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Analyzing the effects of Video Games on Social Anxiety and Communication

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Analyzing the effects of Video Games on Social Anxiety and Communication

Senior Project Submitted to

The Division of Science, Math, and Computing of Bard College

by

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Table of Contents

Abstract.....	3
1. Introduction.....	4
1.1 Player-to-player Dynamics in Video Games.....	4
1.2 Genres.....	7
1.3 Anxiety.....	9
1.3a Social Anxiety.....	9
1.3b Social Anxiety and Video Games.....	10
1.4 Communication.....	10
2. Methods.....	12
2.1 Participants.....	12
2.2 Materials.....	12
2.3 Questionnaires.....	19
2.3a The Liebowitz Social Anxiety Scale (Heimburg, et al., 1999).....	19
2.3b The Interpersonal Communication Competence Scale (ICCS) (Rubin et al., 1994). 19	19
2.3c Demographic Questionnaire.....	20
3. Predicted Results.....	20
3.1 Communication.....	20
3.2 Social anxiety and Communication.....	22
3.3 Video Game Experience.....	23
4. Discussion.....	24
References.....	26
Appendix.....	32

Abstract

Those with high levels of social anxiety can struggle with their communication skills, and confidence in communication. By using a virtual platform such as Zoom to communicate with others, individuals with social anxiety have shown decreased levels of anxiety, even noting that they prefer the virtual platform over face-to-face encounters (Yen et al., 2012). Video games can increase this level of anonymity that could be felt through zoom, by removing the ability to see the other individual's face. This gives video games the opportunity to decrease anxiety levels while still requiring a degree of communication. Participants will be randomly sorted into pairs within one of two groups; competitive and cooperative to test if the type of game can affect communication levels.

The Liebowitz Social Anxiety Scale will be used in order to determine the individual's social anxiety level of participants prior to testing (Heimburg, et al., 1999). It is expected that the individuals paired in the cooperative group will have a greater increase in confidence and ability to communicate than those who are paired in the competitive group. Overall it is hypothesized that the results will reflect that those with higher levels of social anxiety as determined by the Liebowitz Social Anxiety scale will have a more significant drop in anxiety in comparison to those who have a lower score in social anxiety.

1. Introduction

The main medium focused on during this experiment is video games. The simple definition of video games is “a game played by electronically manipulating images produced by a computer program on a television screen or other display screen”(Oxford University Press, n.d.). This includes multiple platforms such as computers, devices that use monitors to display the image (playstation, xbox, Wii, etc), phones and other handheld devices (switch, gameboy, nintendo ds, etc).

Video games first reached their peak in the early 1980s, and continued to grow with the increasing advancements in technology (History.com Editors, 2022). When COVID-19 hit, people reported an increase in time spent playing video games, particularly multiplayer games even when it was not their original interest. This could be due to the feeling of isolation and need to connect to other people despite the distancing and confinement (Barr & Copeland-Stewart, 2021).

They are extremely versatile however individuals can have a different playstyle and preference for games based on which device they use to play on, the type of player-to-player dynamics (if any) , and the genre of game they play.

1.1 *Player-to-player Dynamics in Video Games*

The type of player-to-player dynamics changes the mindset of the individual playing the game, and their willingness to cooperate with or go against their fellow players. The style of the game itself can potentially influence the degree of engagement between individuals based upon whether the individual is playing with or facing another player. This can create a changing atmosphere from game to game, even if the individuals playing remain the same.

Competitive games set a player or a team of players against each other with a goal to win. Those who play competitively can be more hostile towards the opposing team, and in some games their own teammates. Depending on the community of games players can be more or less aggressive towards each other when a mistake is made, a point is lost, or when mocked/insulted. Games such as *Counter-Strike: Global Offensive*, *League*, *Overwatch*, *Valorant*, *Rainbow Six Siege*, *Call of Duty*, *Halo* etc. are described by both players and non-players as 'toxic'. Toxic games are more often shooters or first-person shooters where players work together with their team to defeat or kill the opposing team. Within toxic games however, those on the same team are not friendly towards each other and will berate, insult, yell, and curse at their teammates, blaming each other for mistakes made or losses. Overall there is a lack of support within the community which can drive new players or individuals interested in the game if they are unable to handle the hostile environment. Most competitive games have some level of hostility that can change depending on who the individual plays with/against as you are typically pitted against one or more individuals. Those who are especially competitive will have a larger chance of being hostile. Competitiveness in games has been found to increase aggression, however not aggressive behavior. This indicates that their aggression is increased during the gameplay which factors into the more hostile environment despite the need for teamwork (Dowsett & Jackson, 2019). Some competitive games have a ranking system within them that label players as better or worse than other groups. This could further increase stress if playing against a higher ranked team or teammates. In this case, to reduce some anxiety, the competitive game used will not have such a ranking system to allow for a more friendly competition and experience.

Cooperative games can be competitive if working together on teams, however here cooperative games will be defined as a game in which two or more players are working together

on the same team/side for a common goal, with no opposing individual or team. In this case the concern of competitiveness and hostility is lowered as there is no team/person to argue against, although there may be a non-player character (NPC) which the individual is asked to defeat. Examples of games that require degrees of cooperation are; *Portal 2*, *It Takes Two*, *Unravel Two*, *Stardew Valley*, *We Were Here Together* (and continuing franchise line), *Phasmophobia*, and *Warhammer: Vermintide 2*. In these games, while in some you may be doing different things or tasks, there is a shared goal to get to the next level or complete a stage. Some of these games require a second player where the two (or more) individuals each have a specific skill or task that will help them move on as long as it is completed properly and proper communication is established with their teammate.

Single player games do not have any player-to-player communication or relation. The player is given no other real life individuals to interact with within the game, however they might interact with a NPC or AI. These NPC's will still interact with the player and can act as a guide throughout the game, a villain, or a teammate/friend. All dialogue/lines that the NPC has will be scripted and the player is typically given a small amount of choices in how they wish to respond, if any choice at all. The NPC's are typically added to either help the player figure out where to go in order to advance, to increase the emotional environment of the game, or to provide some assistance in combat /action situations. When connections are formed to these characters guilt or anxiety can occur when they are injured, put into a dangerous situation, or a choice is made in which a character becomes upset or angry at the player. As a result, single player games can still be stressful and cause an increase in feelings despite the lack of player-to-player relation.

