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Social Anxiety Strategies through Gaming

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Abstract. Anxiety and depression cases have trebled within the last decade [1], with diagnoses of social anxiety disorder increasing the most. With such an escalation in care needed, and the ever-struggling mental health service, a new approach to effective mental health options is imperative. The aim of this research was to highlight common, mainstream video games as potential strategies for those struggling with social anxiety disorder, and to understand how these games help sufferers. This was displayed by demonstrating themes in games that those with social anxiety disorder played. The study used a participation selection model mixed method approach utilising the Leibowitz social anxiety scale to invite participants with high social anxiety scores back to interview. Firstly, quantitative results showed that the Leibowitz Social Anxiety Scale maintains reliability in detecting those at risk of clinical diagnoses, being able to significantly predict a clinical diagnosis from a higher score, with younger age groups showing more risk, though this latter finding was a statistically non-significant trend. Qualitative findings showed four main themes were identified when carrying out thematic analysis: the day has been hard for mental health, short solo breaks of play, helping with mental health and growing as a person with game genres including colony or role-playing games. Future research suggests a move to a transdiagnostic approach to anxiety disorders with an early-stage intervention model utilising video games with the themes uncovered. This would aim to improve access to young adolescents and increase uptake of clinical mental health provisions while offering self-directed care in the first instance.

Keywords: Video Games, Social Anxiety, Transdiagnostic.

1 Social Anxiety Strategies through Gaming

Mental health diagnoses, have seen a marked increase in the past 10 years with one in six young people being diagnosed with a mental health disorder [2]. Social Anxiety Disorder (SAD), defined as a debilitating condition causing extreme bouts of anxiety for those confronting social situations [3–5]. With the workload of the NHS increasing, new ways of providing mental health services are needed.

Video games offer a unique solution: training basic social interaction that cover a plethora of social situations [6–8]. Fleming et al. [8] suggested that stories, character interactions and worlds offer an immersive learning experience for patients. Objective

measures like play time has also shown improved well-being [9]. This has already been successful in the treatment of various phobias as well [10, 11] by showing significant reductions in symptoms. A recent meta-analysis showed improvements for depressive and comorbid anxiety symptoms [12, 13]. With videogames already demonstrating promise, approaching social anxiety in such a manner is a logical next step to take.

1.1 Social Anxiety

The Liebowitz Social Anxiety Scale (LSAS) [14] was developed for highlighting people at risk of developing it. Common symptoms include shunning social situations, discomfort around others and, in the extreme, removing social connections entirely. Interventions for SAD often take a pharmaceutical approach, such as the use of selective serotine re-uptake inhibitors, or therapeutic approaches like cognitive behavioural theory (CBT), or a combination of both [15, 16].

Recent reviews suggest however, this approach is unsustainable and unable to be deployed to all those at risk [4]. This is highlighted for younger children and adolescents, as CBT has been shown to be less effective as an intervention, and the use of drugs might cause adverse effects to developing brain chemistry [17, 18]. Research also suggests SAD is an early developmental disorder. Neuroimaging evidence supports this, showing during early years and adolescence, that neural activity has a role in the onset of SAD [19]. The use of drugs and neural activity could see potential negative side effects in young people. In fact, research suggests that CBT was almost ineffective for young adolescents and young adults, defined as those up to age 24 [20]. Support after a CBT course has been shown to hamper the use of techniques learnt in therapy [12] highlighted by Hudson et al. [21], that after a typical 10-week CBT course, 50% of outpatients sought readmission after three months. Further to this, Catanzano et al [22] suggested that uptake rates for younger people is lower compared to older people for therapy, and once mental health problems start, these younger people are often left with no help. Hofmann et al. [23] suggested that individualistic cultures have seen increasing young SAD diagnoses due to demands of social media to maintain a positive look on life.

However, smaller forms of aftercare and positive reinforcement showed a significant reduction in SAD symptoms and readmission [24] showing that providing feedback to a sufferer helps them [18, 25]. Video games could be utilized here, being able to give interactions, teachable experiences, positive feedback, reward reinforcement, and opportunities for continuous learning reinforcement. Globally, as of 2020, 74% of six to 24 year olds played video games for an average of eight and a half hours a week [26]. Knowledge acquisition using video games has been shown to have positive effects on behavioural, cognitive and physiological aspects [27] with real impacts on memory and social improvements [28, 29]. This feedback could deliver a bespoke, narrative experience to help those with SAD. Games such as "Sym" [30] have already been produced. However, this type of game is limited: targeting sufferers who are already open to help.

