

Offline versus online multiplayer gaming experience: A comparison  
study about social deduction games

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## Abstract

**Background:** The effect of playing together on the overall gaming experience have been studied extensively, but research have not compared board games and video games with each other yet. The aesthetics and mechanics of the games are different, while the degree of communication with other players is limited when playing online compared to offline. Players may experience losing in various ways depending on which condition they are in, especially when their loss occurs due to other players voting them out of the game.

**Aims:** This study aims to find out how similar playing with a commercially available game's offline versus online version actually is, for achieving a better understanding of player experience across both platforms. The experience of being voted out by other players was expected to be influenced by other factors besides playing offline versus online, such as their general sensitivity to rejection, intrinsic motivation to win, engagement towards the game, social connectedness with the group and amount of time invested into a round of play.

**Methods:** A quasi-experimental research design was applied, where participants were able to choose between playing offline or online. A total of 58 players gathered either in person at the University of Twente or through Microsoft Teams in 8 groups of 6-8 (4-4 groups in each condition). They filled out a short questionnaire before and an extensive one after the experiment. One session consisted of three rounds of play with The Menace Among Us (offline condition) or Among Us (online condition).

**Results:** The only significant difference between playing offline versus online was found in the case of social connectedness. Players in the offline setting were perceiving a higher sense of belonging to their group than players in the online setting. Besides that, motivation to win influenced the experience of being voted out significantly, meaning that those players who were highly determined to win, experienced being voted out more negatively.

**Discussion:** Playing offline versus online was found to be quite similar in the context of this study, but socially it is a different experience. Also, motivated players have a harder time when losing a game, as they are concerned more about the final outcome. Although the current study has some limitations and its results cannot be generalized to the larger population, it may serve as a preface for future studies to come.

## Introduction

Let's play! This sentence is probably being said a couple of thousand times every day, when people get together with the intention of gaming. The setting of a game can either be offline or online. Both options provide a source of joy and entertainment for the participating parties. Board game history goes back to ancient times and the use of it is so wide-spread, that most likely every person comes across at least one board game in their lives. (Kurke, 1999). They can even be embedded in our cultures and contribute to the development of personality traits as growing up (Bar & Otterbring, 2021). Playing board games was always a popular way to spend leisure time with friends and family, providing an entertaining way to socialize and connect with others in person (Woods, 2012). A digital alternative to board games emerged as technology was advancing at a rapid speed, when video games were introduced in the late 1950's (Malliet & De Meyer, 2005). Opposed to board games, the digital playground is accessed individually from the player's home, which can make the experience feel lonely at times, even when joined by others in the same game (Nebel & Ninaus, 2022). Since their appearance on the commercial market, video games are often criticised for causing harm, despite their massive popularity (Starcevic & Billieux, 2018). Comparing the two in the current study contributes to the on-going debate by putting the widely accepted board game format and the often-judged video game format side-by-side to see how similar - or different - their influence on player experience actually is.

The fundamental idea of most games where two or more people are competing is to accomplish various objectives, and eventually secure winning by outperforming everyone else, which comes with the inherent result of loss for the other player(s). When a loss occurs, it might evoke a negative emotional state in the player, as an increased level of stress and decreased level of arousal is experienced (Cox & Kerr, 1990). In multiplayer video games, losing often translates to the virtual character's death, intensifying not only the player's anxiety, but potentially resulting in a heated

dispute with other players as well (Sjöblom & Aronsson, 2012). This dynamic is very likely applicable to social deduction games too, as they provide an unusual setting with a thrilling atmosphere.

Social deduction games offer an asymmetrical environment, where two unequally distributed teams are competing against each other, with the goal to complete various objectives with their playable characters that have different fictional traits assigned (Osawa et al., 2019). The games used in this study are 'Among Us (video game) and 'The Menace Among Us' (board game). The premise of both games is that players have to solve certain tasks on a spaceship collaboratively, while trying to unmask traitors among them, who are sabotaging the mission in secret. The games include a so-called voting phase, where players are allowed to debate about who they think might be the traitor(s) and exclude someone from the game through democratic voting. This phase is in the focus of the current study, because it provides a great platform for investigating the connection between psychological factors, player experiences and the emotional impact of losing.

Being excluded from the group during the playtime is a kind of social rejection and each person has a different level of sensitivity towards it when it occurs. Games can be great research tools for measuring emotional and behavioural effects of rejection, as proposed by Tuijman et al. (2021). Therefore, in the current study, rejection sensitivity serves as a base variable for determining the extent to which negative emotions manifest in players who got voted out of the games. Social rejection threatens humans' sense of belonging to the group as well as their social acceptance within the group (Batara, 2014). The perceived social connectedness they have with the group could influence their perception of rejection and exclusion from the game after being voted out.

Playing an asymmetrical game with several others introduces competition, which adds another layer of excitement for the players. Vorderer et al. (2003) suggest that a game is found to be more enjoyable when this element is present, as the success of winners can motivate them to continue, while a dissatisfactory outcome may elicit negative emotions, yet still encourage losers to perform better the next round. Not only the outcome of the game, but the time spent playing may

also have an effect on how motivated players become after finishing a round. Players' motivation to win could influence their behaviour during the playtime and possibly have an impact on how they perceive losing or being voted out. Engaged players are more motivated and are more likely to play for an extended period of time according to Hoffman and Nadelson (2009). Experiencing flow and immersion in the game creates arousal in the player, while having low interest decreases the level of engagement (Madeira et al., 2013). It is assumed that engagement influences the player experience and that playing offline versus online may elicit different levels of engagement in the players.

For answering the proposed questions, a quasi-experimental research design was applied, where participants were able to choose between the two conditions (offline and online) themselves. 4-4 groups of 6-8 players (a total of 58) took part in the research by filling out two questionnaires and playing through 3 rounds of the game in the allocated setting. A gaming session was about 90 minutes long on average and the questionnaires could be filled out under 30 minutes in total. Demographic characteristics of the sample had an approximately equal distribution between the two conditions.

This study focuses on the voting phase in social deduction games to understand the impact of losing, which occurs when a participant gets excluded from the game by the will of other players. This is of particular interest because it is the only part of the game where verbal interaction takes place among participants, and the outcome depends on everyone equally. The goal of the research is to explore the similarities and differences between multiplayer gaming experiences in various scenarios. By doing so, the emotional and psychological impact of playing together with others and losing in offline versus online gaming environments is explained, bridging the gap in literature, as this comparison has not been studied before.

## Theoretical framework

### Gaming

The gaming industry is the most lucrative one in the entertainment sector, even bigger than Hollywood and the music industry combined (Richter, 2020). The main reason for this is that we humans like to engage in behaviours that result in amusement, enjoyment and simply having fun (Van Vleet & Feeney, 2015). Games also have a self-motivating effect, as they present players with an adequate amount of challenge, prompting them to use various strategies, while providing assistance in the development of knowledge and acquisition of useful skills (Sears & Jacko, 2007). There are two types of games: solo and multiplayer. Playing solo is quite enjoyable, with a large catalogue of great games designed solely for this purpose. Although, studying solo games is out of the scope of this research, as these experiences don't involve tight cooperation, collaboration and communication with other players. Engaging in playing with multiplayer games creates valuable opportunities for researchers to measure various social phenomena, which simply do not occur when playing alone.

Most games are shared experiences, where multiple players can engage with the content at the same time. Despite the many different genres and styles, perhaps the most significant distinction between multiplayer games is whether they are played offline or online. Board games are always played by all participating members being in the same offline physical space, while online video games are most often played in an individual setting (Zagal et al., 2000). Video games are often criticised of causing harm to young users (Sacks et al., 2011), but research shows that they have a lot more benefits if used properly (Halbrook et al., 2019). These include better problem-solving ability, increased openness in social situations and enhanced well-being (Adachi & Willoughby, 2017). Board games have also shown great potential for strengthening communication and boosting interactions between participating individuals (Zagal et al., 2006).