Based on the player-to-player dynamics, cooperation games would be the best option in terms of friendly communication/interaction. Working together in a more relaxed and friendly

environment would be estimated to be the most encouraging situation for two strangers to interact with each other in order to reach a common goal. For this experiment in order to determine if video games can increase confidence in communication, both participants need to feel at ease enough to communicate. While competitive games do require individuals to work together, there is an opposing team and more than one individual in which the participant(s) would be working with. The competitiveness and potential hostility could inhibit the participants desire to cooperate with their partner, especially if the participant scores higher in social anxiety.

1.2 *Genres*

The genre of the game an individual plays greatly affects their mindset going into the game and how they interact with their fellow players/friends/teammates.

Shooter games, as mentioned earlier, can foster a more hostile environment due to the competitive nature of the game. There are shooter games however, that do not pit you against other players as opponents, but instead against a number of different NPC's such as monsters, villains, or humans that are programmed into the game. Despite the potential tensions of needing to survive or defeat another player in first person shooters (FPS), studies have shown that it doesn't significantly increase an individual's social anxiety (Park, et al., 2016).

Educational games create a fun method of learning to teach a variety of skills to all ages. Video games can create a more relaxed and less stressful environment for individuals to learn. Using a new platform and fantastical world as a means to learn allows the student/learner to learn with less anxiety and offer a new way to absorb information. Games have even been shown to increase the desire of the individual to learn and encourage them to reach out and ask questions when compared to a school environment (Horowitz, 2019), (Jabbar, & Felicia, 2015).

Puzzle games can be similar to educational games but unlike educational games there is no intent to teach a specific skill or lesson. With puzzle games the player either works alone or with another player to complete a variety of puzzles. Depending on the game and age it's directed to, the puzzle game can have a range of tasks and difficulty in order to move onto the next level. Puzzle games can enhance an individual's cognitive, executive, and perceptual skills with enough time dedicated to playing (Oei, & Patterson, 2014). However some puzzle games on phones, tablets, and other handheld devices can make false claims that their games enhance some cognitive abilities/functions despite the lack of research or evidence. This is mainly for entertainment and no expectations for visible or physical evidence of improved cognitive functioning or thinking skills (Simons et al., 2016).

Simulation games tend to be the most demanding and least stressful genre of games. Some simulation games focus on an idealistic life, or farming lifestyle. These games do not always have an immediate short term-goal, but instead allow the player to progress at their own pace and complete smaller missions or tasks. Some of the farming-style games may not even have an end goal but instead allow the player a sort of escape with the ability to create a farm for however long they desire. Survival games could also fall or merge into this genre with games like *Minecraft* where the 'goal' is to survive. However there is no defined end to the game, allowing players to build, mine, farm, upgrade, and explore for their desired amount of time. The emergence of COVID increased some individual's play time in comparison to the amount of time played beforehand. The interest was mainly due to the feeling of escapism, the desire to live some other life such as in role-playing games (RPG) and life simulation games (Prinsen, Eian & Schofield, Damian, 2021).

Puzzle games are likely to be the most stimulating for individuals, particularly if it required two or more people. While requiring individuals to work together, it still remains a less hostile environment than shooter games and attempts to remove the anxiety factor of competition. In shooter games some rivalry between players can build with the question of who has put the most effort in and gotten the most kills or advanced the farthest. Puzzle games require each player to perform some sort of action in order to advance; however even with each advancement players remain on the same level/stage. Simulation games would provide a more relaxing environment, however players are not obligated to work together on the same level that they would within puzzle games. With simulation/rpg games, as long as one player is advancing the other player still benefits without doing any work. At the same time, there is no downside to progressing slowly, or even not progressing at all or focusing on the main objective.

1.3 Anxiety

1.3a *Social Anxiety*

An individual with social anxiety typically feels more fear or anxiety when in situations when judgment can occur or perceived to occur. This can include situations such as meetings/discussions, presentations, going into a work/school environment, interacting with strangers (cashier, new acquaintance, neighbor, etc), or being put in a situation where they become the focus of attention such as answering questions in class. Individuals with social anxiety can have more difficulty communicating with individuals face-to-face due to their increased anxiety, stress, nervousness, and fear of judgment. (Gordon, 2022)

1.3b *Social Anxiety and Video Games*

As a result, interacting with strangers via video games may decrease their unease of interacting with someone unfamiliar to them. Video games remove the need to see someone's facial expressions and read their body language in order to reach a common goal, unlike in a school or work environment where interactions are typically in person. Studies have shown that communicating online/virtually causes them to feel emotionally safer and secure than when they were asked to interact with someone in person (Doorley et al., 2020). It's unclear as to why, however the lack of a physical presence could potentially be boosting their confidence as they may not worry about being perceived a certain way or reading the body language of whomever they are communicating with. Escaping from undesired situations or conflicts is much easier online, which could factor into the decrease in anxiety with online communications. Those who are diagnosed with social anxiety do not see their anxiety vanish online, but the anonymity of online platforms can provide some reassurance and calming factors when engaging with someone unfamiliar or new (Yen, et al.2012).

1.4 *Communication*

Communication is essential in order to function effectively in society. Each individual has their own set of skills within communication, and varying ability to communicate effectively. Those with anxiety, or specifically social anxiety may struggle more to get their ideas across or interact with others with ease (Gordon, 2022). At the same time an individual can easily assume they communicate more effectively than they actually do. As a result it's difficult to calculate how effective communication is achieved. In this case it becomes easier to try and measure how well an individual perceives they are communicating and determine their confidence level in

communication from that. Measures such as the La Trobe Communication Questionnaire (LTQ) and the Interpersonal Communication Competence Scale (ICCS) are self-report questionnaires that are aimed at determining an individual's level of communication. The LTQ is given both to the participant and to the participant's person of choice that they feel close to in order to obtain multiple perspectives. The ICCS is given only to the participant where they are required to evaluate their communication with others by circling an answer that best describes the way in which they would respond to a given situation/statement (Rubin, Rebecca & Martin, Matthew, 1994), (Douglas, Jacinta & O'Flaherty, Christine & Snow, Pamela, 2000).