To use video games as an intervention for SAD, they need to teach, not just enlighten. This requires studying mainstream games to understand the systems that offer benefits, and why SAD gamers play them.

1.2   Learning through virtual interactions

Research has investigated learning through a virtual interface for a specific experience, bringing a participant into a virtual space. Presence and belonging are shown to aid in learning tasks [31]. Virtual experience could provide SAD sufferers the ability to learn in an immersive virtual environment, taking ownership of their mental health and raising their self-esteem. Research on Self-Determination Theory (SDT) [32] supports this, showing intrinsic and extrinsic motivations having positive changes to well-being and self-esteem [9, 33, 34]. By gamifying learning SAD sufferers can also improve autonomy, competency, and relatedness, the three principal components of SDT.

By structuring the research around SDT, the building of theory can suggest how video games can work for SAD sufferers to alleviate their symptoms. Independent gamified learning links directly to SDT with improvements in motivation and self-esteem, suggesting people aim to better themselves, and in the absence of knowing how, video games could offer learning and autonomy. Gamifying treatment has the potential to generalise wellbeing and motivations, with Fleming et al. [35] calling for a paradigm shift in the treatment of many psychological disorders to one that promotes gamifying of learning and coping with problems [36].

1.3   Aims of the current study

The aims of the current study are to identify which games are played by people with SAD, and the systems that help them with their disorder. The hypotheses will enable future research, interventions, and resources to be targeted, by understanding which populations suffer with SAD. The themes that are reported will be analysed to build a new theoretical framework for what a game built to help those with SAD could consist of in the future.

The study asked two main research questions for qualitative analysis and had two hypotheses for quantitative analysis:

RQ$_1$: What type of video games are being played by people with SAD and why?

RQ$_2$: How do these games help SAD sufferers?

For quantitative analysis, the research study had two hypotheses.

H$_1$: The Liebowitz Social Anxiety Scale will significantly predict a clinical diagnosis of SAD.

H$_2$: Age will significantly predict a clinical diagnosis of SAD

2   Method

2.1   Design

For the current study, a participation selection model mixed method was used, where quantitative results informed participant selection for the qualitative element [37]. The quantitative data was also used to add to research on the LSAS [14]. The research questions were assessed based on those diagnosed with SAD and how they responded to the questions. Ethical approval was obtained prior to the study commencing.

2.2   Participants

Data was collected from 82 participants responding to an internet survey distributed via social media. Ages ranged from $18 - 72$ ($M = 27.40$ $SD = 8.56$). Participants ranged in education, with 26.8% having completed a bachelor's degree. There were 44 males, 36 females and two others. Five participants were selected for the qualitative stage of the study based on their answer's prior being diagnosed with SAD and accepting the interview. Five of 11 eligible participants agreed to participate in further interviews and ranged in age from $22 - 35$ ($M = 28$ $SD = 5.70$), with three males and two females. Of these, three had completed a bachelor's degree, whilst the others master's degrees.

2.3   Measures

Qualtrics was used to build and distribute the survey. Demographic information such as age, gender and educational achievement was obtained. The LSAS assessed participant's social anxiety, with questions designed to ascertain how fearful or avoidant of various social situations they may be. Example situations are "telephoning in public" or "going to a party" with participants answering on two four-point Likert scales for each question ranging from "Never" to "Usually" [14]. There was a further question asking if participants had been clinically diagnosed with SAD. The qualitative interview was based on questions asked by Elliot et al. [38], studying gameplayers with post-traumatic stress disorder, modified to fit SAD. This semi-structured interview was not overtly enquiring about a participant's social anxiety, but so they would feel comfortable talking about their mental health and provide valuable insight into how video games help them with their SAD.

2.4   Procedure

Data was collected through anonymous distribution of the questionnaire via social media. Participants gave consent and completed basic demographic questions, the LSAS and gave a brief outline of their experience of video games. They submitted their email address if they wished to be considered for interview. Those that had previously been diagnosed with SAD, and scoring above 65 on the LSAS, the threshold for being high

risk, were invited back to a video and audio recorded semi-structured interview lasting on average one hour conducted via Skype. Central questions were "How do you perceive video gaming relating to your own mental health and wellbeing?", "Have you ever thought of playing a video game as a potential help tool for your own wellbeing?" and "What aspects of the game do you feel are important and positively affect your wellbeing?". Where appropriate, participants were asked further questions to gain more insight on answers they gave to expand on relevant and interesting responses.

