



PRIMARY RESEARCH

It's just a game: A quantitative study on the effects of social interactions inside MMORPGs and its impact on loneliness, depression, and social anxiety

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Abstract

This study aims to find out the correlation and relationship between social interactions inside Massively Multiplayer Online Role-Playing Games (MMORPG) and their effects on aspects of mental health. This study will revolve and focus around three mental health aspects, loneliness, depression, and social anxiety. This study uses a quantitative methodology. An online questionnaire was given out to people who play MMORPGs (n=50). Social Interactions inside MMORPGs give supportive and positive validations to those who have or are part of any mental health aspect, and respondents who don't fit in any mental health category are still affected by the effects of social interactions. On the different categories of social interactions, most participants agreed that this helped their mental health and day-to-day lives. The results have shown mainly positive and supporting effects. There are no methods of social interactions inside MMORPG games that negate or invalidate mental health. Though not all participants strongly agreed or simply agreed that this helped with their mood, it is worthy of note that no participant answered that social interactions didn't help them either. Other answers were simply just neutral but never negative. This paper talks widely and in-depth about mental health and measures each aspect by the level of severity. This study can expand to topics and conversations of how gaming in general, certain games, or certain attitudes while gaming could be the reason or factor for either worsening, intensifying, improving, or recovering a participant from their mental health.

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INTRODUCTION

There are over 20 million MMO players in the year 2021. (MMO Populations, 2021) With games such as Final Fantasy XIV, World of Warcraft, Destiny 2, and Runescape as examples of being part of the most popular MMOs (Populations, n.d), games with a virtual social experience are accumulating and fascinating players to play this highly social environment and causing MMORPGs to grow each passing year. With multiple ongoing pieces of research as to how these games affect players' wellbeing, ranging from problematic internet use to introversion, this study aims to study how strong social environments inside MMORPGs affect a player's mental health in three factors;

- Loneliness,

- Depression, and
- Social anxiety

Past research about MMORPGs and their negative effects on players focuses on their effects in the offline world rather than looking deeper into their impact on one's online environment. Hence, this study aims to figure out what these games provide for mental health and what made players love the environment and stay in that environment.

Research Objectives

The research objectives of the study are as follows:

- Find out what effects social interactions have on a player's mental health in the context of playing MMORPGs.
- Test and identify if there is a possible link between

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the player's mental health and social abilities with the highly social environment MMORPGs give.

Research Questions

Following are the research questions of the study:

- What impact do social interactions have on the aspect of mental health?
- In what ways or methods do social interactions inside MMORPGs negate or support mental health?

Research Hypotheses

There are a total of 4 hypotheses:

H1: Social interactions inside MMORPGs give supportive and positive validations to those who have or are part of any mental health aspects.

H2: Social interactions inside MMORPGs negatively impact those who have or are part of any mental health aspects.

H3: Respondents who don't fit in any mental health category are not affected by the effects of social interactions.

H4: Respondents who don't fit in any mental health category are still affected by the effects of social interactions.

LITERATURE REVIEW

Kelly et al. believe that online gaming is an immensely popular concept that likely has the most impact on how people consume new media on a daily basis. With MMORPGs growing in favor, the social environment, noting its ability to find friends online and create strong emotional ties in a virtual space, is the sole reason for its increased expansion (Friedl, 2003). This is possible due to MMORPGs providing a highly social space for players to divulge in (Cole & Griffiths, 2007). As Yee states, "they are places where people fall in love, get married, elect governors, attend poetry readings, start a pharmaceutical business, and even commit genocide. Whatever MMORPGs are or will become, one thing is clear. They are not just games" (Yee, 2006).

As stated earlier in the Introduction, online MMOs are a topic in past research and discussed in their relationship with negative effects on players' mental health. But as Morahan-Martin states that there are no exact or obvious indications and implications on how big or small highly social games influence the factors of PIU (Morahan-Martin, 2008). Studies involving highly socially active games like MMORPGs and their relationship with online or offline psychology should be viewed differently. Martončík and Lokša (2016) state that the psychological aspects of how a player interacts virtually and in real life are different and should be examined separately. Once players immerse themselves in an online, virtual environment, they treat the responsi-

bilities, options, practicalities, and overall environment independently.

As constantly reiterated, MMORPGs are incredibly social environments, and the reason these games are growing in popularity is that how social interactions are a vital key element of having players immersed and engaged in the game (Chen, Duh, Phuah, & Lam, 2006). In games like MMORPGs, players can customize their appearances and traits and choose a job or class to level, similar to Dungeons and Dragons. Players can also name their characters how they see fit. This enables them to fit inside and feels immersed in a fantasy ambiance and environment for obvious reasons that the world online doesn't fit with the concepts of reality. This allows players to interact with the game as their online persona and form emotional and personal ties with other and similar people they meet in their adventures online. This lets players utilize and experience MMORPGs as a way to connect and enhance their social obligations, wants, and connections online, which they can't find or are not available to them in real life (Lo, Wang, & Fang, 2005; Cole & Griffiths, 2007; Morahan-Martin, 2008).