Based on anxiety and comfort of communication, a cooperative and competitive puzzle game would be best suited for this study. A cooperative game gives the best chance of a low intensity, friendly environment while the puzzle encourages players to communicate and work together to move forward. Competitive games cause the players to work against each other to reach a goal and become victorious, however they must still keep the opposing player in mind. In competitive games there can still be friendly competition if the game does not have high stakes and has no ranking systems to measure a player's ability or label one worse than the other. The best way to measure communication through the questionnaires is to ensure that the paired participants feel comfortable enough to communicate, as it is necessary for the puzzles. Competitive games with only two players encourage communication in order to strategize how to win while preventing your opponent to get to the goal with friendly banter and sabotage. The amount of communication will not be measured since there is no way to ensure that each participant is equally as communicative or extroverted to express their ideas, and so the focus will turn to their comfort and confidence in communication. This study will use games as a medium to see if the lack of face-to-face communication causes enough decrease in anxiety for

individuals to have more confidence in their ability and willingness to communicate. Due to the removal of face-to-face communication those with high social anxiety could benefit from online communication on an even greater scale than those who score lower in social anxiety.

2. Methods

2.1 Participants

1,000 participants will be gathered from a combination of Mechanical Turk (MTurk) and social media platforms such as Instagram and Facebook in order to obtain a diverse group of participants. 250 pairs of two will be randomly sorted for each condition. Participants' ages will have a minimum age of 18, and no age maximum will be set.

2.2 Materials

Participants will be randomly assigned to either the Competitive Group or the Cooperative group. Participants will be randomly paired with another participant in the same group. Before playing the game, all participants will answer questionnaires to determine their comfortability talking to strangers, their confidence in communication, and how difficult they perceive the game to be. Demographic information will be collected during this time.

The Cooperation group will be asked to complete a demo of the game *We Were Here Together* with another random participant during the same time slot. Throughout the game demo participants will be required to work with another individual to complete the puzzles throughout the game, able to only communicate with one another through a walkie talkie in the game. The game will not progress to the next puzzle until the current one is completed, causing a small level

of dependency between participants. Participants will be separated, placed in different rooms for the duration of the game. As a result, no skills in reading body language are required, which could potentially reduce the amount of stress and social anxiety during the collaborative tasks.

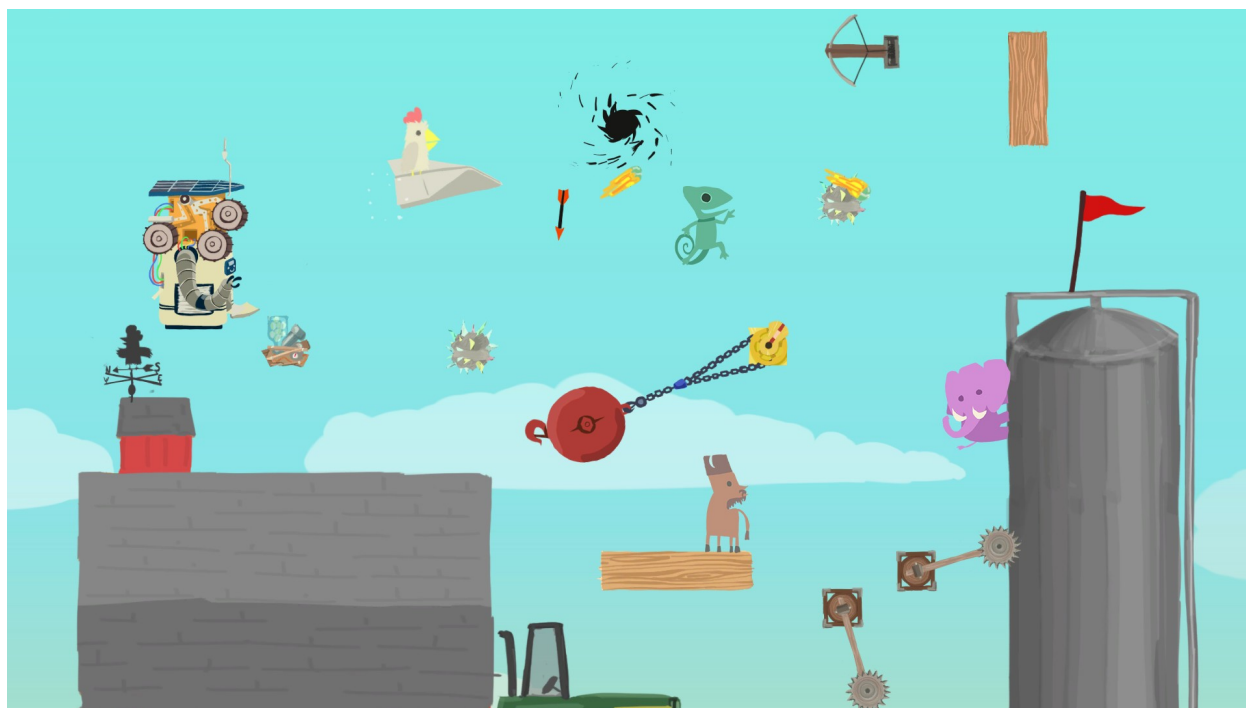
We Were Here Together is an online cooperative puzzle game. The game is set in an isolated arctic environment where you and a partner play as an Antarctic explorer. You and a partner are the only ones stationed out in this isolated area and are required to work together in order to solve numerous puzzles. In the demo, participants will first have a chance to explore their environment while collecting various gears and keys in order to unlock rooms and tools within their research base. Each player will have a walkie-talkie in game, allowing them to communicate with each other regardless of how far apart they are in game or outside of the game. The first puzzle in the demo requires players to be in two separate locations within the game, working together in order to get an antenna to a certain location in order to play the correct radio station, allowing them to clearly hear an individual on the radio. The individual on the radio station, when heard clearly, is asking for help and mentioning several coordinates. This leads to the second puzzle. Players will then have to work together to determine which locations are at each coordinate in order to triangulate where the individual asking for help is. In one room lies a map on a wall with coordinates and several locations. In front of the map are two sets of buttons, one which can move a contraption overlaying the map left or right, and another which moves it up or down. Players must use these simultaneously in order to circle the location at the coordinates mentioned as attempting to move only one direction at a time will reset the pointer and prevent them from circling the location. The players are then directed to get into their vehicle to drive to the location, however the vehicle is not properly fueled. This is the third puzzle, players need to work together to pull a series of numbered levers in order for the fuel

