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The influence of anonymity on toxic behavior in multiplayer online games

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Abstract

Although multiplayer games are enjoyed by millions of players worldwide, they can be host to a quite toxic environment. Communication channels in place to facilitate teamwork get abused to insult and harass other players. The perceived hostility of an online environment has been labeled as toxicity. This literature reviews gives an overview of past research on anonymity. Anonymity has long been attributed to anti-social behavior in face-to-face environments. Deindividuation and SIDE are both used to explain anti-normative behavior in computer-mediated-communication. Research into the effects of anonymity in online games is scarce and no definite conclusion to its effects can be made. Nevertheless, current studies hint that anonymity increases toxic behavior in multiplayer online games. To reach any meaningful conclusion more research has to be done on this specific topic. Possible solutions to counteract toxic behavior are examined and expanded on.

Keywords

Anonymity, CMC, Deindividuation, SIDE, Gaming, Toxicity

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Declaration of scientific integrity

The author hereby declares that she/he has read and fully adhered the [Code for Good Practice in Research of the University of Basel](#).

Introduction

Multiplayer online games like *Defense of the Ancients (Dota2)* or *Counter Strike Global Offensive (CSGO)* enjoy massive popularity worldwide. With active monthly users exceeding 11 Million players, Dota2 is one of the most popular games available on the Steam client (Clement, 2021). In online games players are able to immerse themselves, socialize, engage in competition and escape from real-life problems (Yee, 2006). Both CSGO and Dota2 feature an in-game chat function where it is possible to write or talk to your teammates (Saarinen, 2017). These interactions are helpful for strategic purposes in-game and offer a platform for social interaction with players from around the world. A survey from the *Anti-Defamation League* states that 88 percent of American adults who play online multiplayer games reported positive social experiences like making friends or receiving help from other players (Anti Defamation League, 2019). However, the report also states that harassment is quite frequent. 74 percent experienced harassment while 65 percent fell victim to severe harassment which includes physical threats, stalking and sustained harassment. The games with the most reported negative social experiences were Dota2 and CSGO (ADL, 2019). The use of communication channels to verbally assault other players creates a hostile environment (Märtens et al., 2015). The perceived hostility in an online community is often referred to as toxicity. This perception might prevent new players from joining and may turn off regular players which imposes a serious challenge for game developers. The cost of fixing these problems can cost gaming companies enormous amounts of money (Chen et al., 2009). Research into the motivation behind hostile acts in online games can improve the overall gaming experience for the player base, increase profits and lead to greater understanding as to why certain gamers indulge in such antisocial behavior. People say and do things on the internet that they usually would not say or do in face-to-face interactions (Suler, 2004). This phenomenon is so common that it has its own term: *The Online Disinhibition Effect*. As a user on the internet, it is not easy for others to determine who we are. This anonymity is an important factor of the disinhibition effect. When people have the opportunity to separate their actions from their identity, they act out more easily. This can manifest itself in positive behavior like sharing of personal matters, unusual acts of kindness or going out of our way to help someone. But it can also lead to anger, hatred, threats and rude language. The effects of anonymity in a social context have been researched in social psychology for decades (Christopherson, 2007). Since the early 1980s researchers explored its effects in computer-mediated communication (CMC) which refers to any interpersonal communication that occurs within the internet. Two predominate approaches have been made to explain online behavior in the context of anonymity: The *Deindividuation Theory* and the *Social Identity Model of Deindividuation Effects (SIDE)*. This literature review researches if these theories can be applied to an online environment like online games and if toxicity is linked to the anonymity online environments provide.