Yee states that players are motivated to play MMORPGs due to their emotional and personal ties, such as online friendships (Yee, 2006). Another study that involves Yee also states that these relationships and friendships that were born and were started virtually are treated equally in real life by players (Williams et al., 2006) and that these connections and ties traverse and make their way into real life (Domahidi, Festl, & Quandt, 2014).

A study conducted by Luhmann, Schönbrodt, Hawkley, and Cacioppo (2015) states that MMORPGs serve and act as an instrument in loneliness intervention for benefitting players by allowing them to strengthen and increase social skills and offer social support as well as improve social interactions inside the game. Shaw and Gant (2004) suggest that conversing and communicating online is enough to help with loneliness. This is possible because lonely people are more inclined to feel freer online with their virtual companions due to anonymity which enables them to have a greater desire to develop more supportive connections (Morahan-Martin & Schumacher, 2003).

RESEARCH METHODOLOGY

Research Design

The study follows a quantitative methodology. The data collection method is through an online questionnaire, which will consist of measures and scales that will evaluate the presence or lack thereof of one's loneliness, depression, and social anxiety and ask questions that will assess how the

participant interacts inside the game.

The online questionnaire was originally passed on through guilds in Final Fantasy XIV. Still, it was highly encouraged to share the form with friends of friends, which grew and spread to tweets, Guild Wars 2 guilds, participants' friends, and family members, and reached other MMORPG communities.

The online questionnaire consisted of the following:

- ☑ **Part I:** Consent and Privacy Form
- ☑ **Part II:** Demographics
- ☑ **Part III:** De Jong Gierveld Loneliness Scale
- ☑ **Part IV:** Patient Health Questionnaire - 9
- ☑ **Part V:** Social Phobia Inventory
- ☑ **Part VI:** Assessing social interactions from (Cole & Griffiths, 2007) study.

To assess social interactions for Part VI, that section consisted of questions related to the following:

- Online friendships,
- Real-life friends and family,
- Attraction, mutual attraction, and dating of other players,
- Discussions among online MMORPG friends and others

Scales

De Jong Gierveld Loneliness Scale (DJGLS)

Six questions on emotional loneliness and five about social loneliness attributes were refined into an 11-question scale. The scale was developed in the early 1980s in the Netherlands, and it was based on Weiss' 1973 theory. It assesses whether the individual is lonely due to missing social companionship or because of emotionally losing connection to relationships. A participant is considered and categorized as lonely if their overall score is ≥ 3 . This suggests they show at least a few symptoms of emotional or social loneliness.

Patient Health Questionnaire (PHQ-9)

A depression module consists of 9 questions which are then assigned a score of "0" to "3" to each of the nine DSM-IV criteria in order to assess the level of severity of depression. A participant is considered and categorized as having depression if their overall score is ≥ 10 . This has an 88% sensitivity and specificity of major depression.

Social Phobia Inventory (SPIN)

The SPIN (Social Phobia Inventory) is a 17-item self-assessment tool for social anxiety disorder. The scale includes items that assess each of the symptom areas of social anxiety disorder, which are fear, avoidance, and physiologic arousal, and is assessed over the previous week. A partici-

pant is considered and categorized as having social anxiety if the overall score is ≥ 19 . This suggests a possibility of having social anxiety.

Participants

The online questionnaire reached 50 respondents, with ages that range from 19 to 55 years old. Here are the following demographic results of the respondents that answered the survey:

TABLE 1. Demographics

Category	n	%
Sex (n = 50)		
Male	33	66%
Female	12	24%
Prefer not to say	5	10%
MMORPGs played (n = 209)		
Final Fantasy XIV	46	22%
World of Warcraft	25	12%
Runescape	21	10%
The Elder Scrolls Online	18	9%
Guild Wars 1 or 2	17	8%
Other entries	81	39%
How long they've been playing (n = 50)		
5 years or more	31	62%
1 year or more	17	34%
6 months or more	2	4%
Daily time spent playing (n = 50)		
5 to 8 hours	23	46%
1 to 4 hours	21	42%
9 to 12 hours	3	6%
More than 12 hours	3	6%

FINDINGS

For this section of the study, the findings will be divided into the following subsections: The study will talk over the overall results for

- Loneliness
- Depression
- Social Anxiety

Then, it will discuss respondents who fit in:

- All Mental Health Categories
- Two Mental Health Categories
- On Mental Health Category
- No Mental Health Category

Lastly, review:

- Loneliness

Overall results on mental health scales

TABLE 2. Mental health scale's results

Category	n	%
Loneliness (n = 50)		
Moderately Lonely	24	48%
Not Lonely	14	28%
Very Severely Lonely	7	14%
Severe Lonely	5	10%
Emotional or Social Loneliness (n = 50)		
Emotional	16	32%
Equally Social and Emotional	15	30%
Social Loneliness	13	26%
Not Applicable	6	12%
Depression (n = 50)		
Moderate	14	28%
Severe	12	24%
None	8	16%
Mild	8	16%
Moderately Severe	8	16%
Social anxiety (n = 50)		
None	16	32%
Mild	15	30%
Severe	8	16%
Very Severe	6	12%
Moderate	5	10%

All Mental Health Categories

There are a total of 22 respondents who fit inside all three

mental health categories, Loneliness, Depression, and Social Anxiety.

