to determine the viability of gaming as a therapeutic device. I hope to dissect and expand upon their findings. I then examine four successful cases of video games, or similar technologies, achieving a therapeutic effect. I review two cases via scholarly articles and two commercial video games through primary sources such as reviews, articles, and social media posts. In each of my reviews, I determine which aspects of the games were most effective in achieving a therapeutic effect and how they could be improved. Once I have collected the most useful strategies used, I apply them in the context of therapy for phobia patients, and children to synthesize what a therapeutic videogame might look like in each case. Finally, I determine the necessary steps and feasibility of making therapeutic video games a reality.

Background and Current Landscape

Video games have had a long, complicated, and controversial journey in the eyes of the public. They have long been considered to be trivial entertainment at best, and violent, bad influences at worst. For a long time maybe this was the case. Early video games served merely as colorful distractions, designed to stimulate the senses and create enough excitement to keep players coming back. As video games progressed they began to take on narratives and more cohesive gameplay, but many games like *Doom* or *Wolfenstein* still merely sought to provide excitement and action with violent shooter games. Such titles earned video games notoriety as cheap, vulgar entertainment, and gave rise to myths that video games incited aggression in youth (‘A Timeline of Video Game Controversies’, 2022). Today, many video games still contain similar themes of violence and excitement, but modern technology has made the genre far more

accessible and opened up doors to far more subtle and atmospheric games. More advanced and streamlined development tools have allowed for the rise of independent developers outside of the major studios who are just trying to make money. Such developers have tested the bounds of the medium and begun to make games that tell enriching stories with emotional depth, created not only to entertain but also to provoke thought and genuine emotion (Lesaffre, 2023). Meanwhile, advances like higher graphics, processing speeds, and memory, have broadened the possibilities of the field, allowing for stunning visuals and complex gameplay. The advent of virtual reality (VR) allows almost complete immersion, putting players in scenarios they never would have been able to experience otherwise. The platform of video games has revealed itself as an art form and a powerful tool to be harnessed, so what strengths exactly do video games have, and how can they be used in mental and emotional therapy? To answer this question I study a handful of cases and examine their successes and shortcomings.

Case Reviews

In this section I first examine scholarly articles that directly studied the use of video games or something similar in mental or emotional therapy. I then look at two examples of commercial video games that have achieved a therapeutic effect.

Scholarly Studies:

Games in Child Therapy:

In 2011, H.W. Li, J. O. Chung, and E. K. Ho studied the effect of virtual reality video games on depression and anxiety symptoms in young cancer patients (Li et al, 2011). The study consisted of control and experimental groups of cancer patients undergoing active cancer treatment aged 8-16. The control group received standard treatment while the experimental group would have 30-minute play sessions in a VR environment. The study used non-intrusive

VR technology that would project interactive scenes onto the floor and walls of the play area. Participants would play in groups of four interacting with stimulating visuals as well as basic games such as billiards, volleyball, and football. The researchers found that the experimental group had a significant reduction in depression symptoms compared to the control, but had no comparable decline in anxiety symptoms.

The video games used in this study were geared less directly towards therapy and more towards play, but they do demonstrate many valuable benefits that video games, especially in conjunction with VR technology, can provide. Some of the most significant of these benefits are the effects of immersion and distraction. In the case of child cancer patients, the long weeks of painful hospitalization might make them feel isolated and cut off from normal life. Immersive VR can place them in those normal situations again, giving them the ability to play football or billiards or see exciting things. Furthermore, distraction has been shown to help reduce stress levels (Rijal et al, 2023), so it is likely that the engagement and fun that comes along with playing video games played a large role in reducing depression symptoms. Another strategy that contributed to this study's success was the introduction of a social aspect. Isolation and loneliness only exacerbate the depression and anxiety of the patients (Abad et al, 2010) so having a medium to facilitate connection was probably incredibly beneficial for the children.