Quite a number of studies explored the effects of video games or board games respectively, but only a couple of them investigated both at the same time (Mandryk & Maranan, 2002; Gashaj et al., 2021). Looking at offline versus online gaming experiences is important to have a better understanding about the influences these platforms have on the players. Prior research involving either offline or online games often used custom-designed games for the sole purpose of the given study (Coller et al., 2009). These games while provide valuable insight about a specific topic, cannot be viewed as a casual real-life gaming experience, because participants would have never been able to come across the stimuli themselves. However, it is important to analyse commercially available games and related scenarios that may occur in real life, because they have a high chance to be encountered by casual players. Looking into the different experiences with offline versus online gameplay can shed light on the social and psychological aspects of gaming in relation to topics such as social interaction and cooperation. When the medium for communication changes, it immensely influences how players collaborate with each other (Clark & Brennan, 1991). Having data about player behaviour across the two conditions helps to better understand how this differs between offline and online platforms exactly.

Besides academic relevance, there are certain economic considerations by businesses involved in creating games. The gaming industry will be able to draw from the conclusions of the current study, as many game producer companies are creating video games based on successful board games and vice versa (Eyles, 2022; Potvin, 2022). The current research can help them in understanding player reactions to specific game elements across both platforms, and give them an idea about which elements are worth transferring between the two. Although, it is essential to recognize that playing offline versus online have distinctively unique features, - such as the game environment, controls, aesthetics, player interactions, etc. - which will unavoidably change players' experience. Presumably, even the experience of winning and losing could be altered by playing the same game offline versus online. Traditionally, a whole chain of events determines who wins and who loses at the end, depending on the game's theme, player interactions, the rules and some luck



(Chircop, 2016). Social deduction games twist this formula by giving players the complete power to decide who should lose, which creates an interesting dynamic from start to finish.

### The experience of losing in social deduction games

Social deduction games usually involve two competing teams – the ‘good’ and the ‘evil’ -, where the number of team members on both sides is unequal, player roles are assigned randomly at the start and are kept hidden from other players (Williamson, 2023). Using the games included in this study as an example, it means that players in the larger team (crew members) do not have any knowledge about who else is with them, and their main goal is to find it out. The smaller team (traitors) do have this information, and their main goal is to eliminate crew members before they could realise who is working against them. Besides being eliminated by traitors, anyone can lose during the voting phase, which is an inevitable part of these games. Here players are able to vote for someone else individually in a democratic manner, and the player receiving the most votes is excluded from the game. Before the voting happens, players can talk about their suspicions in an open discussion, and try to convince each other about their belief of which player should be voted out. At this crucial stage, players trust their own strategies and sometimes gut feelings based on their own experiences and observations during the playtime, rather than actual facts provided to them about other participants (Wiseman & Lewis, 2019). This part of the game will be analysed in the current study, as this is the only phase where communication is allowed between players. They have the chance to defend themselves and turn the situation around, but in the end, they often fail to do so. Both crew members and traitors become victims of this situation, as anyone can be suspicious to other players. Traitors are also able to paint a crew member in black with false accusations, creating doubt in other crew members and eventually convincing them to vote for an innocent player. When someone is voted out, it means that their defensive arguments are ignored, and the player has to leave the game. This might affect the player negatively, as their goal to stay alive until the end is not reachable anymore.

## Negative gaming experience

When people start playing a game, they initially want to experience something enjoyable that emphasizes positive emotions, such as excitement, amusement or wonder (Lazzaro, 2009). Although, competitive games unavoidably come with the risk of losing, which can evoke negative feelings in the player, such as frustration (Johnson et al., 2015). Losing as a team in a competitive game can also affect social connection between the members in a negative way, as it diminishes team moral (Hudson & Cairns, 2016). It affects people on an individual level as well, as they tend to evaluate themselves negatively after losing in competitive situations, which lowers their self-esteem (Meeker, 1990). Despite these negative consequences, playing games is a positive experience overall, and going through these emotions is part of the ride, they do not scare players away from coming back (Bopp et al., 2016). However, these negative reactions are undeniably there under the surface, even if their impact is small. The current study intends to discover if there is any relationship between negative gaming experiences that are the result of losing and certain factors that may predict the intensity of such experiences.

### *Rejection sensitivity*

Social relationships and the feeling of belongingness are highly essential for the well-being of humans, as there is a constant instinctive need for interpersonal interactions and forming bonds with each other (Baumeister & Leary, 1995). However, one's intention to form a social connection is not always successful, such as when a person is ignored by others or is being excluded from a social scenario, which results in the experience of social rejection (Leary & Cottrell, 2013). In case this occurs frequently in someone's life, a sensitivity towards rejection can develop (Butler et al., 2007). Rejection sensitivity is basically a defending mechanism based on past vulnerabilities, that makes people more cautious about future relationships by preparing them for the possibility of being rejected (Berenson et al., 2009). Experiencing rejection in real life is far more impactful on a person than being rejected in a game of course, but this variable is not only measured in the context of the game, but also beforehand, where participants' general sensitivity towards rejection is the question.

Social deduction games use rejection as a tool for creating tension between the players. Excluding someone from the round - often based on false accusations - leads to an environment, where it is hard to trust anybody, and no one is safe. Being voted out might leave players with a negative feeling, because they become a vulnerable victim in a group, which they want to belong to. This situation may evoke strong negative emotions in the player, such as social anxiety, shame or embarrassment (Leary, 2015). Tuijnman et al. (2021) have found that rejection in a video game has a stronger negative impact on those who are more sensitive to rejection. Therefore, it is presumed, that those who generally have a higher sensitivity to rejection, will experience being voted out in social deduction games more negatively.

H1. Players with a high-level of rejection sensitivity experience being voted out in a social deduction game more negatively than players with a low-level of rejection sensitivity.

### *Social connectedness*

Humans have a basic need for social connections, hence they are trying to avoid rejection at all times (Leary, 2015). All multiplayer games involve some level of social interaction, providing a great way to connect with others. In fact, playing table-top role-playing games have a positive effect on social skills by helping people to become more confident and less anxious about their actions (Abbott, et al., 2021). In addition, fostering social relationships is sometimes more important than what the game is about or what the outcome will be. Many participants from a study by Buyukozturk & Shay (2022) have reported that the most important factor when playing games is the shared experience, regardless of the platform being offline or online. The game itself is simply the excuse to spend some time together. Playing certain types of games can result in a higher level of perceived social connectedness. A study comparing asymmetrical (like social deduction games) and traditional, symmetrical games found that playing asymmetrical games can result in a higher level of perceived social presence and connectedness than playing symmetrical ones (Harris & Hancock, 2019). Taking into account the previously mentioned decline in team moral following a loss, it is assumed that

players being voted out will experience some degree of negative emotions, and their level of social connectedness might play an essential role in determining how deeply they will be affected.

H2. Players with a high-level of social connectedness experience being voted out in a social deduction game more negatively than players with a low-level of social connectedness.

### *Motivation to win*

Despite the presumed differences between playing with others in a social setting or through a computer, players' motivation to win the game could also influence their perspective on being voted out. The level of motivation does not necessarily depend on external rewards, players often want to perform well instinctively. People become interested in the outcome of a game and make more effort to perform well, when they are presented with a competitive challenge that seems achievable for them (Meng et al., 2016). In case a game sets reasonable goals and players feel motivated to progress, their performance will increase as well (Kilduff, 2014). Generally speaking, board games and video games both offer the chance to replay them, thus competing players are able to change their approach between rounds during the same gaming session. The level of motivation can also change during consecutive rounds in regard of the outcome of the previous round. An experiment conducted in virtual reality found that underperforming players were more motivated in competing and increase their chances to win than those who were on the top at the moment (Ventura et al., 2019). The formula for winning has been found by Reeve et al. (1985), who concluded that the combination of actual competitive performance and the level of motivation to not lose the game yielded victorious results for players. Although, luck is also often required, especially when all players are on similar levels of competence and motivation (Chircop, 2016). It is arguable that people having low or no interest in winning will not perform to their highest potential, and therefore the outcome of the game will not have a significant influence on their experience.