TABLE 3. Combine results of all mental health categories

Category	n	%
Loneliness (n = 22)		
Moderately Lonely	14	64%
Severe Lonely	4	18%
Very Severely Lonely	4	18%
Emotional or Social Loneliness (n = 22)		
Emotional	11	50%
Equally	7	32%
Social	4	18%
Depression (n = 22)		
Severe	9	41%
Moderate	7	32%
Moderately Severe	6	27%
Social anxiety (n = 22)		
Mild	7	32%
Very Severe	6	27%
Moderate	5	23%
Severe	4	18%

Table 3. Continue....

Category	n	%
Daily time spent playing (n = 22)		
5 to 8 hours	12	55%
1 to 4 hours	9	41%
9 to 12 hours	1	5%
Have you made good friends in the game? (n = 22)		
Yes, I have	20	91%
No, I haven't	2	9%
Do you believe your online friends are comparable to real-life friends? (n = 20)		
Yes	19	95%
Not sure	1	5%
Select which applies best for you (n = 20)		
Online & offline friends are equally trustworthy	13	65%
Online friends are more trustworthy	5	25%
Real-life friends are more trustworthy	1	5%
I am unsure	1	5%
Have you met up with online friends in real life? (n = 22)		
Yes, I have	11	50%
No, I haven't, and we haven't discussed	6	27%
No, but plan to in the future	5	23%
Situations in which you've met your online friends (n = 23)		
Small group	7	30%
With one or two people	7	30%
Convention	6	26%
Guild meetup	2	9%
Spent the vacation visiting them	1	4%
In your opinion, does this help with your mood? (n = 20)		
Strongly Agree	9	45%
Agree	7	35%
Neutral	4	20%
Do you play MMORPGs with real-life friends and family? (n = 22)		
No, I don't	14	64%
Yes, I do	8	36%
Do you enjoy playing MMORPGs with real-life friends and family? (n = 8)		
Yes	8	100%
In your opinion, does this help with your mood? (n = 8)		
Neutral	4	50%
Strongly agree	2	25%
Agree	2	25%
Have you been attracted to another player? (n = 22)		
Yes	14	64%
No	6	27%
I don't know	2	9%
Was the feeling mutual? (n = 14)		
Yes	10	71%
No	2	14%
I don't know	2	14%

Table 3. Continue....

Category	n	%
Have you ever had any relationship(s) with other player(s)? (n = 22)		
No	13	59%
Yes	8	36%
I don't know	1	5%
In your opinion, does this help with your mood? (n = 14)		
Strongly Agree	5	36%
Agree	5	36%
Neutral	4	29%
Do you discuss sensitive issues with your friends online? (n = 22)		
Yes, often	13	59%
Yes, but sometimes	5	23%
Yes, but rarely	3	14%
No, not at all	1	5%
Do you feel safe, or have you been provided a safe and supportive environment when sharing such sensitive topics? (n = 21)		
Quite often	12	57%
All the time	8	38%
Sometimes	1	5%
Do you receive or have you been provided a safe and supportive environment to obtain advice and reassurance? (n = 21)		
Quite often	9	43%
All the time	8	38%
Sometimes	3	14%
Not at all	1	5%
What sensitive topics do you share or have conversations about? (n = 95)		
Negative feelings you were feeling at the moment	20	21%
Family problems	18	19%
Work problems	18	19%
Loss of loved ones	14	15%
Sexuality Issues	11	12%
Discrimination	11	13%
Political, current news, philosophy	1	1%
Any life problems	1	1%
Feelings of a loved one	1	1%
In your opinion, does this help with your mood? (n = 21)		
Strongly agree	10	48%
Neutral	7	33%
Agree	4	19%
In your opinion, do you feel like you could be more like yourself online than in real life? (n = 22)		
Yes	18	82%
No	2	9%
Not sure	2	9%
In your opinion, do you feel freer than you would in person? (n = 22)		
Yes	19	86%
Not sure	2	9%
No	1	5%

Two Mental Health Categories

A total of 16 respondents fit inside two out of three mental

health categories: Loneliness, Depression, and Social Anxiety.