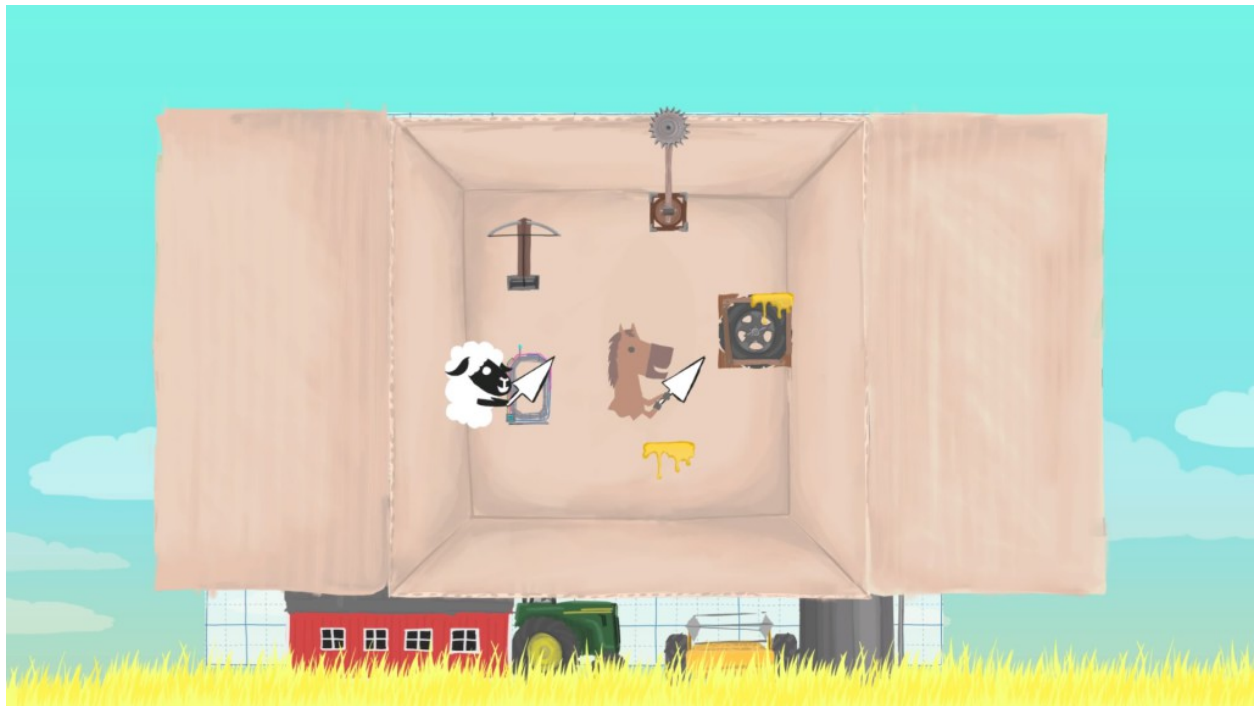
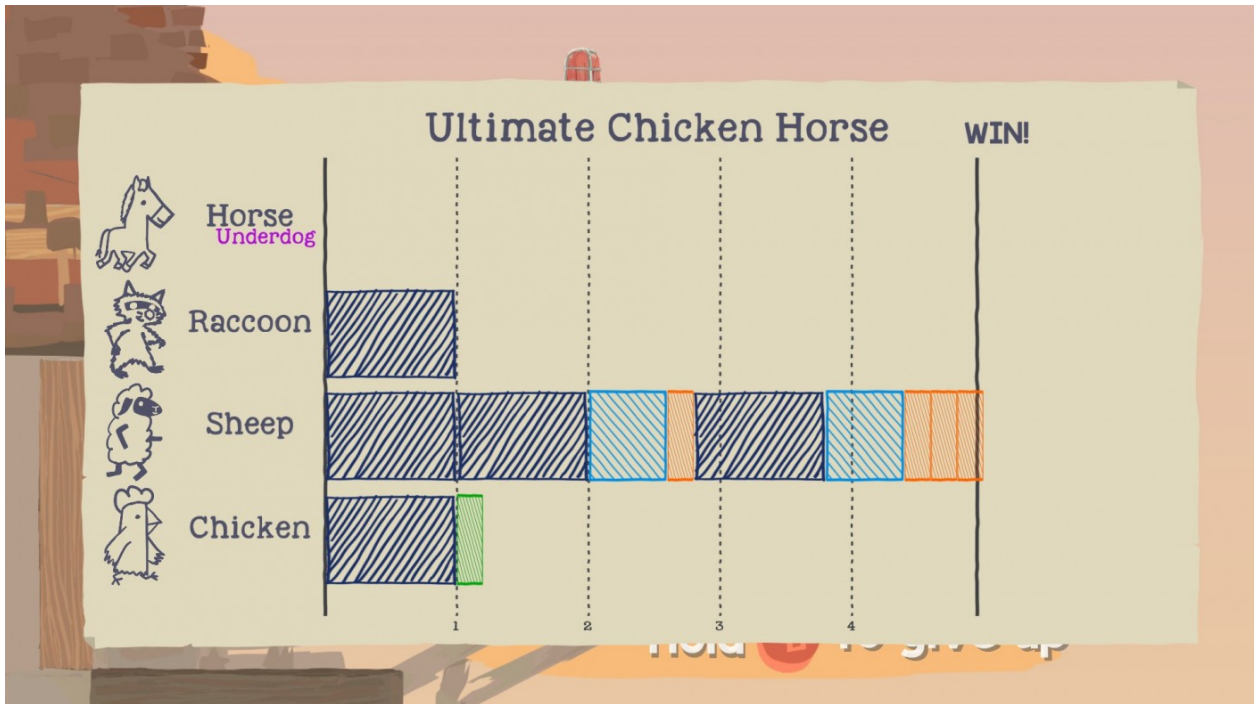
tank to reach the green line, indicating that the proper amount of fuel is in the vehicle. When done correctly the players may 'enter' the car. The demo ends here and so the players are taken back to the title screen to indicate that the game has been completed. Image of the puzzles described are shown below.