H3. Players with a high-level of motivation to win experience being voted out in a social deduction game more negatively than players with a low-level of motivation to win.

### *Invested time*

Players' intrinsic motivation to win likely influences their experience of losing, and the level of this motivation might increase as they progress further in the game. When more time and effort is invested, players' motivation to win also goes up. A study on auction bidders have found that their desire to win increases as time passes and only a few of them remain in the race (Malhotra, 2010). Every competition ends with most participants losing, thus the majority of people have more experience in losing than winning. However, it seems like not every player feels the same about it, and some are more upset than others depending on their final ranking. A study by Medvec et al. (1995) concluded that silver medalists were less satisfied with their result than bronze medalists in the case of Olympic athletes. This is due to the fact that coming in at second place is just one step behind winning, while athletes being third could see it as at least they got to stand on the podium.

Games have to carefully balance the level of challenge, because failure cost time for the players, and the more they are feeling lost, the bigger the chance is that they are going to give up playing (Juul, 2010). Losing streaks in competitive online games often result in disengagement, although winning a lot consecutively was found to end in similar fashion (Kou et al., 2018). Scientific research is limited regarding this topic, but online forums provide valuable insight on the view of gamers. It is simply anecdotal evidence, but users in the board games subreddit agreed that if they would know in advance that they are not able to win, they would rather drop out and lose right away than playing it through and pursue being ranked as second or lower. They pointed out that it might be because of the lack of tension, - which is essential for players to strive further - and agreed that the game loses its essence without it (Reddit, 2022). Social deduction games are built around tension, which is generated through the constant uncertainty of other players' roles. Arguably, this tension only increases during the playtime, as the number of crew members shrink. With that, the likelihood of winning for the traitor(s) gets bigger, but crew members also have better chances to

find them, as there are less options to choose from during the voting phase. Therefore, the sixth hypotheses of this study is the following:

H4. Players' level of motivation to win a round of social deduction game increases as time passes and they progress further.

#### *Level of engagement*

Players can be highly motivated to win, but they also need to find the game engaging enough in order to provide their peak performance. Engagement is an umbrella term, that incorporates several concepts, like immersion, presence, involvement and flow (Bouvier et al., 2014). The extent to which a game is visually appealing is also vital in creating engagement, and players are more likely to find a game exciting and gratifying, if it has high visual aesthetic quality (Kokil, 2018). Besides these, having fun with the game is key, as it was found as the most important aspect of engagement in the context of gaming by Reid (2012), who conducted an extensive literature review on this topic. Engaging with a game satisfies the needs for entertainment, information seeking, socializing and filling time, according to a study involving high school students (Chou & Tsai 2007). Additionally, Shernoff et al., (2003) claim that the level of engagement depends on the balance between personal interest and perceived ability to complete the given objective. The level of engagement can even change during a gaming session. Low-level game engagement can easily be turned into high-level game engagement, because players having a flow experience usually become highly engaged afterwards (Procci et al., 2013). Taking the complexity of the concept discussed, it is presumed that the level of engagement varies for each player, and those who are highly engaged towards the game will experience being voted out differently than those who are only engaged on a low level.

H5. Players with a high-level of engagement experience being voted out in a social deduction game more negatively than players with a low-level of engagement.

### *Offline versus online gaming environments*

Previous hypotheses were looking at the variables in general, offline and online platforms combined. Although, there might be a difference in results when comparing the platforms with each other. Video games are often played online, where players can only hear each other, thus communication is limited compared to board games. When playing offline, people are physically in the same place and can engage in a conversation with each other, while being able to see everyone's non-verbal behaviour as well. This can lead to a stronger feeling of belongingness with the group, as offline communication has more layers than being in an online setting. Social belongingness is important for people, which is proven to be more positive and increase when interaction happens face-to-face in comparison through a virtual environment (Sacco & Ismail, 2014). Moreover, a higher degree of closeness and self-disclosure during face-to-face communication was reported in a study by Mallen et al. (2003), who compared online and in-person conversations. On the contrary, when measuring the effect of social exclusion on participants, their reported experience was not so much different from each other, regardless of the platform being an online chat room or a physical environment (Filipkowski & Smyth, 2012). However, participants in this study did not actually experience exclusion or rejection, as they were simply provided by a scenario on paper, and their task was to imagine themselves into the situation. It can be argued that their results would be different, if participants would have gone through the described experiences themselves, without being fully aware about the topic of the research. Given the context of the current study, the results are expected to align more with Mallen et al. (2003) and Sacco & Ismail (2014).

H6. Board game players in an offline setting experience a higher level of social connectedness than video game players in an online setting.

H7. Board game players in an offline setting experience being voted out in a social deduction game more negatively than video game players in an online setting.

When it comes to offline versus online game engagement, the results of existing studies are mixed. In the case of students and a quiz game designed in both physical and digital format, participants reported higher level of engagement in the online condition (MacNamara & Murphy, 2017). On the other hand, offline and online versions of a robotics game were found to be equally engaging in a study by Madariaga et al. (2023). Experiments conducted in this topic were approaching it from an educational angle, and the games were usually designed specifically for the studies. What happens in a casual gaming scenario with games that are available for the public is unknown so far. Therefore, a research question has been formulated with no assumptions about the results.

R1. How does the level of engagement in social deduction games differ between an offline and an online setting?

There was no scientific literature found about how an offline versus an online gaming environment influences motivation to win and invested time. Hainey et al. (2011) reported that the main motivation for players to take part in offline or online games is seeking challenge and competition. Players looking for these elements in a game are most likely well-motivated to win. It is possible, that there is a significant difference between physical and digital games in these regards, but no evidence has been discovered at the time of conducting this study. It is worth pointing out that using other games as stimuli might produce different results. The following two research questions are aimed to help getting closer to the answer.

R2. How does the level of motivation to win in social deduction games differ between an offline and an online setting?

R3. How does the impact of invested time on motivation to win in social deduction games differ between an offline and an online setting?



## Research aim

In this study, a comparison between board games and video games is presented with the use of almost identical games both offline and online. Reactions to the losing experience are measured, which in this case means rejection and social exclusion in the form of being voted out from the game by other players. The aim of the research is to see whether there are any differences in having this experience in an offline versus online environment.

To conclude this chapter, a research model has been created, where the connection between hypotheses and research questions are clearly visible.