TABLE 4. Results of two mental health categories

Category	n	%
Loneliness (n = 16)		
Moderately Lonely	8	50%
Not Lonely	4	25%
Very Severely Lonely	3	19%
Severe Lonely	1	6%
Emotional or Social Loneliness (n = 16)		
Equally	7	44%
Emotional	4	25%
Social	4	25%
Not Applicable	1	6%
Depression (n = 16)		
Moderate	7	44%
Mild	4	25%
Severe	3	19%
Moderately Severe	1	6%
None	1	6%
Social anxiety (n = 16)		
None	7	44%
Mild	6	38%
Severe	3	19%
Daily time spent playing (n = 16)		
1 to 4 hours	6	38%
5 to 8 hours	5	31%
More than 12 hours	3	19%
9 to 12 hours	2	13%
Have you made good friends in the game? (n = 16)		
Yes, I have	15	94%
No, I haven't	1	6%
Do you believe your online friends are comparable to real-life friends? (n = 15)		
Yes	13	87%
No	1	7%
Not sure	1	7%
Select which applies best for you (n = 15)		
Online & offline friends are equally trustworthy	8	53%
Online friends are more trustworthy	3	20%
Real-life friends are more trustworthy	3	20%
I am unsure	1	7%
Have you met up with online friends in real life? (n = 16)		
No, but plan to in the future	9	56%
Yes, I have	5	31%
No, I haven't, and we haven't discussed	2	13%

Table 4. Continue....

Category	n	%
Situations in which you've met your online friends (n = 10)		
Small group	4	40%
With one or two people	3	30%
Convention	2	20%
Dinner/breakfast	1	10%
In your opinion, does this help with your mood? (n = 15)		
Strongly Agree	8	53%
Agree	6	40%
Neutral	1	7%
Do you play MMORPGs with real-life friends and family? (n = 16)		
Yes, I do	12	75%
No, I don't	4	25%
Do you enjoy playing MMORPGs with real-life friends and family? (n = 12)		
Yes	12	100%
In your opinion, does this help with your mood? (n = 12)		
Strongly agree	5	42%
Agree	4	33%
Neutral	3	25%
Have you been attracted to another player? (n = 16)		
Yes	12	75%
No	4	25%
Was the feeling mutual? (n = 12)		
Yes	8	67%
I don't know	4	33%
Have you ever had any relationship(s) with other player(s)? (n = 16)		
No	10	63%
Yes	6	38%
In your opinion, does this help with your mood? (n = 14)		
Strongly Agree	4	33%
Agree	4	33%
Neutral	4	33%
Do you discuss sensitive issues with your friends online? (n = 16)		
Yes, but sometimes	7	44%
Yes, often	6	38%
Yes, but rarely	3	19%
Do you feel safe, or have you been provided a safe and supportive environment when sharing such sensitive topics? (n = 16)		
All the time	11	69%
Quite often	2	13%
Sometimes	2	13%
Rarely	1	6%

Table 4. Continue....

Category	n	%
Do you receive or have you been provided a safe and supportive environment to obtain advice and reassurance? (n = 16)		
All the time	11	69%
Quite often	2	13%
Sometimes	2	13%
Rarely	1	6%
What sensitive topics do you share or have conversations about? (n = 73)		
Negative feelings you were feeling at the moment	15	21%
Family problems	13	18%
Work problems	13	18%
Discrimination	11	15%
Loss of loved ones	10	14%
Sexuality issues	8	11%
Anything and everything	1	1%
Any issues that come up either with another person or something inside the game	1	1%
Relationship issues	1	1%
In your opinion, does this help with your mood? (n = 16)		
Strongly agree	7	44%
Neutral	7	44%
Agree	2	13%
In your opinion, do you feel like you could be more like yourself online than in real life? (n = 16)		
Yes	11	69%
No	5	31%
In your opinion, do you feel freer than you would in person? (n = 16)		
Yes	11	69%
Not sure	4	25%
No	1	6%

One Mental Health Category

There are a total of 6 respondents who fit inside one out

of three mental health categories which are Loneliness, Depression, and Social Anxiety.

TABLE 5. Results of one mental health category

Category	n	%
Loneliness (n = 6)		
Not Lonely	4	67%
Moderately Lonely	2	33%
Emotional or Social Loneliness (n = 6)		
Social	3	50%
Not Applicable	1	17%
Equally	1	17%
Emotional	1	17%

Table 5. Continue....

Category	n	%
Depression (n = 6)		
None	3	50%
Mild	2	33%
Moderately Severe	1	17%
Social anxiety (n = 6)		
None	3	50%
Mild	2	33%
Severe	1	17%
Daily time spent playing (n = 6)		
1 to 4 hours	3	50%
5 to 8 hours	3	50%
Have you made good friends in the game? (n = 6)		
Yes, I have	6	100%
Do you believe your online friends are comparable to real-life friends? (n = 6)		
Yes	5	83%
Not sure	1	17%
Select which applies best for you (n = 6)		
Online & offline friends are equally trustworthy	3	50%
Online friends are more trustworthy	2	33%
Real-life friends are more trustworthy	1	17%
Have you met up with online friends in real life? (n = 6)		
No, I haven't, and we haven't discussed	3	50%
Yes, I have	2	33%
No, but plan to in the future	1	17%
Situations in which you've met your online friends (n = 2)		
With one or two people	2	100%
In your opinion, does this help with your mood? (n = 6)		
Strongly Agree	4	67%
Agree	2	33%
Do you play MMORPGs with real-life friends and family? (n = 6)		
Yes, I do	4	67%
No, I don't	2	33%
Do you enjoy playing MMORPGs with real-life friends and family? (n = 4)		
Yes	4	100%
In your opinion, does this help with your mood? (n = 4)		
Strongly agree	3	75%
Agree	1	25%
Have you been attracted to another player? (n = 6)		
No	4	67%
Yes	2	33%

Table 5. Continue....