Ultimate Chicken Horse is a competitive puzzle-like game that requires participants to use a variety of changing strategies in order to be victorious. In each session, the two participants in the Competitive Group will be asked to sit in different rooms to play the game *Ultimate Chicken Horse* in the ‘Party Mode’. In this game the overall objective is to use a variety of objects as platforms to make it from one side of the map to the other. Participants will have to choose a random object out of a given selection. These objects can range from normal platforms, traps, stairs, hay bales, fans, etc. When one other item is chosen, the other participating players can not choose it and it is removed as an option. After both participants have selected an item they are asked to place it somewhere on the map with the idea that will either assist them in getting to the goal or sabotage their competitor. However that object could sabotage them as well since players share the map. This means that they must carefully plan their moves and layout in order to win. Images of the gameplay described are included below.





2.3 Questionnaires

2.3a The Liebowitz Social Anxiety Scale (Heimburg, et al., 1999)

This a questionnaire designed to measure an individual's social anxiety level looking at measures of total performance and a social interaction score. For this study a shortened version with 24 questions will be used. Participants will be asked to mark whether or not a certain situation causes them fear and how often they avoid it. The possible answers and points on the fear scale will be given as 'none' (0), 'mild'(1point), 'moderate'(2 point), 'severe' (3 points). The responses and points for the avoidance scale will be given as 'Never (0%)' (0 points), 'Occasionally (1-33%)' (1 point), 'Often (34-66%)' (2 points), 'Usually (67-100%)' (3 points). The scores of both categories will be combined in order to obtain an overall score, with a higher score being indicative of an elevated level of social anxiety. The list of questions given to participants can be found in the appendix.

2.3b The Interpersonal Communication Competence Scale (ICCS) (Rubin et al., 1994)

This a survey designed to measure how well individuals perceive their ability to communicate with others. Participants will answer 30 questions (a shortened version of the full questionnaire) in a randomized order that fall under 10 categories with three statements under each category. Participants will be unaware of these categories and only given the statements within them. With each statement the individual will be asked to choose a response based on their communication with others. A scale will be given for each statement ranging from 'Almost always' (5 points) to 'Almost never' (1 point). This survey will be given at the beginning and

end of the testing sessions in order to see if an individual's communication levels have improved as a result of the experiment. A more detailed version of the ICSS questions used can be found in the appendix.

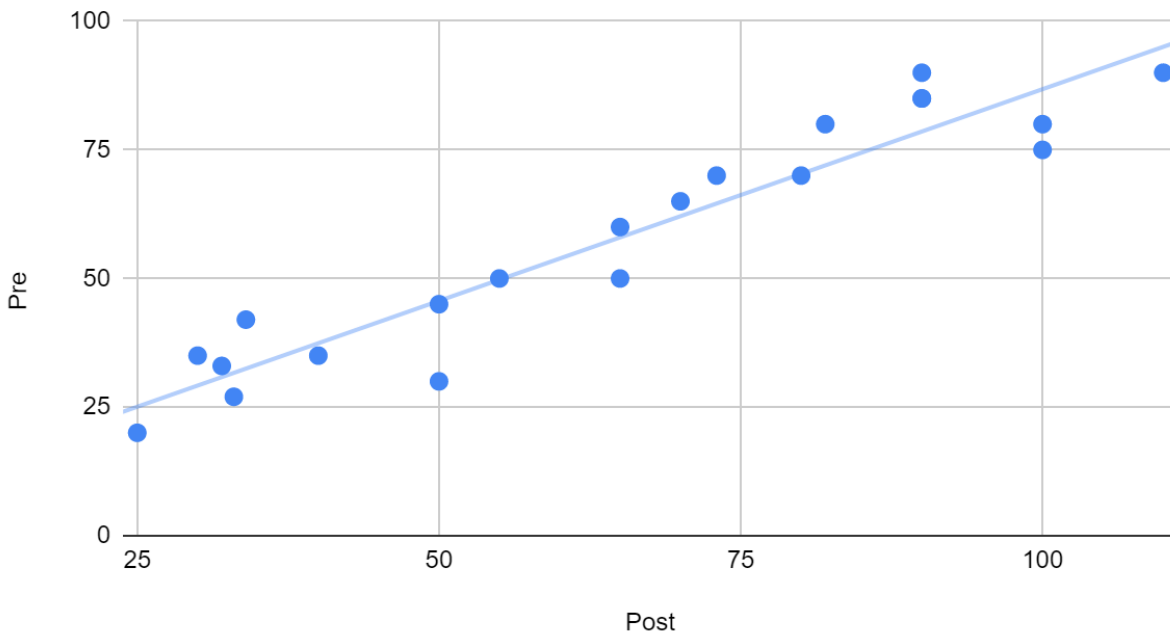
2.3c Demographic Questionnaire

This will be used to obtain information about the demographics of the sample size as well as additional information such as about their background with video games (if they've played these particular games before, if they've played video games before, how long they've played them, etc.). Examples of the questions asked are listed in the appendix.

3. Predicted Results

3.1 Communication

In order to provide support for the hypothesis that communicating through video games will improve confidence in communication, a correlation r test will be conducted between the communication scores pre test and communication scores post test. I predict that there will be a positive correlation, suggesting that as one's original communication scores increase, so will their communication and confidence after the study (Figure 1). This implies that a variable in the study could be improving confidence among participants across the varying communication scores regardless of their original perception of skill.