This study did not use games that were specifically therapeutic but instead relied more on the natural therapeutic effects of leisure, stimulation, and social interaction. This opens up the idea that a therapeutic video game would not necessarily have to just address issues directly, but also provide and enhance experiences that are naturally therapeutic. However, this study was only effective in reducing depression in patients, not anxiety. The games were able to break the isolation and monotony of hospitalization but they did not address the fear of illness and

treatment. The patients would likely need a way to express and process these emotions safely and easily. A therapeutic video game would need to provide tools to help achieve this goal.

VR in Phobia Treatment:

In 2021, Philip Lindner, Jesper Dagöö, William Hamilton, and their associates researched the effectiveness of VR exposure therapy in treating severe social anxiety, especially in public speaking (Lindner et al, 2021). The trial was conducted on patients seeking therapy to reduce their social anxiety. No control group was used. Instead, all patients tried both traditional and VR methods, and progress was tracked for each strategy so that every participant served as their own control. For the VR treatment section, patients were put in virtual scenarios designed to provoke their fear response. For instance, a patient would be placed at the head of a boardroom, conference room, or classroom, and instructed to perform tasks like introducing themselves or giving a speech. The scenarios were fully customizable with adjustable parameters for task length, audience mood, audience size, and proximity. Participants were encouraged to build scenarios themselves to increase their sense of control. Therapists were also able to trigger audience reactions such as laughing, clapping, or booing, increasing immersion and interactivity. The study found that these methods were significantly more effective than the traditional methods for lowering catastrophic beliefs and Subjective Units of Distress (SUDs).

Though the treatment used in this study was not a game per se, its methods are very close to what a video game for this type of therapy might look like. The researchers took full advantage of most of the benefits that VR can provide, the most obvious of which is the immersion effect. The researchers were able to create a realistic environment capable of triggering a fear response without the extreme resource drain that would be required to create it in the real world. The second effect, which ties into the last, is interactivity. Previous phobia

exposure therapies would use a static 360 video for the scenario, but the VR approach allowed for audience reactions making the virtual scenario more realistic while also giving participants useful feedback. The last and most useful effect was VR's customizability. Since the platform is so flexible, participants were able to customize their treatment, helping them to gain some control over a stressful situation as well as fitting it to their personal needs.

One of the issues that this approach faced was dissatisfaction and attrition of participants. The study dropped from 23 to 19 participants throughout the study and 6 of the remaining participants reported feeling like they were "under more stress" and that the study did not "meet [their] expectations" (Lindner et al, 2021). This issue could be mitigated by adding a game-like element. By using the distraction strategy, a video game could break some of the tension and stress that comes with exposure therapy. For instance, there could be options for un-likely scenarios like giving a Grammy acceptance speech, one's own version of the State of the Union address, or a Ted-Talk on one's favorite subject. More light-hearted situations such as these could take some of the focus off of the fear itself and more on the challenge, making the process more comfortable, enjoyable, and sustainable.

Commercial Games:

Kick the Buddy

The first game I examine is a mobile application by the name of *Kick the Buddy. Kick the Buddy* is a free game meant to provide cheap entertainment and stress relief through slapstick violence. The game gives the player a wide variety of weapons and powers that they can then use to violently and creatively destroy a stuffed dummy. It is by no means a piece of art but for many users, it is an effective outlet for negative emotions.

The developers almost market the application as a therapeutic game. In the application description in the store, they argue that it will help you "chill during the daytoday struggle" and "deal with the anger that you accumulate throughout the day." They even say that it is "a new way to use mobile gaming for the good." This game was made not only to create entertainment but also to provide the user with some sort of therapeutic effect, and it seems like they have found great success in that goal. The application has over one million reviews, many of which praise the gameplay and its relaxing qualities. One such review calls it "stress relieving" and tells the reader to play it "in bed after a rough day." So what exactly are users getting out of this game and why has it been so successful?

The main therapeutic elements that this game provides are control, autonomy, and expression. One review describes exactly why the game is good. it says the game is "amazing" because it lets you "take out all your anger" using "whatever weapon… you want." It goes on to say that you should "never take out your anger on real people" so you should use the dummy instead. According to this review, the greatest aspect of the game is its ability to provide an outlet to express emotions in a way that would be inappropriate otherwise. Furthermore, the game provides full control and autonomy in how the user wants to express these emotions, through a wide selection of weapons and situations. Overall, the game realizes things that the user might not have in real life. It provides a place of escape where one has complete control and autonomy over a situation.