Category	n	%
Was the feeling mutual? (n = 2)		
Yes	2	100%
Have you ever had any relationship(s) with other player(s)? (n = 6)		
No	4	67%
Yes	2	33%
In your opinion, does this help with your mood? (n = 2)		
Strongly Agree	1	50%
Agree	1	50%
Do you discuss sensitive issues with your friends online? (n = 6)		
Yes, but sometimes	2	33%
Yes, but rarely	2	33%
Yes, often	1	17%
No, not at all	1	17%
Do you feel safe, or have you been provided a safe and supportive environment when sharing such sensitive topics? (n = 5)		
All the time	3	60%
Quite often	1	20%
Sometimes	1	20%
Do you receive or have you been provided a safe and supportive environment to obtain advice and reassurance? (n = 5)		
All the time	3	60%
Quite often	1	20%
Sometimes	1	20%
What sensitive topics do you share or have conversations about? (n = 19)		
Negative feelings you were feeling at the moment	4	21%
Family problems	4	21%
Loss of loved ones	4	21%
Work problems	3	16%
Sexuality issues	2	11%
Discrimination	2	11%
In your opinion, does this help with your mood? (n = 5)		
Strongly agree	3	60%
Agree	1	20%
Neutral	1	20%
In your opinion, do you feel like you could be more like yourself online than in real life? (n = 6)		
Yes	4	67%
No	1	17%
Not sure	1	17%
In your opinion, do you feel freer than you would in person? (n = 6)		
Yes	3	50%
Not sure	2	33%
No	1	17%

No Mental Health Category

There are a total of 6 respondents do not fit inside any of

the three mental health categories; Loneliness, Depression, and Social Anxiety.

TABLE 6. Results of no mental health categories

Category	n	%
Loneliness (n = 6)		
Not Lonely	6	100%
Emotional or Social Loneliness (n = 6)		
Not Applicable	4	67%
Social	2	33%
Depression (n = 6)		
None	4	67%
Mild	2	33%
Social anxiety (n = 6)		
None	6	100%
Daily time spent playing (n = 6)		
1 to 4 hours	3	50%
5 to 8 hours	3	50%
Have you made good friends in the game? (n = 6)		
Yes, I have	6	100%
Do you believe your online friends are comparable to real-life friends? (n = 6)		
Yes	5	83%
No	1	17%
Select which applies best for you (n = 6)		
Real-life friends are more trustworthy	3	50%
Online & offline friends are equally trustworthy	3	50%
Have you met up with online friends in real life? (n = 6)		
Yes, I have	4	67%
No, but plan to in the future	1	17%
No, I haven't, and we haven't discussed	1	17%
Situations in which you've met your online friends (n = 6)		
Small group	2	33%
With one or two people	2	33%
Convention	1	17%
Came to residence	1	17%
In your opinion, does this help with your mood? (n = 6)		
Strongly Agree	3	50%
Agree	2	33%
Neutral	1	17%
Do you play MMORPGs with real-life friends and family? (n = 6)		
Yes, I do	4	67%
No, I don't	2	33%
Do you enjoy playing MMORPGs with real-life friends and family? (n = 4)		
Yes	4	100%
In your opinion, does this help with your mood? (n = 4)		
Strongly agree	4	100%

Table 6. Continue....

Category	n	%
Have you been attracted to another player? (n = 6)		
No	3	50%
Yes	2	33%
I don't know	1	17%
Was the feeling mutual? (n = 2)		
Yes	1	50%
I don't know	1	50%
Have you ever had any relationship(s) with other player(s)? (n = 6)		
No	6	100%
In your opinion, does this help with your mood? (n = 2)		
Agree	1	50%
Neutral	1	50%
Do you discuss sensitive issues with your friends online? (n = 6)		
Yes, often	2	33%
Yes, but sometimes	2	33%
Yes, but rarely	2	33%
Do you feel safe, or have you been provided a safe and supportive environment when sharing such sensitive topics? (n = 6)		
All the time	3	50%
Quite often	2	33%
Rarely	1	17%
Do you receive or have you been provided a safe and supportive environment to obtain advice and reassurance? (n = 6)		
All the time	3	50%
Quite often	1	17%
Sometimes	1	17%
Rarely	1	17%
What sensitive topics do you share or have conversations about? (n = 21)		
Work problems	5	24%
Family problems	4	19%
Loss of loved ones	4	19%
Negative feelings you were feeling at that moment	4	19%
Discrimination	2	10%
Sexuality issues	1	5%
Tech issues	1	5%
In your opinion, does this help with your mood? (n = 5)		
Agree	4	67%
Strongly agree	2	33%
In your opinion, do you feel like you could be more like yourself online than in real life? (n = 6)		
No	4	67%
Yes	2	33%
In your opinion, do you feel freer than you would in person? (n = 6)		
No	3	50%
Yes	2	33%
Not sure	1	17%

Lonely People

There are a total of 36 respondents who fit inside the Lone

liness mental health category. Following table presents detailed results of this category.