Figure 1**Pre vs. Post**

To simplify communication measures, a difference score will be created using the pre and post communication scores. Communication scores pre test will be subtracted from communication scores post test in order to obtain an overall score. A positive score will indicate an overall increase in perceived ability to communicate, while a negative score will indicate a decrease in perceived communication. I predict that there will be a positive overall score, indicating that the game experience interacting with a stranger through verbal communication increases their perceived communication score. This new variable will be used later in the regression analysis as a calculated communication variable for means of simplification.

3.2 Social anxiety and Communication

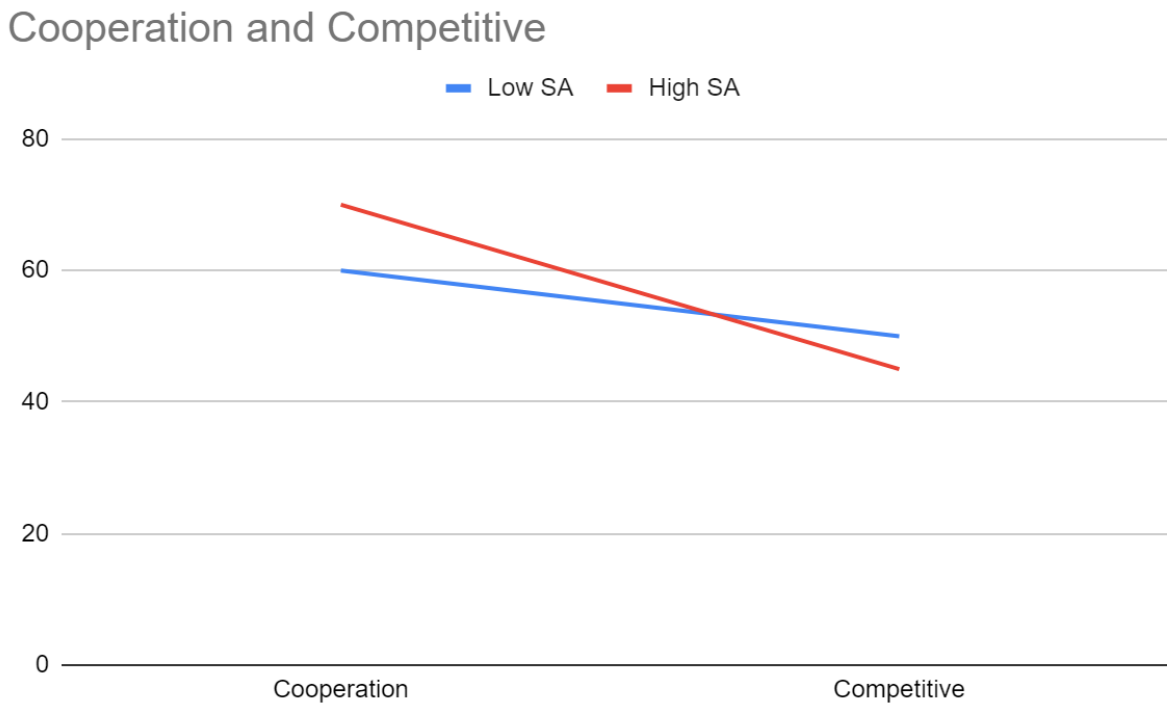
To determine if I can reject the null hypothesis that there is no statistically significant impact of the type of games on social anxiety and its interaction with communication, I will conduct a regression predicting change scores by regressing condition (as a dichotomous variable) and social anxiety scores (as a continuous variable) onto change in communication scores. This measure will analyze the effect of social anxiety on communication via the cooperative and competitive condition.

I predict that those who played the cooperative games will have a larger increase in communication, particularly if they had a higher indication of social anxiety prior to the study. While any individual can show relief from interacting through virtual platforms, research has shown that there is a result of lower social anxiety in subjects with high social anxiety when talking to someone through a virtual platform. This can be due to the anonymity that it provides, especially with high anxiety individuals who are worried about being perceived negatively (Yen et al., 2012).

Based on previous studies, those who have high social anxiety show a decrease in anxiety when communicating through an online platform (such as zoom) versus face-to-face (Yen et al., 2012). Video games do not require seeing the other person's face when talking and allows the individual to be more comfortable in their environment, similar to zoom. Those with social anxiety have the potential to feel less observed knowing that the individual that they're talking to can not see them and analyze their body movement or facial expressions. Less pressure occurs as a result, versus standing in front of an audience and feeling all eyes upon them. As a result, I hypothesize that individuals with high social anxiety levels will show a larger increase in communication than those with low social anxiety levels. I predict this to be true in both the

cooperative and competitive groups (Figure 2). Due to potential tension and hostility that can occur within competitive games, I predict that individuals with both levels of social anxiety will feel more confident with their communication skills within the cooperative group. Working together towards a common goal can cause one to feel more at ease with a stranger. Cooperative games require teamwork in order to complete each puzzle and advance. While frustration can occur when a solution can not be found, it does not reach the potential level of tension from being pitted against each other where there can only be one winner.

Figure 2



3.3 Video Game Experience

In this experiment it becomes important to test and see whether the experience level in games affects a participant's measured communication level. Using an Analysis of Variance (ANOVA) focusing on the experience in games and communication will give a clearer insight into any possibility that experience in games can impact confidence in communication. I predict that people who have an initial greater experience in games will show more confidence in their communication ability prior to the test due to potential experience interacting with strangers on a virtual platform previously to their time in the study. This result could indicate there could be a connection between the length of time an individual has spent playing video games. The more time an individual spends playing video games, the more likely they are to engage with strangers. As this happens more frequently, it can become a less nerve wracking experience and communicating with strangers can become easier. If this is true, then it would be further beneficial to look into video games as a communication medium to increase confidence and reduce anxiety levels.