Online multiplayer Games

Online games can be described as games that are played over some form of computer network most commonly the internet (Weibel et al., 2008). They argue that the connection to the internet allows playing against other human players which leads to more player enjoyment than playing against computer-controlled opponents. According to Frostling-Henningsson (2009) online gaming is considered to be highly socially motivated and a strong sense of togetherness occurs through cooperation and communication with other players. Multiplayer games can possibly lead to a completely new way of experiencing a game compared to a single player game, as the player is able to share his reactions and emotions introduced by the game with others (Sánchez et al., 2012). League of Legends as well as Dota2 and CSGO are round based game where teams are often made up of strangers (Shores et al., 2014). Effective communication and teamwork are essential to be able to win a game. The necessity to communicate makes the experience highly dependable on social interactions with others. As shown in annual report (ADL, 2019), those social interactions can be quite hostile. The league also states that Dota2 and CSGO were the games with the most reported negative social interactions. Both of these games fall into the category of *match-based team online games* (Saarinen, 2017) and will be introduced in the next chapter.

Match-based team online games

CSGO

Counter Strike: Global Offensive is a multiplayer FPS (i.e. first person shooter) game developed and published by *Valve Corporation* (Saarinen, 2017). The player enters the game as either *Terrorist* (T) or *Counterterrorist* (CT). Players need to complete objectives which depend on the game mode and side (i.e., T or CT) they start the game with. For terrorists it can be planting a bomb at the bombsite while counter-terrorists try to defuse it. During a round while players are trying to complete the objective they can shoot and kill each other. If all enemy players died, the bomb detonates (T) or gets defused (CT) a round is won. Competitive mode involves two teams of five players who compete in a best of 30 rounds matchup. Teams can be premade (i.e., team-mates known) or consist of individuals who were put into a team according to their skill-level by automated matchmaking (i.e., team-mates unknown).

Dota2

Defense of the Ancients 2 can be categorized as a *Multiplayer Online Battle Arena* (MOBA) and is also played in five versus five matches (Saarinen, 2017). Both teams start in opposite corners of the map and try to reach and destroy the base in the enemy corner. Each player chooses from a pool of hero-characters with different abilities and playstyles. During a game the player gathers experience and gold (i.e., in-game currency) to buy items which make them stronger. Similar to CSGO teams can be premade or players get put into a game according to their skill level. Both games include a chat where players can write or talk to their teammates. According to Shores et al. (2014) this communication is important to win a game and makes matched-based team online games highly dependable on social interaction.

Toxic Behavior

There are many different forms of negative behavior in online gaming, for example: cyberbullying, cheating, harassment and griefing (Kwak et al., 2015). These terms can be summarized under the expression toxic behavior. The word “toxic” to describe bad behavior in online games stems from the way it affects the players (Blackburn & Kwak, 2014). Multiplayer games are dependent on player interactions. Through those interactions a player can get exposed to different forms of toxic behaviors, which have a negative impact on the gaming community and player enjoyment. According to Märtens et al (2015) players triggered by certain in game events like mistakes, can turn angry. In their anger players can start to verbally assault their teammates over the communication channels which are intended to coordinate teamwork. A possible reaction can be players giving up, feeling offended or regret playing the game. Multiple bad experiences are harmful for the community and may lead to a negative bias towards future engagements with new teammates and opponents. How hostile a player community is perceived, often gets summarized under the term toxicity (Märtens et al., 2015). Shores et al. (2014) stated that toxic behavior includes a large range of “un-sportsmanlike” behavior like sending offensive messages and intentionally helping the opposing team. A specific definition of toxic behavior is dependent on the community it was shown at. Different communities have different perceptions on toxicity (Blackburn & Kwak, 2014). Those differences arise due to unique rules, expected behaviors, customs and ethics across games. This subjective perception can lead to individuals not recognizing what they did.

Griefing

Foo and Koivisto (2004) defined four categories of griefing. *Harassment* has to aim to emotionally distress the victim. This is achieved through shouting slurs, spamming a chat channel with repeated messages or disrupting events. *Scamming* refers to fraudulent transactions through trading, fake identities or breaking a promise. *Greed play* refers to any action with the intent to benefit regardless if the behavior annoys the other players around. The last category is called *Power imposition*. Demonstration of power itself is not perceived as griefing, but if it is coupled with other actions such as killing a player or harassment, it is. Chen et al. (2009) summarized griefers as players who like to cause others to enjoy the game less. Although it is estimated that only a small percentage of players fit the description of griefers, their impact on the player base and the gaming companies is detrimental. Chen et al. (2009) argue that griefing behavior leads to other players quitting the game and an overall more toxic environment. If a gaming community is perceived as toxic, new players may refuse to join. According to Chen et al. (2009) gaming companies sometimes pour in millions of dollars trying to fix this problem because they do not want to lose customers.