TABLE 7. Results of loneliness mental health category

Category	n	%
Loneliness (n = 36)		
Moderately Lonely	24	67%
Very Severely Lonely	7	19%
Severe Lonely	5	14%
Emotional or Social Loneliness (n = 36)		
Emotional	15	42%
Equally	12	33%
Social	9	25%
Daily time spent playing (n = 36)		
1 to 4 hours	16	44%
5 to 8 hours	16	44%
9 to 12 hours	2	6%
More than 12 hours	2	6%
Have you made good friends in the game? (n = 36)		
Yes, I have	33	92%
No, I haven't	3	8%
Do you believe your online friends are comparable to real-life friends? (n = 33)		
Yes	29	88%
Not sure	3	9%
No	1	3%
Select which applies best for you (n = 33)		
Online & offline friends are equally trustworthy	21	64%
Online friends are more trustworthy	7	21%
Real-life friends are more trustworthy	3	9%
I am unsure	2	6%
Have you met up with online friends in real life? (n = 36)		
Yes, I have	14	39%
No, but plan to in the future	13	36%
No, I haven't, and we haven't discussed	9	25%
Situations in which you've met your online friends (n = 29)		
Small group	9	31%
With one or two people	9	31%
Convention	7	24%
Guild meetup	2	7%
Spent the vacation visiting them	1	3%
Dinner/breakfast	1	3%
In your opinion, does this help with your mood? (n = 33)		
Agree	15	45%
Strongly Agree	13	39%
Neutral	5	15%

Table 7. Continue....

Category	n	%
Do you play MMORPGs with real-life friends and family? (n = 36)		
Yes, I do	19	53%
No, I don't	17	47%
Do you enjoy playing MMORPGs with real-life friends and family? (n = 19)		
Yes	19	100%
In your opinion, does this help with your mood? (n = 19)		
Neutral	7	37%
Strongly agree	6	32%
Agree	6	32%
Have you been attracted to another player? (n = 36)		
Yes	23	64%
No	11	31%
I don't know	2	6%
Was the feeling mutual? (n = 23)		
Yes	15	65%
I don't know	6	26%
No	2	9%
Have you ever had any relationship(s) with other player(s)? (n = 36)		
No	23	64%
Yes	12	33%
I don't know	3	3%
In your opinion, does this help with your mood? (n = 23)		
Agree	9	39%
Strongly Agree	7	30%
Neutral	7	30%
Do you discuss sensitive issues with your friends online? (n = 36)		
Yes, often	16	44%
Yes, but sometimes	12	33%
Yes, but rarely	7	19%
No, not at all	1	3%
Do you feel safe, or have you been provided a safe and supportive environment when sharing such sensitive topics? (n = 35)		
All the time	15	43%
Quite often	15	43%
Sometimes	4	11%
Rarely	1	3%
Do you receive or have you been provided a safe and supportive environment to obtain advice and reassurance? (n = 35)		
All the time	15	43%
Quite often	12	34%
Sometimes	6	17%
Rarely	1	3%
Not at all	1	3%

Table 7. Continue....

Category	n	%
What sensitive topics do you share or have conversations about? (n = 158)		
Negative feelings you were feeling at the moment	33	21%
Work problems	31	20%
Family problems	29	18%
Loss of loved ones	22	14%
Discrimination	21	13%
Sexuality Issues	17	11%
Any life problems one would discuss with close friends or family members	1	1%
Any issues that come up either with another person or something inside the game	1	1%
Feelings of a loved one	1	1%
Relationship issues	1	1%
In your opinion, does this help with your mood? (n = 35)		
Strongly agree	15	43%
Agree	10	29%
Neutral	10	29%
In your opinion, do you feel like you could be more like yourself online than in real life? (n = 36)		
Yes	25	69%
No	8	22%
Not sure	3	8%
In your opinion, do you feel freer than you would in person? (n = 36)		
Yes	26	72%
No	6	17%
Not sure	4	11%

DISCUSSION

For this section of the study, the discussions will be divided into the following subsections: The study will talk over the overall results for:

- All Mental Health Categories
- Two Mental-Health Categories
- On Mental Health Category
- No Mental Health Category

Then, it will discuss respondents who fit in:

- Loneliness

Lastly, contextualize and summarise the overall findings in:

- Overall Discussion

This section will take the mode of all the responses for each subsection.