4. Discussion

Any participants with anxiety or social anxiety will show an even larger increase in communication ability in the video game group due to their ability to talk via a platform that does not require participants to be face-to-face with each other. Those that were in the cooperation group are predicted to have a larger increase in confidence/ability to communicate than the competitive group. In addition, it is predicted that those placed in the competitive group will report a higher feeling of anxiety during or after the trial due to potential desires to win.

Virtual platforms have the potential to be used as an alternate platform for communication or work tasks, and video games work on a similar level. However games can add a more engaging aspect that still allows individuals to work together. The virtual environment can feel like a safe place to engage, particularly when only the voice is used to communicate and the worry about how the individual is perceived is minimized. The focus turns to the game or task at hand, rather than what the other person looks like, their body language, or their facial expressions. Learning to work together or engage with a stranger is difficult, but it can become easier with more exposure, common goals, and an engaging platform.

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Appendix

Pre-Registration



CONFIDENTIAL - FOR PEER-REVIEW ONLY VIDEO GAMES- Social Anxiety and Communication, 2023 (#130674)

Created: 04/30/2023 05:07 PM (PT)

This is an anonymized copy (without author names) of the pre-registration. It was created by the author(s) to use during peer-review. A non-anonymized version (containing author names) should be made available by the authors when the work it supports is made public.

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

Playing a cooperative video game with a stranger can increase an individual's confidence and ability to communicate. Individuals who have high levels of social anxiety will display a greater increase in confidence and ability to communicate than those with lower levels regardless of assignment to cooperative or competitive groups.

3) Describe the key dependent variable(s) specifying how they will be measured.

Participant's levels in communication will be measured based on their answers to the Interpersonal Communication Competence Scale. Social anxiety measures will be measured through a combination of participant's anxiety and fear response levels on the Liebowitz Social Anxiety Scale.

4) How many and which conditions will participants be assigned to?

Participants will be randomly sorted into one of two conditions: competitive or cooperative.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

In order to provide support for the hypothesis that communicating through video games will improve confidence in communication, a correlation r test will be conducted between the communication scores pre test and communication scores post test. To simplify communication measures, a difference score will be created using the pre and post communication scores. Communication scores pre test will be subtracted from communication scores post test in order to obtain an overall score. A positive score will indicate an overall increase in perceived ability to communicate, while a negative score will indicate a decrease in perceived communication. To determine if I can reject the null hypothesis that there is no statistically significant impact of the type of games on social anxiety and its interaction with communication, I will conduct a regression predicting change scores by regressing condition (as a dichotomous variable) and social anxiety scores (as a continuous variable) onto change in communication scores. In this experiment it becomes important to test and see whether the experience level in games affects a participant's measured communication level. Using an Analysis of Variance (ANOVA) with the experience in games and communication will give a clearer insight into any possibility that experience in games can impact confidence in communication.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

We will exclude any participants under 18 years of age.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

Participants will be collected from a series of platforms such as Mturk, Facebook and Instagram until 1,000 participants have been collected for 250 pairs of two for each condition.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

We will include three questionnaires; a demographic questionnaire, a shortened version of the Interpersonal Communication Competence Scale (to measure perceived ability to communicate), and a shortened version of the The Liebowitz Social Anxiety Scale.

Informed Consent Form

Informed Consent

Principal Investigator

Ana Quigley, Student
Psychology Program
Bard College

Project Title

Analyzing the Effects of Cooperative Video Games on Social Anxiety and Communication

Introduction

You are being asked to be a volunteer in an experiment conducted by members of the Psychology Program at Bard College. Please read the following information carefully prior to proceeding to the experiment.

Purpose

The purpose of this experiment is to better understand the effects of cooperative and competitive games on social anxiety and communication. Through playing video games an individual can interact with dozens of strangers, occasionally being asked to work together or play against them. Do these interactions have any effect on anxiety? Do these games cause more anxiety? Can they cause one to improve their confidence and ability to communicate? This study will help identify any potential connections between communication, video games, and anxiety as well as what implications the results could indicate.

Study Procedure

If you decide to participate, you will be asked to complete a questionnaire that provides us with basic demographic information including your age, race, and gender. Next you will be given two additional questionnaires to determine your level of social anxiety and your perceived level of communication. You will then be sorted into one of two groups and paired with another individual. You will not be in the same room as your partner, however you will be asked to play either a competitive or cooperative game with them that has been selected in advance. The game will be explained to you after your group has been chosen in order to gain a basic understanding of the gameplay. After playing the game for roughly 30 minutes you will once again be asked to complete the communication questionnaire. Following your participation, you will be provided with information about the specific hypothesis in this study. **Participation in this study is completely voluntary and you are free to stop at any time without penalty.**

Risks and Discomforts

There is minimal potential risk and discomfort from participating in this study. Due to playing with a potential stranger, anxiety levels may be temporarily increased, but not to any degree of danger.

Benefits

You are not likely to benefit directly from participating in this study. However, what we learn from this experiment will provide more insight to the benefits of using games as a less anxiety inducing learning and communication platform.

Compensation

You will receive \$3.50 in compensation for completing the task. This task should take approximately 30 minutes.

Exclusion/Inclusion Criteria

Individuals must be over the age of 18 to participate in this study.

Confidentiality

Once you have completed the experiment, your data will be automatically assigned a participant ID code. There will be no way to directly link your name with your data. In addition, study data will be kept on password-protected folders and only study personnel will have access to these files. No personally identifying information will be collected electronically or appear when the results of the study are presented or published.

Questions

If you have any questions about your rights as a research participant, you may contact the Principal Investigator, Ana Quigley, student at aq7931@bard.edu or their advisor Kristin Lane at lane@bard.edu

By clicking the box below, you affirm that you have read and understood the content of the consent form. You must be 18 years or older in order to participate and continue on with the study. All questions must be answered as honestly and accurately as possible. Thank you for your time and cooperation.

Signature of participant:

Debrief Form

Debrief form

Thank you for participating in this study.

In order to get the information I was looking for, I withheld some information about some aspects of this study. The full hypothesis was omitted in order to remove any influence over your answers to the questionnaires.

With the experiment now being complete I can disclose the hypothesis and detailed intent of the study.