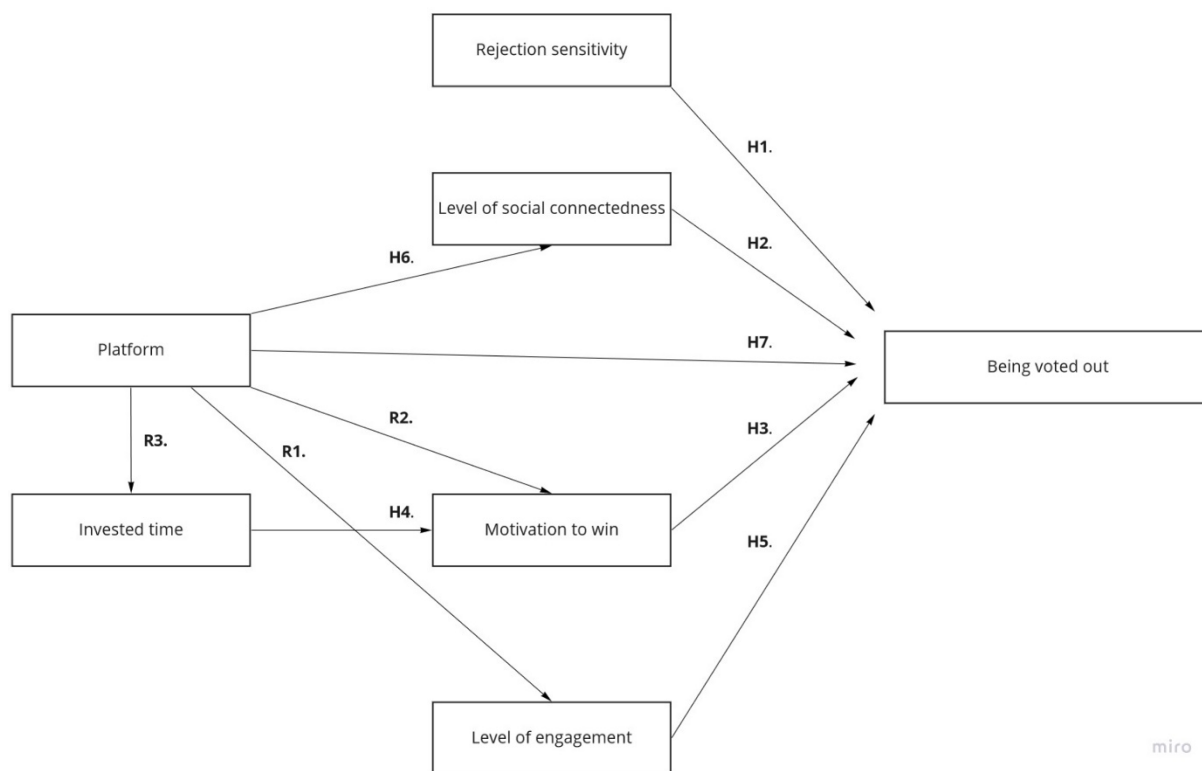


Figure 1. Research model

## Method

### Research design

The current study applied a quasi-experimental, between subjects (offline versus online) design with a quantitative approach. Participants were distributed between the offline and online settings in equal numbers to compare the offline group's experience with the online group's experience based on two questionnaires. The group playing with the board game gathered at the University of Twente to conduct the experiment. The video game group could stay at their own homes and joined the game from there to resemble a real-life gaming situation. Their only contact with each other was via voice chat through Microsoft Teams for a maximum of 2 minutes each time before a voting happened, with cameras turned off for the entirety of the experiment. Players were recruited through the snowball sampling method on social media. As not enough participants applied, the study was additionally uploaded to the SONA website, where other students from the university were able to see it and join. 8 sessions were held in total (4 offline and 4 online), with a player count of 6-8 each occasion.

### Procedure

First, participants were asked for informed consent, then the research and its aim were described to the group, but some information was left out intentionally, to not influence their genuine reactions during the games. They had to think that this research was looking at the whole gaming experience in general, and there was no special focus on any phase of the game. After the introduction, participants were asked to fill out a short survey about rejection sensitivity, then the game started.

One gaming session consisted of three rounds of play, because this way every participant had a higher chance to experience both outcomes (winning and losing). One round on average took 15.65 minutes in the offline condition ( $SD = 3.15$ ) and 12.17 minutes in the online condition ( $SD = 2.28$ ). There was also a trial round at the beginning to make sure everyone understood the rules. When all

rounds ended, participants were asked to fill out an extensive survey that concentrated on the whole experience and included questions and statements about all the other variables as well as demographics and their gaming habits.

The author would like to thank the participants who took part in this study, this could have not been done without their help. The study was approved by the ethics committee of the BMS faculty of the University of Twente.

## Stimuli

The games chosen for this study were The Menace Among Us (board game) and Among Us (video game). The setting of both games is a spaceship, where crew members have to complete certain tasks to save the ship and themselves, while traitors are hunting them down in secret. In both games, traitors know about each other, thus they are aware of the rest of the players' roles, while crew members only know their own. The composition of the teams in this experiment was 6 crew members versus 2 traitors. This way the games did not end immediately in case a traitor got caught at the beginning.

The Menace Among Us consists of 3 action phases (below deck action, above deck action and voting), while Among Us only has 2 (task completion and voting). To keep the games as similar as possible, the above deck action phase was removed from the board game. It gives individual characteristics and skills to each player, but this feature is not present in Among Us, where the only difference between players is whether they are crew members or traitors. This way the playtime was also shortened and it matched the playtime of the video game approximately.

The below deck action phase in The Menace Among Us requires players to put a card from their hands face down the table. The game master then collects all cards, shuffles them and reveals the actions written on these cards. The actions can be good, neutral or bad (from the viewpoint of the crew members), and are aimed to control the oxygen and energy levels of the ship. The level of oxygen starts from 100%, and the goal of traitors is to bring it down to 0% in order to win. The level

of energy starts at 0%, and the goal of crew members is to bring it up to 100% in order to win. There are 11 different cards in total, hence each round will have a unique variety of actions. Some cards affect both oxygen and energy levels in a way, thus various tactics can be used by the players.

The task completion phase in Among Us is on-going throughout the whole playtime, as there are no fixed rounds, like in the board game. All crew members have an equal number of tasks that are distributed to them automatically at the start. Each of these tasks have to be completed in different rooms of the spaceship, hence all players scatter around the map, which makes it easier for traitors to hunt. The tasks are basically short interactive minigames within the video game. Completion times are ranging from 5 seconds up to around 1 minute. The spaceship and the crew are safe if all tasks are completed. The traitors are also able to sabotage parts of the spaceship, like the reactor, communication channels and lights, which gives them an advantage when attacking.

The voting phase in The Menace Among Us is a scheduled activity, always coming right after individual actions are done, but can be skipped if players are uncertain about who to vote for. Players can discuss who is suspicious and choose to exclude someone from the game, whose identity is then revealed. In Among Us, voting only occurs if players trigger the event themselves. This can be done either by finding the body of a dead player and reporting it, or by convening an emergency meeting from the main room when someone behaves in a suspicious way. In both games, a player only gets excluded if the majority votes for them. The time limit for this discussion was set to 2 minutes in both settings.

A group of 9 people helped with pre-testing the games and gave their opinion about how to make them more similar to each other. Providing the same experience for participants in both conditions was necessary, otherwise potential differences in results could be explained by stating that one game had an extra phase or unique feature that the other did not. This way the game mechanics and progression through the round was highly alike in both settings, only the way actions were performed (inputting commands with a touchscreen versus playing cards) and the aesthetics

were different. For example, it was the idea of the pre-test group to include a step at the beginning of the board game, where every player closes their eyes except for the two traitors, thus they can be aware of each other without crew members knowing. In the video game, identity of the other traitor(s) is displayed on the screen for traitors at the start, but in the board game this action was not included in any form originally.



The Menace Among Us game elements (Smirk & Dagger, 2022)



Among Us voting phase (Innersloth, 2022)

## Measures

### *Offline versus online*

Participants were either playing the game offline (=0) or online (=1). They were able to choose either of the two conditions when applying to participate in the study. This served the purpose of being able to collect data from outside the geographical location as well. Many participants could only take part in the online condition due to living in another country or a city far from the university, which made the offline condition inaccessible for them. For the sake of gathering a sufficient number of responses in a reasonable time, this decision had to be made.

### *Rejection sensitivity*

The instrument used to measure rejection sensitivity was the Rejection Sensitivity Adult Questionnaire (A-RSQ), which consists of various scenarios with one question and one connected statement (Berenson et al., 2013). Rejection sensitivity was only measured at pre-test. An example scenario is: "You ask your supervisor for help with a problem you have been having at work." An example question is: "How concerned or anxious would you be over whether or not the person would want to help you?" The questions were answered on a 6-point Likert scale, ranging from "very

unconcerned" (=1) to "very concerned" (=6). The question subscale of the rejection sensitivity variable consists of 9 items ( $\alpha = .73$ ). An example statement is: "I would expect that he/she would want to try to help me out." The statements are also answered on a 6-point Likert scale, but these are ranging from "very unlikely" (=1) to "very likely" (=6). The statement subscale of the rejection sensitivity variable consists of 9 items ( $\alpha = .71$ ). Internal consistency, reliability and validity were proven by Downey et al. (2006) ( $\alpha = .74$ ).