All Mental Health Categories

64% of respondents were categorized "Moderately Lonely" on De Jong Gierveld Loneliness Scale. Most of them leaned more toward Emotional Loneliness. For the PHQ-9 scale, 41% of respondents came out with a "Severe" level of severity in depression. As for SPIN, 32% of respondents ap-

peared to have "Mild" social anxiety.

Respondents who fit inside this category are more likely to spend around 5 to 8 hours of daily time playing MMORPGs.

Online friendships

Out of 20 responses, 45% strongly agreed that this helps with their mood. This proves to be true for most of the responses to this section of the survey are received with positive reflections. 65% of the respondents believe that online and offline friends are equally trustworthy. 50% of respondents have met up with friends they've made online, while 23% plan to in the future.

Real-life friends and family

Out of 8 responses, 50% felt neutral about this helping with their mood. Out of 22 responses, 64% of the respondents don't play with real-life friends or family.

Attraction, mutual attractions, and dating of other players

Out of 14 responses, 36% of both responses strongly agreed or agreed that this affects their mental health, while 29%

felt neutral. 64% have shown attraction towards another player, with 71% of the 14 responses having their feelings reciprocated. Though, it is worth noting that 59% of all 22 responses stated that they hadn't had any relationships with other players in the game.

Discussions among online MMORPG friends

Out of 21 responses, 48% strongly agreed that this helps with their mood. With 59% of respondents discussing sensitive issues with friends they've made online often, they have also felt safe and secure with the environment they're sharing it in, with 57% being quite often and 43% believe that they have been provided a supportive environment to receive advice and assurance.

There are a total of 95 responses to the sensitive topics they share online.

Other

82% felt like they could be more like themselves online, and 86% believe that they are freer online.

Two Mental-Health Categories

50% of respondents were categorized "Moderately Lonely" on De Jong Gierveld Loneliness Scale. Most of them equally leaned towards both Emotional and Social Loneliness. For the PHQ-9 scale, 44% of respondents came out with a "Moderate" level of severity in depression. As for SPIN, 44% of respondents appeared to have no signs of social anxiety. Respondents who fit inside this category are more likely to spend around 1 to 4 hours of daily time playing MMORPGs.

Online friendships

Out of 15 responses, 53% strongly agreed that this helps with their mood. This proves to be true, for there are 94% of respondents have made good friends in the game. 53% of the respondents believe that online and offline friends are equally trustworthy. 56% of respondents plan on meeting up with their friends online, while 31% have already met their online friends.

Real-life friends and family

Out of 12 responses, 42% strongly agreed that this helped with their mood. 75% of respondents play with real-life friends or family, with all 12 respondents enjoying the time they've spent.

Attraction, mutual attractions, and dating of other players

Out of 12 responses, 33% of all responses strongly agreed, agreed, or felt neutral that this affects their mental health. 75% have shown attraction towards another player, with

67% of the 12 responses having their feelings reciprocated. Though, it is worth noting that 63% of all 16 responses stated that they hadn't had any relationships with other players in the game.

Discussions among online MMORPG friends

Out of 16 responses, 44% strongly agreed that this helps with their mood.

There are a total of 73 responses to the sensitive topics they share online.

Other

69% felt like they could be more like themselves online and believe that they are freer online.

In the Mental Health Category

67% of respondents were categorized "Not Lonely" on De Jong Gierveld Loneliness Scale. Most of them leaned more toward Social Loneliness. For the PHQ-9 scale, 50% of respondents came out with no level of severity of depression. As for SPIN, 50% of respondents appeared to have no signs of social anxiety.

Respondents who fit inside this category are more likely to spend around 1 to 8 hours of daily time playing MMORPGs.

Online friendships

Out of 6 responses, 67% strongly agreed that this helps with their mood. 50% of the respondents believe that online and offline friends are equally trustworthy. 33% of respondents have met up with friends they've made online, while 50% plan to in the future.

Real-life friends and family

Out of 4 responses, 75% strongly agreed that this helped with their mood. Out of 6 responses, 67% of the respondents play with real-life friends or family.

Attraction, mutual attractions, and dating of other players

There were only a total of two responses out of 6 respondents for this section in the questionnaire. One strongly agreed, while the other one agreed that this helps with their mood. 67% have not shown attraction towards another player.

Discussions among online MMORPG friends

Out of 5 responses, 60% strongly agreed that this helps with their mood.

There are a total of 19 responses to the sensitive topics they share online.

Other

67% felt like they could be more like themselves online and 50% believe that they are freer online.

No Mental Health Category

All respondents were categorized as "Not Lonely" on De Jong Gierveld Loneliness Scale. For the PHQ-9 scale, 67% of respondents showed no level of severity in depression. As for SPIN, no respondents appeared to have social anxiety.

Respondents who fit inside this category are more likely to spend around 1 to 8 hours of daily time playing MMORPGs.