The goal of this study was to see if individuals marked with low or high social anxiety were affected differently in terms of communication based on the condition of cooperative or competitive games. It is hypothesized that while there would be an increase in communication levels for both anxiety levels, those with high anxiety will show a more statistical increase in communication skills.

If you believe your information to be inaccurate, or wish it to be excluded for any reason, please mark it below. Choosing to withdraw your data from the experiment will not result in any penalties or loss of compensation that has been offered to you.

Any information provided will remain confidential. No information involving names were gathered and your data will only be shared with researchers while being kept on a password protected computer.

Please check the appropriate box below if you do, or do not, give permission to have your data included in the study (if you do not give permission, your information will not be retained or used).

Yes, you may use my data

No, you may not use my data

Questionnaires

1. Liebowitz Social Anxiety Scale (Post and pre test) (Heimburg, et al., 1999)
 - a. FEAR OR ANXIETY RATING

- i. 0 = None
- ii. 1 = Mild
- iii. 2 = Moderate
- iv. 3 = Severe

	ANXIETY	FEAR
1. Telephoning in Public		
2. Participating in small groups		
3. Eating in public places		
4. Drinking with others in public places		
5. Talking to people in authority		
6. Acting, performing or giving a talk in front of an audience		
7. Going to a party		
8. Working while being observed		
9. Writing while being observed		
10. Calling someone you don't know very well		
11. Talking with people you don't know very well		
12. Meeting strangers		
13. Urinating in a public bathrom		
14. Entering a room when others are already seated		
15. Being the center of attention		
16. Speaking up at a meeting		
17. Taking a test		
18. Expressing a disagreement or disapproval to people you don't know very well		
19. Looking at people you don't know very well in the eyes		

20. Giving a report to a group		
21. Trying to pick up someone		
22. Returning goods to a store		
23. Giving a party		
24. Resisting a high pressure salesperson		
TOTAL		

2. Demographic Questions

- a. How old are you? (fill in the box)
- b. What gender do you identify with?
 - i. Female
 - ii. Male
 - iii. Transgender
 - iv. Nonbinary
 - v. Other (fill in the box)
 - vi. Prefer not to answer
- c. What race do you identify as?
 - i. Black/African
 - ii. White/Caucasian
 - iii. American Indian or Alaskan Native
 - iv. Native Hawaiian or Pacific Islander
 - v. Asian
 - vi. Other

- vii. Prefer not to say
- d. What is your first language?
 - i. English
 - ii. Spanish
 - iii. French
 - iv. Chinese
 - v. Other
- e. Have you ever played the game *We Were Here Together* before?
 - i. Yes
 - ii. No
 - iii. I don't know
- f. Have you ever played the *Ultimate Chicken Horse* before?
 - i. Yes
 - ii. No
 - iii. I don't know
- g. Have you played Video Games before?
 - i. Yes
 - ii. No
- h. How much experience do you have with video games (on any device)?
 - i. No experience
 - ii. Very little
 - iii. Some experience
 - iv. A lot of experience

- i. If you have experience with video games, how long have you been playing them?
 - i. I don't have any experience
 - ii. Weeks
 - iii. Months
 - iv. Around a year
 - v. More than a year
- j. Would you label yourself as more of an extrovert or introvert?
 - i. Extrovert
 - ii. Introvert
 - iii. Prefer not to answer
- k. How often do you use your phone or other electronics on a daily basis for non-work related purposes?
 - i. Little to none
 - ii. A moderate amount
 - iii. Very often
- l. How anxious do you feel about working with another person whom you may not know?
 - i. 1. Not nervous at all
 - ii. 2. Somewhat anxious
 - iii. 3. Extremely anxious
- m. Did you recognize or know the individual you were paired with?
 - i. Yes
 1. If yes, how well did you know them?

- a. Not very well/acquaintances
 - b. Somewhat well (classmates/coworkers)
 - c. Very well (friends)
 - ii. No

3. Interpersonal Communication Competence Scale (ICCS) (Rubin et al., 1994)
 - a. *Instructions:* Here are some statements about how people interact with other people. For each statement, circle the response that best reflects YOUR communication with others. Be honest in your responses and reflect on your communication behavior very carefully.

If you ALMOST ALWAYS interact in this way, circle the 5.

If you communicate in this way OFTEN, circle the 4.

If you behave in this way SOMETIMES, circle the 3.

If you act this way only SELDOM, circle the 2.

If you ALMOST NEVER behave in this way, circle the 1.
 - i. SELF DISCLOSURE
 1. I allow friends to see who I really am
 2. Other people know what I'm thinking
 3. I reveal how I feel to others
 - ii. EMPATHY
 1. I can put myself in other's shoes.
 2. I don't know exactly what others are feeling.
 3. Other people think that I understand them

iii. SOCIAL RELAXATION

1. I am comfortable in social situations.
2. I feel relaxed in small group gatherings.
3. I feel insecure in groups of strangers.

iv. ASSERTIVENESS

1. When I've been wronged, I confront the person who has wronged me.
2. I have trouble standing up for myself.
3. I stand up for myself.

v. ALTERCENTRISM

1. My conversations are pretty one-sided.
2. I let others know that I understand what they say.
3. My mind wanders during conversations.

vi. INTERACTION MANAGEMENT

1. My conversations are characterized by smooth transitions from one topic to the next.
2. I take charge of conversations I'm in by negotiating what topics we talk about.
3. In conversations with friends, I perceive not only what they say but what they don't say.

vii. EXPRESSIVENESS

1. My friends can tell when I'm happy or sad.
2. It's difficult to find the right words to express myself.

3. I can express myself well verbally.

viii. SUPPORTIVENESS

1. My communication is usually descriptive, not evaluative.

2. I communicate with others as though they're equals.

3. Others would describe me as warm.

ix. IMMEDIACY

1. My friends truly believe that I care about them.

2. I try to look others in the eye when I speak with them.

3. I tell people when I feel close to them.

x. ENVIRONMENTAL CONTROL

1. I accomplish my communication goals.

2. I can persuade others to my position.

3. I have trouble convincing others to do what I tell them to do.