### *Social connectedness*

The level of social connectedness was measured with items from the Intrinsic Motivation Inventory (IMI; Ryan & Deci, 2000). One subscale of IMI is called the Subject Impressions Questionnaire, which intends to uncover the thoughts and feelings of participants regarding the other people involved in the experiment. Only 10 statements were chosen for this study from the total of 29 that is originally in the Subject Impressions subscale, because they cover all the relevant aspects, and also for time saving reason for the participants. An example statement is: "I enjoyed interacting with the others from the group." Statements were answered on a 7-point Likert scale, ranging from "completely disagree" (=1) to "completely agree" (=7). Multiple studies have used the IMI successfully, for example Leng et al. (2010) have tested the stability of all constructs and they found the whole scale as a reliable tool of measurement ( $\alpha = .84$ ). The social connectedness scale consists of 10 items and was found reliable based on the results of the current study ( $\alpha = .88$ ).

### *Invested time*

The outcome of this moderation was measured by asking questions about specific details of the game, which were noted down by participants right after they lost in each round. Arguably, this could break the immersion, as noting things down is usually not part of a real-life gaming scenario, but it only took about 15 seconds. Moreover, this way participants could give a transparent answer in the end instead of speculating about these things that they might not remember correctly. At the beginning of the questionnaire, participants had to fill in their final rankings of each round, which

indicated how much time they were able to spend with the game. They also had to answer which round was the best and which was the overall worst experience out of the three, as well as which one felt the worst to lose. The overall worst experience and worst to lose rounds might not be the same, that is why they are asked separately (for example: coming in 2<sup>nd</sup> place could be the worst to lose, because the player was close to winning and felt disappointed, while coming in 8<sup>th</sup> place is the overall worst experience, because the player lost very early and felt embarrassed. Lastly, they had to rank the three rounds based on how much motivation they had to win them at the beginning. The rankings of the lost rounds were then compared with their placement and their answers for the being voted out variable.

### *Motivation to win*

Assessing to what extent players were motivated to perform well in the games was done with the help of the Student Opinion Scale (SOS; Sundre & Finney, 2002). This scale consists of 10 items, which are equally distributed onto two subscales: Importance ( $\alpha = .79$ ) and Effort ( $\alpha = .73$ ). Statements were answered on a 7-point Likert scale, ranging from “completely disagree” (=1) to “completely agree” (=7). An example statement is: “Doing well in this game was important for me.” The SOS was proven to be a reliable tool in a study, where students’ motivation during completion of a test was measured (Thelk et al., 2009) ( $\alpha = .88$ ). The motivation to play variable was found to be highly reliable based on the results of the current study ( $\alpha = .85$ ).

### *Engagement*

The Scale of EGame Flow was used to measure the level of engagement players had towards the game (Fong-Ling et al., 2009). This scale is comprised of 8 subscales and 56 statements, which was narrowed down for this study including statements only from the subscales of Immersion, Concentration and Challenge. It would take a lot of time for participants to comment on all of the 56 statements and also on every other variable, therefore only the most relevant statements were included. An example statement is: “I enjoyed the game without being bored.” Since this scale does



not include statements about the visual aesthetic quality, two extra items were added to the questionnaire from the Revised Gameplay Scale, as it is believed to be an important element of engagement too (Parnell et al., 2009). This scale has similar items to the Scale of EGame Flow, but the wording is often less precise, which may lead to misinterpretations. Hence the decision to combine the two scales instead of using only one in this study. All statements were answered on a 7-point Likert scale, ranging from “completely disagree” (=1) to “completely agree” (=7). The engagement scale consists of 10 items and was found reliable based on the results of the current study ( $\alpha = .92$ ).

### *Experiencing being voted out*

This variable was measured with 15 statements, that were formulated for this study specifically. Being voted out is a unique and isolated experience, which occurs in social deduction games only. Therefore, existing measurement tools cannot fully capture the essence of this situation and provide all the information needed to cover every aspect of this experience. The statements were aimed to measure the level of – or the lack of - certain reactions and actions that may follow the experience of being voted out. There were 3 components used for measuring this experience, which were chosen to have more detailed insight about the effect of being voted out.

The emotional component helps to understand how players feel at the exact moment they were voted out of the game. It was the most obvious choice, as inner feelings are the first natural reactions to a situation like this. Hurt feelings, sadness, anger and anxiety are very likely to come up at the moment of rejection (Buckley et al., 2004). From a gaming point of view, anger, anxiety and sadness were also found to occur after losing a round of poker, but in this case, disappointment was mentioned too by most of the players (Palomäki, 2013). Therefore, the statements for this component include all of the above-mentioned five emotions. The emotional subscale of the experiencing being voted out variable consists of 5 items ( $\alpha = .73$ ). Players scoring high on these statements were associated with experiencing being voted out more negatively. The social

component shows how players' attitude towards other players changes after they were voted out of the game. The social subscale of the experiencing being voted out variable consists of 5 items ( $\alpha = .72$ ). Lastly, the future behaviour component looks at how players' behaviour towards the game itself changed in the next round(s) after they were voted out. These components and the context of the statements were chosen based on a discussion with a group of people that helped to pre-test the games. An example statement is: "I was disappointed when I got voted out." The future behaviour subscale of the experiencing being voted out variable consists of 5 items ( $\alpha = .81$ ). All statements were answered on a 7-point Likert scale, ranging from "completely disagree" (=1) to "completely agree" (=7). The experiencing being voted out variable was found to be highly reliable based on the results of the current study (15 items;  $\alpha = .82$ ).

After performing a factor analysis on this variable, it became clear that one emotional and one social subscale statement are not grouping well with the rest of the statements in the respective subscales. Therefore, these statements were excluded from the data analysis.

The whole questionnaire is included in Appendix A.

## Participant characteristics

The current study included a total of 58 participants, with an approximately equal distribution of gender ( $n = 27$ , 53.4% male;  $n = 31$ , 46.6% female). The age range of participants varied between 18 and 50 years, with a mean age of 22.69 years ( $SD = 4.71$ ). Most of the participants were following some form of higher education ( $n = 50$ , 86.2%), mainly a Bachelor's degree ( $n = 38$ , 65.5%) or Master's degree ( $n = 12$ , 20.7%) during the data collection period, while one person was in high school (1.7%) and the rest were working ( $n = 7$ , 12.1%).

The distribution of gender within the offline and online conditions was approximately equal ( $n = 16$ , 53.3% male;  $n = 14$ , 46.7% female in the offline condition and  $n = 11$ , 39.3% male;  $n = 17$ , 60.7% female in the online condition;  $\chi^2(1, 58) = 1.15, p = .284$ ). Participant ages were distributed approximately equally between the conditions ( $n = 30$  offline with a mean age of 22.53,  $SD = 2.89$ ;  $n =$

28 online with a mean age of 22.86,  $SD = 6.16$ ;  $t(56) = .26$ ,  $p = .208$ .) Current educational level was also very similar in all categories across both conditions. Distribution was approximately equal in the case of participants that were doing a Bachelor's degree ( $n = 18$ , 47.4% offline;  $n = 20$ , 52.6% online), a Master's degree ( $n = 7$ , 58.3% offline;  $n = 5$ , 41.7% online) or were working ( $n = 4$ , 57.1% offline;  $n = 3$ , 42.9% online) at the time of data collection.

### *Gaming habits*

Participants were asked about their general experience with board games and video games at the end of the survey. Scoring on 5-point Likert scales, board games were found to be a bit more enjoyable than video games, with a mean score of 4.17 compared to 3.81 ( $t(56) = 1.80$ ,  $p = .144$ ), and 55.2% said that they prefer playing offline over online. Although participants expressed a greater appreciation for board games, the research has discovered that they engage with video games more often, with a mean score of 3.00 compared to 2.79 ( $t(56) = 1.02$ ,  $p = .333$ ). The majority agreed that playing with others is better than solo (84.5%).