Flaming

Researchers came up with several definitions for flaming (Alonzo & Aiken, 2004). They generally include words of profanity, obscenity and insults targeted at individuals or an organization. Alonzo and Aiken (2004) argue that the act of flaming results from uninhibited behavior and aims at harming an individual or organization. Flaming behavior can also be seen in the use of capital letters or an extensive use of exclamation points and question marks (Turnage, 2007).

Cheating

Chen and Wu (2015) defined cheating in as any behavior that a player can use to gain an unfair advantage over other players. What might be considered cheating is depended on the rules of a game which are stated in the End User License Agreements (EULA) and Terms of Services (ToS) (Botvich et al., 2010). Although there exists uncertainty in the definition of cheating, some behaviors like wallhacking (i.e., a program that lets a player see through walls and spot enemy player that should normally be hidden) and aimbotting (i.e. a program used to assist a players aim in first person shooters, resulting in high accuracy of the shots) have been affiliated with it. Yan and Randell (2005) systematically classified cheating in online games and created an extensive list of cheating behaviors. Their goal is to assist game developers, players and security specialists in detection and prevention of cheating in online games.

Cyberbullying

The definition of bullying is not agreed upon but usually involves aggressive behavior and an imbalanced relationship in regards to power which happens over a prolonged period of time. (Chesney et al., 2009). With the introduction of new technologies, new ways of communication followed. Cyberbullying can be described as an intentional, aggressive act using electronic forms of contact (Smith et al., 2008). This allows the bully to potentially reach their victim at any time and copies of their exchanges can be shared to a large audience. Cyberbullying is associated with depression, anxiety and can result in drastic actions such as suicide (Kwak et al., 2015). According to Kwak et al. (2015) players who invest a lot of time and effort into a game are more likely to react emotionally when they get targeted by bullies or toxic behavior. This emotional reaction can even carry over into the real world.

Summary Toxic behavior

As explained above toxic behavior includes a wide variety of negative behaviors. Their definitions are not always agreed upon and some of them may overlap. According to Chesney et al. (2009) some authors and gamers regard griefing and cheating as the same. Foo and Koivisto (2004) point out that repeatedly killing another player may be within the rules and therefore not cheating, but it might be considered as griefing. According to Kowert (2020) research on toxic behavior in games can be a confusing task. Many researchers use different criteria and terms to describe the same thing. Kowert (2020) argues that the inconsistencies in the topic are likely a consequence on the novelty of the field. There also exists a lack of studies researching the topic and that is why she tried categorizing toxicity in a new way. Going deeper into defining toxicity is out of the scope of this thesis, for more information see Kowert (2020). Research into toxic behavior in online games has shown that this type of behavior can cause psychological harm (e.g. increased anxiety and lower self-esteem) despite some interactions only lasting a short amount of time (de Mesquita Neto & Becker, 2018). In some cases, toxic behavior like cyberbullying leads to depression and can even end in suicide. Some researchers argue that misbehavior in an online environment is linked to the anonymity that is provided through the internet (Barlett, 2015; Chen & Wu, 2015; Chen et al., 2009; Suler, 2004; Tang & Fox, 2016; Zimmerman & Ybarra, 2016).