2.5 Data Analysis

Thematic analysis was employed [39] following transcription of recorded interviews with participants being coded. This involved reading and re-reading each interview with the goal of identifying potential themes. This led to producing overarching higher themes that would encompass what the participants were discussing, informed by the video games being played and discussed, and the research questions set out. Lastly, quotes were identified that were congruent with the identified themes and naming of the themes took place to outline the processes described by participants.

3 Results

3.1 Quantitative Analysis

To analyse the predictive ability of the LSAS, scores and a categorical diagnosis of SAD were entered into a logistic regression. LSAS scores ranged from 0 to 112 ($M = 53.24\ SD = 28.02$), with a score of 65 or higher indicating risk of clinical diagnosis [14, 40]. In total, 18 people, or 22% of participants had a clinical diagnosis of SAD. Due to missing data, the total sample size fell to 63, with 11 being clinically diagnosed. A power analysis concluded for a logistic regression with one predictor variable, suggested the sample size should be 75 or greater [41]. However, given the effects found, this was deemed acceptable with 6 less than the power analysis. For the first hypothesis, the model was significantly worse at predicting if a clinical diagnosis was present, $\chi2(1) = 7.53$, $p = .006$. As such, the LSAS Score was entered into the logistic regression, and was found to be a significant predictor of a clinical diagnosis, with a Wald test indicating its level of significance, $Z(1) = 6.46$, $p = .011$. The odds of being diagnosed with an increasing LSAS score was almost 1:1, $e^B = 1.04$. For the second hypothesis, the model was deemed significantly worse without the addition of age, $\chi2(1) = 4.89$, $p = 0.027$. However, age was not a significant predictor of being diagnosed with SAD, $Z(1) = 3.74$, $p = .053$, with the odds of being diagnosed being less than 1:1, , $e^B = .91$.

3.2   Qualitative Analysis

For the qualitative analysis, four main themes were identified: a) day has been hard for mental health, b) short solo breaks of play, c) helping with mental health and d) growing as a person. Each theme has smaller sub-themes which trended across participants in their feedback.
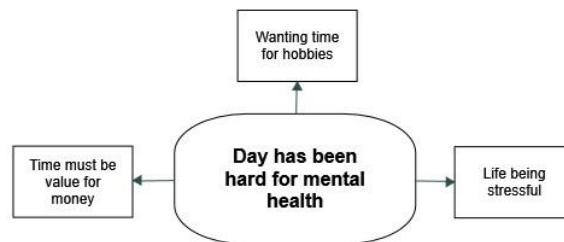
Day has been hard for mental health

Fig. 1. Theme map for "Day has been hard for mental health"

Most interviewees responded that everyday life was stressful and this impacted their wellbeing. They discussed seeking downtime, and reported wanting to alleviate these stressors. Participant one, a 22-year-old female teaching assistant spoke of this:

"I can't really leave my work at work because you know, they're kids and I know how much they... especially my one that I work with looks up to me. You do come home at the end of the day kind of still thinking about work and did I do this right did I handle that right.".

Participant two, a 34-year-old male student also commented on the stressors faced in his life:

"At the moment it's just getting through the master's frankly... making sure I'm managing my money effectively and so I can get through the degree without going completely broke"

Participant three, a 24-year-old male researcher, also spoke of bringing work stress home with him:

"there's your kind of perception of everything which is like an added like level that can be stressful but nothing specific if you know what I mean... So maybe that's like a different type of stress I'm experiencing I'm not sure.".

This theme was characterised by wanting to leave work behind and spend time on hobbies. Value was placed on time and money spent on gaming, as participant four, a

36-year-old male primary teacher, commented on the importance of finding time for himself at the end of the day:

"Stayed with them for a couple of minutes had a look thought right okay, they're busy, they won't mind me going off to play now for a little bit.".

Participant 3 echoed this, stating game choice depended on relative value for time and money:

"But yeah, once you've kind of bought into their kind of battle pass progression thing you definitely feel compelled to get to the end of it because otherwise, you're not going to get your money back... Yes to defend my, you know to get my value for money. I'm almost compelled to yeah play".