As much as *Kick the Buddy* is praised in reviews for its therapeutic effects, there is a caveat to its success. Many players may use the game to vent anger and other negative emotions, but studies have shown that such catharsis does not decrease aggression but increases it. Studies found that even in people who report feeling better after venting, their emotional state is not

improved (Bushman, 2002). Therefore, many *Kick the Buddy* users are getting a false therapeutic effect. They may feel better and want to keep playing the game, but it's only superficial.

All things considered, *Kick the Buddy* gives insight into what not to do as much as what should be done when making a therapeutic video game. As a mobile game, *Kick the Buddy'*s overall goal is to draw players in and keep them there. It focuses far too much on entertainment and immediate gratification to be considered a true therapeutic video game. While video games are inherently entertaining and good gameplay is necessary for a therapeutic game to be engaging and effective, it can't come at the expense of the actual therapy.

Still, not all of *Kick the Buddy*'s therapeutic effects come from catharsis, and there is still something to be learned from its strategies. The game provides its players with power and control which have shown to be effective at reducing stress and increasing overall well-being. (Guma, 2022) This opens up the idea of games that would take a role similar to medications that help patients cope with difficult emotions while they are dealt with in talk therapy.

Animal Crossing:

Animal Crossing exists on the complete opposite side of the spectrum from *Kick the Buddy*. Where *Kick the Buddy* is exciting, chaotic, and violent, *Animal Crossing* is calm, peaceful, and creative. Players are placed on a sparsely populated island that, through the player's efforts, slowly grows into a lively neighborhood with a colorful cast of characters to interact with. Players can perform various low-stress tasks to improve their island, gain money, and customize their home into their own personal paradise. There is also a social aspect as one can interact with other players by performing emotes, sending gifts, and visiting other islands. The therapeutic effects of *Animal Crossing* are well-known and confirmed by its players. On a Reddit post titled "Does AC help you?" by user u/ladyburgerandcatnap, many people left

comments saying it helped with things like insomnia, ADHD, and isolation, especially during the pandemic. Some users described the game as “chill” and “relaxing.” Another said it “helped people feel more confident and creative.” Furthermore, some therapists have already started incorporating the game into their sessions. Psychologist and therapist Ariel Landrum explains in her article “Therapeutic Gameplay of Animal Crossing” that it helps provide “increased hope through imagination”. She says that her clients gain a sense of “calm and wonder” through playing the game and that it helps them “maintain their mental wellness” (Landrum, 2020). *Animal Crossing* has proven to be beneficial in many ways, so what aspects allow it to achieve such a salient therapeutic effect?

Similar to *Kick the Buddy*, *Animal Crossing’*s main strength seems to lie in realizing needs that may not be present in the player’s real life. Through its various gameplay aspects, it helps fulfill the basic human needs for peace, autonomy, accomplishment, self-expression, and social connection. As there is no “goal” for the game except those set by the player, the game is extremely low-stress, providing a peaceful escape from the high stakes of real life. This player-driven style of gameplay gives the player full autonomy of how they want to play within their world. The game provides a sense of accomplishment as players develop their desolate island into something exciting. Finally, *Animal Crossing*’s many accessible ways to connect with other players can help players interact with each other in a comfortable environment. This aspect can help those who have issues with social interaction or simply those who are feeling isolated.