Anonymity

Definitions of anonymity

Anonymity has long been of interest to social scientists and social psychologists (Christopherson, 2007). The construct of anonymity can be described as the inability of people to identify an individual or themselves. Zimbardo (1969) defined anonymity as the inability for others to single out an individual resulting in incapability to punish, judge, criticize or evaluate the anonymous person. Hayne and Rice (1997) state there are two subcategories of anonymity. *Technical Anonymity* refers to the absence of any information that could make someone identifiable during communication and other interactions. Information like one's full name, IP address or telephone number. Technical Anonymity makes it impossible to base an evaluation by means of social cues or identity thus the content alone influences succeeding comments and responses. *Social anonymity* refers to the perception of being unidentifiable due to missing cues (e.g., body language, voice and appearance) that would let others attribute an identity to an individual or themselves. Both subcategories of anonymity are shown in online environments like computer games, internet forums, chat rooms and instant messaging (Zimmerman & Ybarra, 2016). A person can feel anonymous in the privacy of their home while communicating over the internet and they can feel anonymous in a crowd where identification cues are lacking. Pedersen (1997) described anonymity as seeking privacy by going unnoticed in a crowd of strangers and gave an example of going to a concert alone.

Privacy

According to Zimmerman and Ybarra (2016) privacy is an important component of anonymity. Through privacy an individual is able to control the amount of contact with others (Pedersen, 1997). Too much interaction can lead to a feeling of invading one's privacy, to little may result in loneliness. There are three functions anonymity serves in the context of privacy. *Catharsis* means the unhindered expression of emotions and thoughts to others without the ability to be identified. A person can be completely anonymous on the internet and still share their feelings without the fear of social evaluation (Christopherson, 2007). Pedersen (1997) identified two more factors, autonomy and recovery. *Autonomy* describes the function of being able to try out new behaviors without social repercussions. The most common function associated with anonymity was *recovery*. People use anonymity to get away from social stress and pressure and can heal their social injuries.

Deindividuation

One of the most influential theories on the effects of anonymity on behavior is Zimbardo's (1969) Deindividuation Theory (Christopherson, 2007). Festinger et al. (1952) define the state of deindividuation as being not seen or paid attention to as an individual in a group which leads to fewer inner restraints against various behaviors. In the study from Zimbardo (1969), he observed that participants who were wearing hooded clothing to hide their identity were willing to administer longer shocks to others compared to those who wore clothes that made them easy to identify. In a deindividuated state the anonymous person resides, self-observation, self-evaluation and concern of social comparison are all decreased. As a result, the individual feels less fear, guilt and shame which

leads to more expression of otherwise inhibited behavior. Mann et al. (1982) supports this claim and argues that anonymity protects an individual from social disapproval or rejection that would likely follow after deviating from a social norm. Another example of the deindividuation theory is the Stanford prison experiment (Haney et al., 1973). Participants were assigned either the role of a guard or that of a prisoner. The group that was assigned the role of guards wore uniforms and glasses to hide part of their faces. The guards displayed cruel behaviors towards the prisoners which might not have been the case if they were easier to identify. But researchers do not agree on the factors that lead to an deindividuated state (Christopherson, 2007). While Zimbardo (1969) argues that environmental conditions lead to said state, others see the cause more in a lack of self-awareness (Diener, 1979; Prentice-Dunn & Rogers, 1982). After examining different studies in a meta-analysis Postmes and Spears (1998) issued doubts whether the deindividuated state even exists. Technologies gave us the possibility to interact with others without the need to be physically present and can grant relative anonymity (Chen & Wu, 2015).

Anonymity in an online environment

This chapter will explore how anonymity has been researched in an online environment.

Computer-mediated-communication

With the rise of new technologies especially the internet followed new interest in the effects of anonymity in an online environment (Christopherson, 2007). Computer-mediated-communication (CMC) refers to any communication between people in the context of the internet and intranet networks. CMC possesses some unique features (e.g., lack of visual cues and asynchronous communication) that are non-existent in face-to-face (FtF) communication. Many use the internet for interpersonal communication which provides large amounts of social behavior to investigate (Joinson, 2001). It has been argued that the lack of visual cues leads to less awareness of others and more anti-normative behavior (Kiesler et al., 1984). Anonymity in an online environment gives individuals the opportunity to behave in an anti-normative way without any repercussions. According to Joinson (2001) visual anonymity leads to higher self-disclosure (i.e., sharing of personal information like feelings, goals and dreams). When participants can see each other, their public self-awareness is heightened, which leads to social inhibition and less self-disclosure. On the other hand, missing visual cues lead to more private self-awareness and in term to increased self-disclosure. To summarize Joinson (2001) argues that in an online setting where participants are anonymous, they are more likely to share personal information. On the other hand, when they are identifiable, they are more cautious in the amount of information they share. Reduced social cue models predict that removing social hints will lead to less restrained communication and social standards (i.e. politeness, how to greet) becoming less important (Kiesler et al., 1984). In the same study they also hypothesized that in the absence of social cues individuals who usually possess less power in society (e.g. children and women), have more power in an online environment leading to a more even playing field for all participants. Dubrovsky et al. (1991) made the same observation and named it the *Equalization Phenomenon*. In their study they compared the effects of status in FtF-communication and CMC and