Online friendships

Out of 6 responses, 50% strongly agreed that this helps with their mood. 67% of respondents have met up with friends they've made online, while 17% plan to in the future, and 17% have not met up with friends online, nor have they discussed the topic.

Real-life friends and family

Out of 4 responses, all respondents strongly agreed that this helped with their mood. Out of 6 responses, about 67% of the respondents play with real-life friends or family.

Attraction, mutual attractions, and dating of other players

There were only a total of two responses out of 6 respondents for this section in the questionnaire. One agreed, while the other one felt neutral that this helped with their mood. About 50% have not shown attraction towards another player.

Discussions among online MMORPG friends

Out of 6 responses, 67% agreed that this helps with their mood.

There are a total of 21 responses to the sensitive topics they share online.

Other

67% don't believe that they could be more like themselves online, and 50% don't believe that they are freer online.

Loneliness

67% of respondents were categorized as "Moderately Lonely" on De Jong Gierveld Loneliness Scale. Most of them leaned more toward Emotional Loneliness.

Respondents who fit inside the Loneliness category are more likely to spend around 1 to 8 hours of daily time playing MMORPGs.

Online friendships

Out of 33 responses, 45% agreed that this helps with their mood. 64% of the respondents believe that online and offline friends are equally trustworthy. 39% of respondents have met up with friends they've made online, while 36% plan to in the future, and 25% have not discussed the topic yet.

Real-life friends and family

Out of 19 responses, 37% felt neutral about this helping with their mood. Out of 36 responses, 53% of the respondents play with real-life friends or family, while 47% don't.

Attraction, mutual attractions, and dating of other players

Out of 23 responses, 39% agreed that this does help with their mood. 64% have shown attraction towards another player, with 65% of the 23 responses having their feelings reciprocated.

Discussions among online MMORPG friends

Out of 35 responses, 43% strongly agreed that this helps with their mood. With 44% of respondents discussing sensitive issues with friends they've made online often, they have also felt safe and secure with the environment they're sharing it in, with 43% being all the time and 43% believe that they have been provided a supportive environment to receive advice and assurance all the time.

There are a total of 158 responses to the sensitive topics they share online.

Other

69% felt like they could be more like themselves online, and 72% believe that they are freer online.

Overall Discussion

From the findings, two hypotheses were shown to be the results of this study:

H5: Social Interactions inside MMORPGs give supportive and positive validations to those who have or are part of any mental health aspects.

H6: Respondents who don't fit in any mental health category are still affected by the effects of social interactions.

Hypothesis 1

Through all the 50 respondents in the course of this study, all of them either strongly agreed, agreed, or felt neutral in the different sections in assessing the social interactions they had inside the game. None of the respondents disagreed with this assisting in their mental and emotional needs.

Hypothesis 2

There were a total of 6 respondents who didn't fit in any of the mental health categories, but as shown in the tables and discussions corresponding to this category of respondents, it is clear that they still felt as if it aided their mood.

This study mainly focused on three mental health aspects, loneliness, depression, and social anxiety. There are other mental health aspects. This is to suggest that even if they don't fit in any mental health category, they must have other mental health aspects outside the focus of this research.

Loneliness

In [Morahan-Martin and Schumacher \(2003\)](#) study, they've stated that lonely people feel freer online. This is supported by this research as it shows that out of 36 respondents who fit in the category of loneliness, 72% agreed that they do feel freer than they would in person, and 69% of respondents agreed that they feel more like themselves online than in real life.

This also supports [Shaw and Gant \(2004\)](#) study about how loneliness can be reduced simply with the help of conversations a player makes online and communicating with them. In the discussions among online MMORPG friends, 43% of 35 respondents strongly agreed that this assisted with their mood.

CONCLUSION

With the highly social environment, MMORPG games provide gives players the opportunity to be themselves, make friends and acquaintances, or create an environment in which they can call family. Friendship and relationships

that can transcend into the real-world environment.

Hence, overall, in the different categories of social interactions, most participants agreed that this provided assistance, aid, and helped their mental health and day-to-day lives, with these having shown mainly positive and supporting effects.

As presented and visible in the data presented earlier, so far, there are no methods of how social interactions inside MMORPG games negate or invalidate mental health.

Though not all participants strongly agreed or simply agreed that this helped with their mood, it is worthy of note that no participant responded that social interactions didn't help them either. Other answers were simply just neutral but never negative.

LIMITATIONS AND RECOMMENDATIONS

The study only gets a snapshot of what the participants are feeling recently or as of this moment. This study wasn't able to note and pinpoint how they were feeling before, during, and after playing MMORPGs, which basically means that the answers can change, shift, and differ over time. To note, because the study only works mainly on a niche, this also resulted in only being able to work on 50 respondents. The study can also be further advanced if this is worked on in collaboration with psychologists and experts in the field of mental health. This could lead to further research on whether gaming in general, certain games, or certain attitudes whilst gaming could be the reason or factor for either worsening, intensifying, improving, or recovering a participant from their mental health.

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