## Results

### Influences on experiencing being voted out

#### *Rejection sensitivity*

Regression analysis was used to test whether players' general sensitivity towards rejection significantly influenced their experience of being voted out. The results of the regression indicated that the independent variable explained 24% of the variance, although players' general sensitivity towards rejection did not significantly predict their experience of being voted out ( $R^2 = .24$ ,  $F(2, 21) = 3.38$ ,  $p = .053$ ; scale 1:  $\beta = .36$ ,  $p = .075$ ; scale 2:  $\beta = .29$ ,  $p = .14$ ). Consequently, hypothesis 1 should be rejected.

#### *Social connectedness*

Regression analysis was used to test whether players' perceived social connectedness with the group they were playing together significantly influenced their experience of being voted out. The findings indicated that players' perceived social connectedness did not significantly predict their experience of being voted out ( $R^2 = .00$ ,  $F(1, 22) = .01$ ,  $p = .941$ ,  $\beta = .02$ ). Consequently, hypothesis 2 should be rejected.

#### *Motivation to win*

Regression analysis was used to test whether players' motivation to win significantly influenced their experience of being voted out. The results of the regression indicated that the independent variable explained 19% of the variance ( $R^2 = .19$ ,  $F(1, 22) = 5.11$ ,  $p = .034$ ). The findings demonstrated that motivation to win significantly predicted their experience of being voted out ( $\beta = .43$ ,  $p = .034$ ). When people are more motivated to win, they experience being voted out more negatively. Thus, hypothesis 3 can be accepted.

### *Engagement*

Regression analysis was used to test whether players' engagement during the game significantly influenced their experience of being voted out. The findings indicated that players' engagement during the game did not significantly predict their experience of being voted out ( $R^2 = .03$ ,  $F(1, 22) = .68$ ,  $p = .420$ ,  $\beta = .17$ ). Consequently, hypothesis 5 should be rejected.

### *Offline versus online*

Regression analysis was used to test whether playing offline or online has significantly influenced players' experience of being voted out. The findings indicated that playing offline versus online did not significantly predict players' experience of being voted out ( $R^2 = .01$ ,  $F(1, 22) = .32$ ,  $p = .580$ ,  $\beta = .12$ ). Consequently, hypothesis 7 should be rejected.

### The influence of invested time on motivation to win

Regression analysis was used to test whether the time players' invested into the game significantly influenced their motivation to win. The findings indicated that players' invested time into the game did not significantly predict their motivation to win ( $R^2 = .06$ ,  $F(3, 54) = 1.04$ ,  $p = .382$ ). (round 1:  $\beta = .04$ ,  $p = .788$ ; round 2:  $\beta = .14$ ,  $p = .288$ ; round 3:  $\beta = .20$ ,  $p = .140$ ). Consequently, hypothesis 4 should be rejected.

### The influence of playing offline versus online

#### *On social connectedness*

Regression analysis was used to test whether playing offline versus online significantly influenced players' perceived social connectedness with the group they were playing together. The findings show that playing offline versus online significantly predicted players' social connectedness ( $R^2 = .09$ ,  $F(1, 56) = 5.82$ ,  $p = .019$ ,  $\beta = .31$ ). Offline players were perceiving a higher sense of belonging to the group than players in the online setting. Consequently, hypothesis 6 should be accepted.

### *On engagement*

Regression analysis was used to test whether playing offline versus online significantly influenced players' engagement during the game. The findings indicated that playing offline versus online did not significantly predict players' engagement during the game ( $R^2 = .00$ ,  $F(1, 56) = .01$ ,  $p = .957$ ,  $\beta = .01$ ). In conclusion, there is no relation between playing offline versus online and how engaged players were during the game.

### *On motivation to win*

Regression analysis was used to test whether playing offline versus online significantly influenced players' motivation to win. The findings indicated that playing offline versus online did not significantly predict players' motivation to win ( $R^2 = .00$ ,  $F(1, 56) = .01$ ,  $p = .960$ ,  $\beta = .01$ ). In conclusion, there is no relation between playing offline versus online and how motivated players were to win the game.

### *On invested time*

Regression analysis was used to test whether playing offline versus online significantly affected how players' invested time into the game was perceived. The findings indicated that playing offline versus online did not significantly predict players' invested time into the game ( $R^2 = .05$ ,  $F(3, 54) = 1.02$ ,  $p = .390$ ; round 1:  $\beta = .23$ ,  $p = .094$ ; round 2:  $\beta = .06$ ,  $p = .644$ ; round 3:  $\beta = .01$ ,  $p = .959$ ). In conclusion, there is no relation between playing offline versus online and players' invested time into the game.

## Discussion

This study compared the offline and online gaming experiences to uncover the possible differences and similarities between playing with a video game versus a board game. It was presumed that players' general sensitivity towards rejection, motivation to win the game, engagement during the playtime, perceived social connectedness with fellow players and the time they invested into each round of play were all influencing their experience of being voted out from the game. Playing offline versus online were found to be a similar experience in the context of the current study, suggesting that the setting in which the player engages with the game does not have a large impact on the experience, at least when looking at the stimuli used here. Only social connectedness was found to be significantly different between the two conditions, as players in the offline setting felt more connected to the group than online players did. The other significant difference was demonstrated in the case of motivation to win, which in fact was a predictor of being voted out. Although, the small sample size makes it near impossible to draw generalizable conclusions of this result.

### Offline versus online

One of the most important questions of this research was to find out whether playing offline is distinct in any way in regards to the gaming experience and being voted out than playing online, but there was no significant difference discovered. The results are backing up the study of Filipkowski & Smyth (2012), who were looking into social exclusion in real life versus in online chatrooms with a similar outcome. It seems like experiencing exclusion is quite alike across all scenarios, does not matter whether it happens offline or online and through simple chatting or playing a game. Although, there could be differences in the results if they were checked between genders, as Benenson et al. (2013) have found that women tend to be more sensitive towards social exclusion in an online scenario. This would have been possible to check in the current study, as data about gender was collected as well, but the idea of dividing the already small sample even further was scrapped due it

not yielding sufficient results anyway. Future researchers could look into whether there is a difference between how men and women experience exclusion and rejection in a gaming setting. Another avenue worth pursuing is whether there is a difference between how friends and strangers react to exclusion from the game. Covert & Stefanone (2020) reported that close friends were found to experience a greater negative response to social exclusion in general, thus it could potentially transfer over to a gaming scenario as well. The current study had quite a few mixed groups, where both strangers and friends were taking part in the same session. The initial expectation was to separate people that are familiar with each other, but this was not possible in every case. Since each group had a unique composition and various friends to strangers ratio was present between the participants, no clear conclusion can be drawn about whether playing with friends is any different to playing with strangers only.

Another interesting finding of this study is that participants playing offline were perceiving a higher level of social connectedness than those playing online. This contradicts Holmberg (2014), who reported that although social connectedness was influencing participants' happiness, but whether the connections were made offline or online did not matter, both had the same effect. On the contrary, face-to-face communication was found to induce a higher sense of belonging and closeness between the parties (Mallen et al., 2003; Sacco & Ismail, 2014), and this is in line with the current study's results. Even though the board game was shortened and players' characters had no unique characteristics with special abilities – which helps to achieve a higher sense of connectedness in a game according to Harris (2019), - they were perceiving playing offline as a more connected experience than players in the online condition. This shows that playing online in an individual setting without continuous voice chat results in a more isolated experience with a low level of perceived belongingness to the rest of the group. Players in the offline condition were also not allowed to talk outside of the voting phase, but non-verbal reactions, facial expressions and small laughs must have contributed to a more connected feeling throughout the session.