Participant 4 also commented value for money defining his hobby, noting that advertising played a particular role in the purchase of one game that he felt let down by,

"I've got suckered in by the ad campaign. I thought oh yeah got that and it weren't half as good as I was led to believe it was".

Clearly there is importance in daily downtime, but the importance of both time and money should not be overlooked, as modelled in Figure 1.

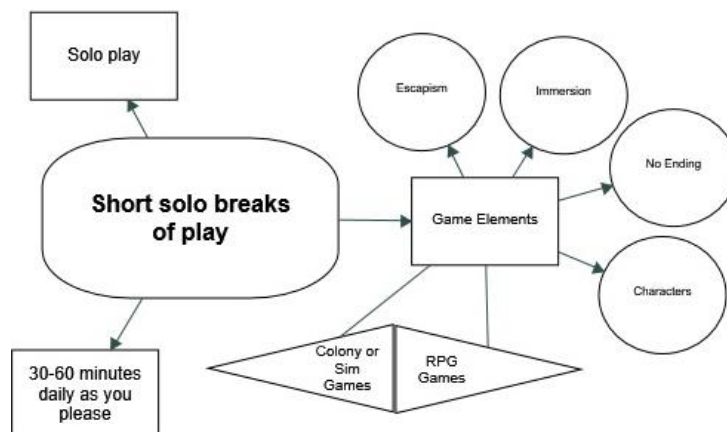**Short solo breaks of play**

Fig. 2. Theme map for "Short solo of breaks"

The second theme was short solo breaks of play. All participants suggested that 30 to 60 minutes of playtime most days helped with stress or mental health. Key game

elements were mentioned, emphasising the type of game that was played. Participant four said:

"I need that half an hour just mind numbingly doing something"

Participant five, a 26-year-old female student said:

"I want to play something in the afternoon"

Participant two elaborated why shorter sessions were useful, that investment into long stories was not feasible given his life now:

"So, I try to stick with light games, games you get on for like an hour and get back off not a game that you have to invest 10 hours to, to get to the tutorial".

This approach to gaming sessions was also echoed by participant four stating:

"I haven't got to remember what happened three hours ago and have the right item to get into that next bit".

This style of gameplay makes sense, wanting quick access to the hobby to relax. This supports existing research that short sessions of gameplay can be beneficial [43]. When questioned what types of games they enjoyed playing, four main elements were highlighted. Immersion within the game, escaping reality, little to no story, and the characters within the game. Immersion within games was the most common theme that emerged with participant four commenting:

"The latest ones really good you can create your own team and stuff and it kind of helps it kind of immerses me in the world…Well it was something it was, I think you can be so, you can be so immersed in them now…they've come such a long way since we were kids".

This was echoed by participant two who regaled a specific scene that spoke of immersion specifically, and its impact on him as a person:

"There's this narrative immersion that was happening… And you get to the boss fight, it goes, it glides back into narrative immersion."

This was reiterated by participant three, suggesting being able to start a game and immediately be immersed was of upmost importance:

"You know stuff like I can really kind of jump into and kind of be immersed into my thing".

These interviews indicate immersion is a key factor for SAD sufferers. A further element was games allowing the player to escape their reality. Participant four spoke of his insight into this:

"I think now it's a bit different because of lockdown and the way it's gone people have kind of had to retreat online, almost just to get a bit of normality. Hmm yeah… I think you hit the nail on the head really, it's just a way of escaping and having a bit of down time and a bit of me time. Yeah definitely, definitely. You know, definitely parts of my life for where like escapisms were needed."

This was highlighted by participants two and one also:

"So yeah, it was a good way for me to distract myself and like I'm gonna work on this in Minecraft and I think focus on this"

"I obviously wasn't going out to work at all and being inside my own four walls was feeling quite claustrophobic… And again, I get all that you know, I get all that same escapism".

These excerpts suggest that transportive ability of a game to another reality was key for SAD sufferers, seemingly to escape stressors in their lives and being immersed instantly. Linked to these are the last two sub-themes, a need for no specific story and the characters that are in the game. Participant four spoke of this:

"Yeah, that kind of game that you continuously get something out of, get something out of… with the likes of FIFA and formula one, you know, there's no end in sight so you can just have a play."