Compared to *Kick the Buddy*, *Animal Crossing* demonstrates a far more refined approach to a soothing, therapeutic videogame. Where *Kick the Buddy* centered solely on the release of negative emotions, *Animal Crossing* centers around fostering positive emotions. A real therapeutic video game might have to do both. One of the most significant things to be learned

from *Animal Crossing* is the importance of autonomy in action and expression. However, the game limits players greatly in one way: they can't express themselves negatively. *Animal Crossing's* cheerful atmosphere is one of its most redeeming qualities, but a therapeutic videogame can't be just for enjoyment. In practice, a therapeutic videogame would have to be more of a blank slate, allowing the player to pursue whatever kind of expression that resonates the most. That way the player could create a more unhindered reflection of their mental state, providing release for the player and giving insight on the patient to their therapist. Furthermore, *Animal Crossing* gives more support to the idea that games don't need to directly achieve a therapeutic effect themselves but merely provide the player with experiences that are naturally therapeutic. For instance, promoting social interaction and giving a sense of accomplishment and competency. Overall, *Animal Crossing* provides a solid framework for what a therapeutic videogame should achieve and should be used as inspiration for any such games in the future.

Analysis and Synthesis:

These case studies have provided a window into what aspects make a good game and how they might achieve therapeutic effects. The question is how might these aspects might be applied to help provide therapy to children and phobia patients. It is important to consider the current methods used in each field, so this section will cover both cases and determine which video game strategies would fit together best within the field's established practices.

Phobias:

Currently, the most effective methods of treating phobias are exposure therapy and cognitive behavioral therapy (CBT). (*Specific Phobias,* 2016) Exposure therapy is meant to gradually build desensitization to one's fear and replace catastrophic beliefs with more realistic

expectations. It is often used in conjunction with CBT which aims to change maladaptive patterns of thought. The current methods are quite effective with 60-90% of patients leaving treatment with mild or no symptoms. (Herndon, 2021) However, the process is extremely stressful as it involves confronting the object of fear directly. This can lead to high treatment dropout rates, climbing up to 45% for some phobias. (Arias, 2021) Using a video game in exposure therapy could help fill in where traditional methods are lacking.

To make a therapeutic video game for phobias the most applicable strategies are autonomy, customizability, immersion, and distraction. As there are many different phobias, there would need to be a different game for each one and all of these strategies would need to be applied in different ways. Therefore this section covers overarching ways these aspects could be applied as well as provide some specific examples.

A game can achieve immersion most easily through VR technology, but other aspects can heighten its effectiveness. For instance, realistic graphics and quality sound design are both important for player immersion. Implementing goals, punishments, and rewards can also be effective at drawing the player. In the case of phobias, this could look like giving the player points for overcoming their fear in some way or making players restart a level if they fail. If a player is tested and becomes invested in the game they get “challenge-based immersion” and identify more with their in-game character. (Ermi & Mäyrä, 2005) Such aspects could give video games an advantage over current VR exposure methods by adding another layer of immersion on top of simple sensory immersion.

The idea of goals and rewards also ties nicely into the distraction strategy. Such methods help make a game more engaging and exciting and could help foster positive associations with the fearful object. Distraction can also be achieved by introducing wacky tools and scenarios,

overall making the process more interesting and fun. For instance, an arachnophobic player could be a military agent sent to save a city from giant spiders. In such a game, the patient could actively defeat the object of their fears and gain confidence around them as opposed to just getting used to them. This strategy aligns with CBT practices as they both aim to form more healthy and normal thought patterns around fearful objects. The main concern with this strategy is if the fearful situations are too fantastical, they might not translate well into the real world. Therefore, either a balance would need to be struck, or more realistic situations would need to be used in conjunction with the engaging ones.

To achieve both autonomy and customization in a therapeutic game, the most effective strategy would be to have a sandbox element where patients can create their levels themselves. For instance, a game for patients with a phobia of heights could provide tools for both the therapist and player to build a mountain scene together that the player could then walk through. That way the patient has complete control over the fearful scenario they will be experiencing. As seen with *Kick the Buddy*, such a sense of control could help patients to cope with the stressful treatment, possibly reducing drop-out rates. Furthermore, as the player becomes more comfortable, the therapist could have them introduce more fearful elements like rickety bridges and steep overlooks to continually tailor the patient's experience.

Children:

There are many techniques used in child therapy but one of the most common, and most relevant to video games, is play therapy. Play therapy is based on the idea that a trained therapist can understand much more about a child’s mental state from how they play than what they can express verbally. It has shown to be highly effective with the up to 71% of children displaying positive change after treatment (Pietrangelo, 2019). Play therapy is mainly limited by the fact it

isn't very concretely defined, leaving much room for error on the therapist's side (Jones, 2016). In this case, a video game could offer more structure and produce more concrete results.