The low number of scientific papers in comparing offline and online gaming environments lead to forming research questions instead of hypotheses for some of the variables. The results show that gaming offline versus online are very similar in terms of engagement, at least in the case of the exact games used during data collection. This contradicts the paper of MacNamara & Murphy (2017), who reported a higher level of engagement for online players. It is possible that some of the participants of the current study chose the setting they wanted to play in, based on personal preferences of playing offline or online, which influenced the results in return. Players preferring and choosing board games/video games rated engagement high in their conditions, which might not be similar in case they were allocated to the other condition. On the other hand, many participants were physically unable to take part in the offline setting, even though they noted that they would have preferred that over playing online. Data about game preferences from the end of the survey also shows that board games are more popular amongst the participants, even though the offline sessions took way longer to organize due to the low number of applicants. Overall, the results could be biased to some extent, but probably a random allocation wouldn't have discovered significantly different findings either. The current outcome is in line with the results of Madariaga et al. (2023), who used a robotics game to test the same question and concluded that there was no difference in engagement between the two conditions. Since players were playing only one version of the game, they did not have a chance to compare the two. The results may differ in case participants would have played with both versions of the game, but this was not part of the current study. Future researchers should check whether there is any variation in the results after letting participants play a game's both offline and online versions. Half of the sample could play the board game earlier, while the other half would be introduced to the video game first to exclude any rating bias that may come from everyone being presented with the stimuli in the same order (Landon Jr, 1971).

Motivation to win and the time invested into each round were also question marks, whether they change depending on playing offline versus online. The current study was the first to compare these aspects between the platforms and based on the results, there was no difference discovered

between the two conditions. This suggests that it does not matter where the game is played, it triggers the same reactions. Seemingly, motivation does not depend on whether it is related to an offline or online context, similar feelings emerge in the player. It would be interesting to test this in the context of sports games, whether gamers' motivation to win is comparable to real athletes. Due to the growing popularity of eSports, its recognition as a real category of sport, and research revealing that virtual environments can be perceived as real, a comparison between the motivation of FIFA game players and real footballers during a competition could be done in the future (Thiel & John, 2018).

### Experiencing being voted out

Prior work has documented that individuals who are sensitive to rejection tend to have a less pleasant gaming experience when encountering some form of rejection within the context of the game (Tuijnman et al., 2021). However, the current study arrived at a contrasting conclusion by suggesting that whether players were rejection sensitive or not, it did not affect their experience of being voted out. This disparity might be attributed to the different types of games that were used by the researchers. In social deduction games, some instances of rejection may be considered as fair by players, because they can actually deserve being excluded based on their actions. Tuijnman et al. have used *Scroll Quest*, in which the experience of rejection happens unrelated to the context of the game and the player's actions, therefore the effect might be stronger. Future work should take this into account and analyse the results separately based on player roles, in case of using a social deduction game as stimuli. Traitor players may experience rejection in a different way than crew members, because their intentions are also opposite to each other. For traitors, the possibility of getting caught and being voted out is always in the air, but it takes innocent crew members by surprise, as they were not doing anything wrong.

Excluding players and rejecting their arguments regardless of their roles was presumed to have an effect on their perceived social connectedness with the rest of the group. Usually, games

create a comfortable environment where people can foster social relationships, further develop their skills and have fun (Abbot et al., 2021; Buyukozturk & Shay, 2022). In principle, exclusion and rejection are quite the opposite to building social connections, hence it was expected to find results that suggest a negative relationship between these variables. However, the current study was not able to provide justification for this, which is in line with the findings of Bowman et al. (2015), who concluded that experiencing ostracism in an online game did not influence players' enjoyment of the game nor their attitude towards other participants. They argue that individuals were possibly not as concerned about the social setting, - given that it was a controlled experiment - or they simply weren't affected by exclusion that negatively on an emotional level, because everyone else were strangers to them anyway. This could be the case in the current study as well, and it is likely that players were perceiving the situation as it really was: a game without any stakes for the sake of research, which made them less invested and consequently less sensitive to rejection. Social deduction games might not be the best stimuli to use when studying rejection, because these games include exclusion based on the rules. Every player is aware of the fact that they can be excluded at any moment, therefore this scenario is not as strong as rejection or exclusion in real life.

Although players did not take the games that seriously when exclusion happened, they were very much motivated to perform well during the session. Competitive performance and the desire to not lose were determined as predictors for being motivated to play well and actually win a game (Reeve et al., 1985). This result is in line with the current study's finding, as players who had a high motivation to win, were more concerned when they got voted out from the game. People that took it seriously and were competing with the intention to end the round with success, were affected more negatively by the fact that they cannot continue playing. This might be because they were more invested, believing that they should win based on the amount of effort they put into the game. They possibly even imagined themselves coming out on top, which was suddenly contradicted with being excluded out of the blue after a voting session occurred. This large contrast between inner feelings, personal expectations and the actual scenario that was played out might have caused this significant

influence. Future research could potentially build on this result and attempt to justify the real psychological reason behind this by interviewing players after a session to dig deeper into what the driver of their motivation was and how they felt when they got excluded from the game. If the interview happens right after they are voted out and the experience is fresh, they can elaborate on it while still feeling the emotions that emerged in them as a result. It is also possible that game engagement plays a role in determining the level of motivation to win, which could also be revealed with asking the right questions in a survey or during an interview.

The importance of taking engagement as an influencing factor in game studies was proven by many scientific papers (Chou & Tsai 2007; Kokil, 2018; Reid, 2012). However, the present research could not justify its inclusion when looking at whether it affects the gaming experience in the case of being voted out. This might be because here game engagement was measured only once, after all three rounds of play have been completed. When measuring engagement during gameplay, Ventura et al. (2019) have reported that players' relative performance at the given moment was influencing their level of engagement. Players that were behind their opponent were more engaged than those who were about to win. Taking this into account, it seems like engagement levels are constantly changing throughout the game, especially when playing multiple rounds. For future researchers, it is advised to take measures more often, even monitor engagement constantly during gameplay for the most accurate results. The current study did not want to break the natural flow of the gaming sessions by taking measurements at multiple times, although it seems like for in-depth results it is unavoidable.

### **Invested time & motivation to win**

It was anticipated that invested time will influence players' motivation to win, because of the findings of previous studies from Malhotra (2019) or Medvec et al. (1995). However, in this regard, there was no connection established between the variables. It might be attributed to the fact that a round of play in the games used as stimuli is relatively short. Players may not feel as invested in these

10-15 minutes long sessions as they would in more extended games, because they can easily start a new one and try their chances again. In case a game takes longer to complete, players might be more concerned about their time investment. Using the full version of the offline stimuli, *The Menace Among Us* may yield different results, as a playthrough takes about 60 minutes. In the current study the focus was on the comparison of two very similar games, hence the board game was shortened. In case research wants to focus on one platform only or compare it with an online game longer than *Among Us*, there could be more potential. Yee (2006) has found that when MMORPG (Massive Multiplayer Online Role-Playing Games) players are spending a lot of time in the game, they are also being emotionally invested into what happens with their character. Combining his findings with the current study, an interesting avenue would be to see what happens when participants are asked to play with a game that takes an extended time to finish, involves deeper strategical decisions, possibly character development choices as well, and there is no room given for replay.

### Limitations & recommendations

The findings of this research are limited by the size and demographic composition of the sample. Mainly university students between the ages of 20-25 took part in the data collection procedure with a modest sample of 58. It makes it hard to draw generalizable conclusions to the broader population, as studies on sample requirements usually mention 100 as a completely reliable minimal sample size (Mundform et al., 2005; Oosterhuis et al., 2016). Only half of the participants experienced being voted out from the games, which further narrows the number of useful responses for a few of the hypotheses. Future research should involve a larger number of participants with more diverse backgrounds and focus on actual gamers, who can potentially stumble upon the games themselves or may even be familiar with them already.