These elements were also spoken about by participant two:

"And like there's no story…and I start having ideas about different builds and I want to start again so I think I can get a bit bored and like, oh yeah keep doing new things rather than finishing old things as I try and make myself persevere".

Participant two formed a family-like bond, commenting on this impact of a virtual character within a game he had played:

"The character was kind of like a big sister, sister like she you know, there wasn't a romantic interest, it was just this person that was helping you",

These elements working together are important to those suffering with SAD. They add to research suggesting that a virtual world to escape to and become immersed in, with characters to have meaningful relationships with, could be of great benefit to others with SAD as modelled by Figure 2.
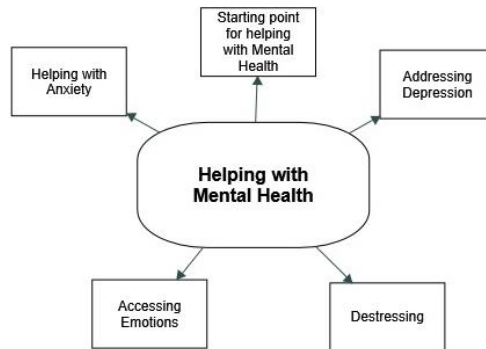
Helping with mental health

Fig. 3. Theme Map for "Helping with mental health"

The third evident theme was, games help with mental health. This theme was seen in all participants, that games have helped them with anxiety and depression. Participant four spoke of this (Figure 3):

"Ha it's that it's that down time really hmm, my job is quite kind of high mental load, it's like a lot of decisions every day and it's a bit of downtime you can escape.".

Participant two spoke further, offering how games have helped him with his mental health and wellbeing:

"I've had some pretty profound experiences with gaming that has left an emotional impact so to say… I mean I could go on on about like games as therapy… So yeah, I'm definitely on I I definitely think games could be a new form of therapy.".

Participant three also spoke of games helping him with his mental health:

"I feel like they can be applicable, and they can be beneficial so… yeah no its definitely helped me yeah in detaching from day-to-day problems, especially the ones I can't do anything about".

These experiences were echoed by participant one:

"I think like I think to myself like oh, you know, I can unwind today after playing a game… and like shutting off the thoughts when I read as when I play games… you know, get these little sense of affirmation from if you you play little games or you're winning that gives you like a little adrenaline kick".

Clearly, gaming can benefit mental health. These experiences suggest games could offer an option to SAD sufferers, by allowing them to explore and challenge their own

mental health. Participant five offered additional thoughts, commenting that games cannot replace traditional therapy but could be a useful starting point for sufferers:

> *"Be a good tool I think it can be a really good tool in moderation as like a starting point".*

Growing as a person

Fig. 4. Theme Map for "Grow as a person"

Theme four was: games foster growing as a person, by improving skills both in and out of games. Games highlighted new ways of exploring your sense of self. Participant four spoke of his experience applying games in problem solving in teaching (Figure 4):

> *"I did a lot of stuff with Apple, got some Apple accreditations and it was the gaming and it was the problem-solving approach and the kind of a gaming aspect of it"*

Furthermore, he spoke of gaming growing within his family and the development of his young son, mentioning:

> *"Oh, I love that in particular because he's really confident when he does that and he's not unconfident, but he knows what he's doing he's in that environment, he's really, really confident he can, he can kind of order me about a little bit and I love to hear him".*

Discussing this revealed he regularly played with his eight-year-old son watching him develop confidence and leadership skills from sessions. Participant five gave personal accounts on working towards goals in games to achieve and learn:

> *"So, you are working with them towards a goal and probably a sense of achievement."*

Participant two spoke of expanding social skills within video games:

> *"Applaud MMORPGs for helping the socially awkward individuals come out".*

Participant three commented on learning about themselves from the games they have played and the interview itself:

"I mean after talking with you I think it's made me realise how much erm, yeah how, how, how your kind of play style and your kind of and your kind of how you act in real life how you are in real life can intercept… like something to push someone to develop their social skills".