In making a therapeutic video game for children, the main goals should be to engage patients and allow them to express themselves indirectly. Therefore, the most effective strategies would be distraction, autonomy, and emotional expression. The facilitation of other therapeutic aspects such as accomplishment and social interaction would also be especially beneficial in this case.

In the case of child patients, the distraction element would be purely for engagement. The game has to be able to hold the attention of any child even through difficult and perhaps uncomfortable parts. Furthermore, If the patient is invested in the game, in-game incentivization toward therapeutic goals will be far more effective. Such distraction can be achieved in many of the traditional ways. Bright flashy colors are especially effective in capturing the attention of children (Adock, 2018).

In a therapeutic video game for children, autonomy and emotional expression go hand in hand. It is important for the game to be a blank slate. However, compared to conventional play therapy, video games will be inherently more structured, and therefore more limiting. Still, the possibilities in video games are much richer than with simple toys and such structure could help to provide more concrete results. If made with the help of a skilled play therapist, it could be set up so that the child's approach to the game can be interpreted by a therapist to determine their mental state. Furthermore, there should be ample tools and incentivization for the player to express themselves within the game. This is no easy task, but similar effects have already been achieved in games like *Animal Crossing* and *Kick the Buddy.* The overall idea would be to combine the strategies in these games with the principles of play therapy to enhance its use.

Other intrinsically therapeutic elements could be incorporated in a variety of ways. Social interaction could be introduced by simply making the game multiplayer. If the game is open-ended enough, players will be able to work together however they want within their world. Creating a sense of accomplishment can be achieved implicitly if the player can build up a world that reflects themselves like in *Animal Crossing*. Other aspects like peace and control can be achieved by maintaining a self-driven, low-stakes environment in the game.

Discussion and Next Steps:

So far this paper has covered what a therapeutic videogame might look like, but how might one be implemented in the real world? To answer this question, each main actor in the process and their needs must be considered. In the case of introducing video games into therapy, the main actors are therapists, phobia patients, child patients, parents of child patients, and video game designers.

The only way therapists would incorporate video game therapy into sessions is if it's backed by clinical evidence. This paper has coalesced strategies that have been successful in the past and any extrapolations are merely hypotheses. Therefore, before any full therapeutic game can be made, the strategies suggested must be scientifically tested. If they are confirmed then the development of full therapeutic video games can begin with full support from the people who would be utilizing the games.

The main barrier to the acceptance of therapeutic games by patients and their parents is public perception. Though perception has improved recently and many would be excited to try video game therapy, others may find the reputation and culture surrounding video games difficult to overcome. If one of these actors thinks of video games as vulgar and a bad influence, they will be hesitant to place themself or their child in video game therapy. Therefore full transparency on

the contents of such games and how they will be used is necessary. Furthermore, there has long been a toxically masculine culture around video games that have given rise to the idea that they are for "boys only." Therefore, some female patients may have little to no interest in trying such therapy. As this is a societal issue it would be difficult to mitigate it, but designers may be able to work around it by making games marketed specifically towards a female audience.

It should not be hard to convince video game developers to use their skills for a good cause. however, they would need proper compensation and help from therapists and psychologists to create a therapeutic video game. To organize such a project it could be necessary to gain support and funding from an outside organization. Such support could be garnered from companies such as Games for Good, a non-profit organization centered around raising funds for games to donate to children's charities or Let's Play Therapy Institute, an organization that helps therapists use video games in therapy.

Many hurdles would need to be overcome for therapeutic video games to become a reality, but the potential benefits across many types of therapy are worth it. This paper has covered two ways they could be directly implemented in therapy, but they could also be used as a supplement to medications, something that soothes symptoms while they are worked on in traditional talk therapy. The field of video game therapy is only just budding but it has shown itself to be promising. This paper provides the start of a framework for how the field might progress and I hope that it is more thoroughly explored in the future.

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