Another limitation was screening out participants that were familiar with each other before the experiments. The original goal was to have strangers playing in every group to achieve a similar dynamic each time. However, during half of the gaming sessions, there were at least 2 classmates or

friends that were in contact before, even though the online advertisement created for the study explicitly asked applicants to choose different time slots in case someone they know is also part-taking. This might have had an influence on their attitude towards each other during the playtime, as playing with friends is viewed more as a social activity than playing with strangers (Eklund, 2015). Isolating friends is not an easy task and the extent can only be minimized, as using randomization could also put some of them into the same group. Asking for social relationships between applicants beforehand and manually separating those who know each other before applying randomization on the rest of the sample could be a solution.

The team composition and dynamic were very distinct each time as well, which could potentially influence players' performance and overall experience (Ong et al., 2015). Some groups just wanted to get over with it as quickly as possible, while others enjoyed it a lot and wanted to play more even after the session was concluded. Generally, participants played the games carefully and chose to vote someone out only when they were almost 100% certain. This resulted in less people experiencing being voted out than expected initially. It was quite the opposite during the pre-test of the games, which might be attributed to the fact that the pre-test group consisted of long-time friends that were used to play together a lot and there was no social pressure to appeal to each other in any way.

Based on observations during the data collection, strangers seemed to be more polite with each other and show that they do not vote for someone unless there is solid proof against the suspect. Friends on the other hand tended to care less about this and they may even have enjoyed messing with each other for the sake of fun. This could be to inject some element of surprise or unexpectedness into the game, as playing a lot with friends results in a higher awareness about each others' intentions, because they are getting used to the play style of the rest of the group over time (Spante et al., 2003). It would be an interesting avenue for future researchers to study more deeply what the differences are in the experience and game dynamics between a group of friends compared

to a group of strangers. Using the same games as stimuli could be a good starting point, because dynamics were noticeably different when observing the sessions in the current study. If 8 groups of long-time friends and 8 groups of complete strangers would play the game, a clear and direct comparison could be made between their attitude and behaviour towards each other. It was out of the scope of this research to compare this as well, although the idea was there. Finding groups of friends of 8 people as applicants seemed like a task too hard to accomplish in the timeframe that was set to complete the sessions, therefore it was excluded from the current study.

Lastly, measuring variables on multiple occasions to see possible changes over time during the experiment may have provided more detailed results, but this was presumed to potentially disrupt the natural flow of the game and break immersion. As mentioned earlier, the goal was to resemble a real-life gaming scenario as much as possible, without including extra steps between the rounds that could remind participants that they are taking part in research. Also, the length of a session would have been longer, which might have made it less appealing for participants to apply. However, future studies should try to find a way to incorporate continuous or repeated measurement within one session in a way that does not interrupt the game and participants' experience.

## Conclusion

The aim of this study was to find out whether playing a commercially available and quite successful game's offline versus online versions results in any difference for the players in their gaming experience. The stimuli used for measuring the influences were two almost completely identical social deduction games (one in board game format and one in video game format). Based on the data collected, the main conclusion is that playing offline versus online results in a similar experience. Only social connectedness showed significantly distinctive results between the two conditions, which means that participants in the offline setting were perceiving a higher sense of belonging to the group than participants playing online. Having a distinct comparison between

groups of friends versus groups of strangers playing or letting participants play with both versions of the game before asking for their input could yield positive results for the other variables as well.

The other main route this study took was testing whether players' sensitivity to rejection prior to the game, invested time into the game, motivation to win, engagement and perceived social connectedness with other players had any influence on their final moments in the game, namely when they were voted out. 52% of the participants experienced being voted out. There was only one significant influence found, with motivation to win. Being eager to win the game resulted in a more negative experience for players than not being interested in the final outcome. Although motivation to win was connected to the negative experience due to being voted out, the amount of time invested did not affect players' motivation to win.

This study serves as the introduction chapter in comparing offline and online games and it can only be done better in the future by learning from the shortcomings listed in this paper. Larger and well-distributed sample between groups, measurement of variables multiple times or even continuously during the sessions and the use of a better stimuli, where all participants experience what the study wants them to experience would all contribute to stronger findings and arguments.



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## Appendix

### Appendix A – Questionnaire

#### *Starting questions (measuring invested time too)*

What roles did you have in the rounds (crew member/traitor)?

Round 1 \_\_\_\_

Round 2 \_\_\_\_

Round 3 \_\_\_\_

How did you finish in the rounds (1<sup>st</sup>-8<sup>th</sup>)?

Round 1 \_\_\_\_

Round 2 \_\_\_\_

Round 3 \_\_\_\_

Were you voted out/killed/neither in the rounds?

Round 1 \_\_\_\_

Round 2 \_\_\_\_

Round 3 \_\_\_\_

Please rank the 3 rounds from the best gaming experience to the worst (1=best experience; 3=worst experience)!

Round 1 \_\_\_\_

Round 2 \_\_\_\_

Round 3 \_\_\_\_

Which round felt the worse to lose?

Round \_\_\_\_

Please rank the rounds based on the inner motivation you had for winning them at each start (1=was more concerned about winning; 3=was less concerned about winning)!

Round 1 \_\_\_\_

Round 2 \_\_\_\_

Round 3 \_\_\_\_

### *Demographics*

Age

Gender

Education level

Profession

### *Motivation to win – 7-point Likert scale (Strongly disagree – Strongly agree)*

1. Doing well in this game was important for me.
2. While playing the game, I could have been more eager to win.
3. I did not give this game my full attention while playing it.
4. I was not concerned about how I finish in this game.
5. I gave my best effort during the playtime.
6. I am not curious if overall I performed better than other players in this game.
7. I engaged in good effort throughout the game.
8. It was important for me to perform well in this game.

9. I would like to know how well I did in the game relative to others.

10. While playing the game, I was able to persist to completion of the task.

*Level of engagement – 7-point Likert scale (Strongly disagree – Strongly agree)*

1. When I was playing the game, I lost track of time.

2. I temporarily forgot worries about everyday life while playing the game.

3. I enjoyed the game without being bored.

4. I found the appearance of the game to be interesting.

5. The game grabbed my attention.

6. I was not distracted from the tasks that the player should concentrate on.

7. I could remain concentrated throughout the game.

8. I felt myself being involved in the game.

9. I was encouraged to improve my skills in the game.

10. I liked how the gaming environment looked.

*Level of social connectedness – 7-point Likert scale (Strongly disagree – Strongly agree)*

1. I enjoyed interacting with the other players.

2. I felt really distant from the group.

3. I was anxious when I had to interact with the group.

4. I had no sense of togetherness with the other players.

5. I felt relaxed when interacting with the group.

6. It was fun being in this group during the game.

7. I would like to play with this group again in the future.

8. I thought this group was boring.

9. I felt pressured when interacting with the group.

10. I would prefer to not play with this group again.

*Experiencing being voted out – 7-point Likert scale (Strongly disagree – Strongly agree)*

*Emotional component*

1. I was disappointed when I got voted out.

2. I felt anger when I got voted out.

3. It hurt my feelings when I got voted out.

4. I was sad about not being able to continue playing the game.

5. Being voted out made me anxious.

*Social component*

6. Being voted out affected my opinion about other players.

7. It was unfair that other players voted me out of the game.

8. Other players voted me out of the game because they do not like me.

9. Being voted out affected the way I treated people in the next round(s).

10. I had fun with the other players, regardless they voting me out of the game.

*Future behaviour component*

11. Being voted out had no influence on my play style in the next round(s).

12. I changed my game strategy in the next round(s) after being voted out.

13. I paid more attention to how I play in the next round(s) after being voted out.

14. If I am ever playing this game again, my approach will be different.

*Rejection sensitivity (all of the A-RSQ statements and questions were used)*

*Closing questions (about gaming in general) ('How' questions: 7-point Likert scale)*

How much do you like playing board games? (Not at all – Very much)

How much do you like playing video games?

How often do you play board games? (Never – Daily)

How often do you play video games?

If you have to choose one, which one do you prefer over the other? (Board / Video / Could not say)

Do you prefer playing solo or with others?