The last sub-theme was being able to explore your sense of self. Participants discussed how video games had informed life choices. Participant four mentioned that game play had helped with the direction of his life and choices he faced:

"It inspired me, why inspired that's a strong word? I'd like to think that it helped me later on in life"

Participant two's emotional experience let him notice that other people perceived him differently and that this was a direct consequence of its impact on him:

"Definitely like after the after like those tears came out people said 'man, you feel this, you seem softer or what happened', you know, you you and 'he cares' it's funny having an experience like that",

Participant three also explored this. He spoke about the many choices and paths he would take in games, first playing as what he would do, then on further playthroughs, playing as though he were his ideal self, enabling him to explore both game and self:

"Love the kind of choices and how many different things there to do in it… to an extent the the range of choices and roots you can take through the game…which I love and and yeah kind of crafting a character to reflect yourself...or to reflect parts of yourself that you want to explore."

Finishing up with a very introspective view of his own life:

"I think those kinds of games in a very basic kind of obvious way they kind of they're good for reminding you that you do have choices and and that they do have consequences and that you need to be ok with that and maybe risk negative consequences to make a correct or right decisions yeah."

The ability to experience more aspects of life from games is vast and evident. From simple exploration within games, improving game skills, to exploring their own sense of self. Games can clearly offer freedom of choice and expression, unjudged by other people. This freedom to explore oneself and the game is key for SAD sufferers and could help in the future to tackle their condition.

4   Discussion

The aim of this mixed methods study was two-fold. Firstly, the quantitative element tested the reliability of the LSAS, and if age was a significant predictor of SAD. Secondly, the qualitative aims were to ascertain themes in gameplay that would aid SAD sufferers.

Firstly, this study added to research, showing the validity claimed by the LSAS was accurate. The measure predicted being clinically diagnosed with SAD. This supports previous research and shows the LSAS is still a valuable tool for assessing SAD, showing it can highlight those who are at risk of a clinical diagnosis of SAD [40].

The study also suggested the usefulness of age in predicting SAD, expanding on links between early age and the onset of SAD [22, 42]. While this study did not show age significantly predicted a clinical diagnosis, the trend suggests that age could be an important factor. Limited results here could be due to the average age of a participant being over 27, older than the range defined as adolescence of 24 years, [43]. This trending result could be examined by future studies with younger populations.

The qualitative element was to understand themes in games SAD sufferers played to help them, producing four themes. The first was short breaks of play, by themselves, almost every day. This is consistent with previous research, reporting than an hour of video games a day can be beneficial [9, 27]. Games were played as a self-constructed coping mechanism to handle everyday stress. While there was some emphasis on this investment being good value for money, the theme suggested that games were used to get back to a hobby, and to alleviate stress. There has been a strong link in recent years for the need to unwind after work, and the benefits this can have, from reducing the risk of cardio-vascular disease [44] to increasing work productivity and general life satisfaction [45].

Another theme was using games to grow, including gaining skills in real life and in games, using both to explore yourself. This aligns with previous research that video games help realise what people envisage as their 'ideal' self [46]. Using character avatars to realise an 'ideal' version of oneself has been shown to help improve intrinsic motivation [47]. Furthermore, the theme shows real life skills can be learnt through gameplay supporting previous research [28], however, the skills learnt in this study go further by using sophisticated games with complicated input systems.

The final theme was games helping with mental health. This is expected given the numerous studies highlighting their possible benefits. Some examples would be the works of Lau et al. [48] showing a positive trend in reported mental health scores after playing games. Mandryk and Birk [7] suggested that video games could be used as a complimentary tool to classical therapeutic applications, as well as many other studies highlighting benefits to mental health and well-being [49–51]. The current study adds to this area by highlighting mainstream video games helping with common mental health problems. Importantly, video games are not suggested as an alternative therapy, but that video games can support mental health, providing positivity and well-being. Furthermore, improvements to stress and accessing emotions are an important factor in today's world. This supports new clinical methods and builds evidence for using the transdiagnostic approach in mental health diagnoses [42, 52].

The themes identified help to answer the games played by SAD sufferers are short, immersive, with little story, playable in small sessions with strong characters to escape the hardships of the day. The research shows games allow SAD sufferers new opportunities to address their own mental health and grow as a person, both in and out of game.

4.1   Limitations and Improvements

The transdiagnostic approach to mental health presents limitations of the current research. Importantly, questions asked in the semi-structured interviews were not explicitly about SAD: participants were not asked how games benefitted their SAD, rather how games helped their mental health. No participant spoke about their SAD, either positively or negatively. More than one type of generalised mental health disorder was discussed, including anxiety with depression, lack of emotionality, stress, and low mood. Recent research discusses that many mental health disorders are in fact comorbid, especially anxiety and depression [53, 54]. By asking a wider range of questions to tackle the most common mental health disorders, the research could be improved. Whilst specific enquiries into SAD are beneficial, the framework of the transdiagnostic approach helps to address mental health as general symptoms [52]. This approach might allow for a wider and more accurate understanding of how games can positively affect mental health.

Whilst the qualitative research here is necessary, drawing conclusions from a small population must carry careful interpretation. The findings are indeed promising and suggest interesting ways for both mental health and digital interventions to move forward. However, further research is needed with a wider range of participants with varied mental health disorders. This is supported by the themes extracted from this research. Immersion and escapism have been common themes throughout gaming research history, but there are still conflicting definitions for both [55]. A solution here would be to compare gameplay and application-based immersion [47] . By applying quantitative analysis to a qualitative conundrum, more insight into both topics could be gained.

Participant's motivation to game is also due consideration [34, 56]. Research in recent years has sought to understand how video gameplay, especially violent video gameplay, interacts with aggressive tendencies [46]. Substantial evidence has shown that people play games for specific motivations, especially improving self-esteem, as well just enjoying the hobby [57]. Therefore, this could potentially affect the results found as the participants already played video games. Findings might be different for those who do not play video games. However, with the number of people playing video games being vast [26] it would seem likely that most people have encountered a video game in some form [58]. This makes the approach plausible to consider as an alternative approach to tackling mental health. This could take the form of multiple games being needed for different diagnoses or symptoms, or a transdiagnostic approach, as suggested by Chronis-Tuscano et al. [59].

The age of the participants in the current study could also be a limitation. An important point of research was the young age at which SAD can be predicted. The

quantitative analysis found a trending result that suggested younger populations would be more likely to be clinically diagnosed with SAD. This supports recent research suggesting that the onset of mental health problems is most prominent in early adolescent years, defined as the ages of 10 – 24 [20]). By limiting future studies to a maximum age of 24, there could be a more direct link between video games and their effects of participant's overall perceptions of their own mental health. This would also allow questions to be asked of the younger populations, who are traditionally less likely to seek more traditional therapeutic methods [22].

Future research could also approach the use of video games and mental health by adapting a transdiagnostic approach. Video games can offer a broad spectrum of tools, as presented. To assess games for their transdiagnostic abilities would be a reasonable next step. By first categorising symptom clusters for the most common mental health disorders, video games could be used as an early intervention into mental health. Similar research has already focused on video games improving well-being [9, 60]. However, more research is still needed to identify games that can be used for an intervention-like use-case. Given that these symptom clusters often account for sign of multiple disorders such as anxiety, depression and obsessive compulsions [61], future research could identify which types of games could address the underlying symptoms of these common mental health disorders.

Linked to research on age, if future research were to develop a way for young adolescents to take ownership of their mental health, this could offer an exciting new way to tackle large scale mental health problems. Adolescent uptake of mental health prevention strategies has been traditionally low [49] and video games could offer an intrinsic way to provide mental health help to adolescents. The transdiagnostic approach with targeted video games presents an exciting new area of future research. This could benefit groups at risk, where explicit help might not be the first thing they look to engage with.

4.2   Conclusion

To conclude, the current research aimed to identify key themes in video games that could be used help those with SAD. The study also contributed to the validity of the LSAS and suggested that more research could emphasize the importance of age predicting SAD. The LSAS is still valid in modern day diagnoses of SAD. This suggests the tool is suitable for continued use in the research and applied settings. Regarding age, while not significant, more research surrounding SAD being particularly more worrisome for younger people could prove beneficial. Qualitative analysis yielded four main themes elicited from thematic analysis of semi-structured interviews. These four themes were: the day has been hard for mental health, short solo breaks of play, helping with mental health and growing as a person. The themes discovered from this research offer an interesting way to approach video games in mental health. Games can be used as first entry into mental health help, as a means of self-directed help. There were limitations to this approach. Qualitative research struggles to be generalised. However, these initial findings suggest that underlying game mechanisms could be useful for self-

directed help, particularly among younger people. Furthermore, research could investigate transdiagnostic approaches to tackling mental health through video games. Broader approaches might be more beneficial for wider populations. Those suffering with mental health would then have the agency to 'level up' their abilities to tackle their own life. In doing so, they would be more equipped to combat their biggest enemy: overcoming their mental health and take their first step towards freedom.

5 References

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