observed that it had less influence in CMC. Suler (2004) states that people say or do things online that they would not do or say in a FtF environment and named this phenomenon the *Online Disinhibition Effect*.

Online disinhibition effect

According to Suler (2004) this disinhibition effect can function in two opposing directions. Its positive side can lead to people sharing their feelings, showing random acts of kindness and revealing their secrets which he named *benign disinhibition*. Its counterpart *toxic disinhibition* can lead to negative behaviors like using rude language, threatening others or harsh criticisms. Suler (2004) states that it is not always easy to tell them apart. What might be rude language to the receiver can be an important psychological breakthrough for the other. He defined six factors which are involved in creating the effect. In the following paragraph two effects will be introduced. *Dissociative Anonymity* is one of the principal factors that contributes to the disinhibition effect. The internet allows people to conceal their identity through hiding or modifying their name. Thus, whatever they say or do on the internet, will not be linked to their identity. Suler (2004) argues that this leads to a process of dissociation and to the fact that a person does not acknowledge their own behavior anymore. The individual feels less restricted and cognitive moral processes are temporarily interrupted. People can go as far as denying that the behavior stems from them at all. With the factor *Invisibility* Suler (2004) describes a concept that is closely linked to anonymity. In text communication a person might know who he is talking to but cannot see them. Without eye-contact there is a lack of visual social cues which can lead to less inhibited behavior. Seeing a frown, headshaking or a bored expression might inhibit what people are willing to share. Suler (2004) compares this to everyday relationships where an individual sometimes averts eye-contact while talking about something emotional. Lapidot-Lefler & Barak (2012) did research on the impact of anonymity, lack of eye-contact and invisibility on toxic online disinhibition. In their study lack of eye-contact lead to the most flaming behavior. They argued that less social cues lead to a communication induced deindividuation, which lets individuals act out more freely. Wright (2013) researched the connection between anonymity and cyber aggression. She defines cyber aggression as cyberbullying behaviors (e.g., threats, insults) without the need of an imbalance in power. Her study indicates that anonymity contributes to cyber aggression in young adults. According to Douglas and McGarty (2001) deindividuation theory has provided a popular explanation for hostile behavior in CMC. Instead of a crowd, people lose part of their identity through the anonymity CMC provides. In their study Douglas and McGarty (2001) observed that participants who were anonymous were more likely to exchange flaming behavior. Postmes and Spears (1998) conducted a meta-analysis with 60 studies on deindividuation and did not find any support that a deindividuated state in CMC leads to anti-normative behavior. With its limitations in explaining behavior online the classic deindividuation theory was revised and Reicher et al. (1995) outlined a new approach with the social identity model of deindividuation (SIDE).

SIDE

SIDE is based on two social theories and used them to revise the classic theory of deindividuation (Vilanova et al., 2017). The *Social Identity Theory* by Tajfel et al. (1979) proposes that part of an

individual's identity gets created through groups they belong to. Each group has its own rules affecting how a member acts, behaves and thinks. This does not lead to de-characterization, but individual aspects of the personality overlap with more collective aspects which gain more influence in a situation where an individual is a member of a group. *Self-Categorization Theory* as stated in (Vilanova et al., 2017) splits identity into the parts social and personal. In situations where the focus is on personal identity we look at ourselves as individuals and are more likely to act according to our own beliefs and norms. On the other hand, there are situations where the group identity is highlighted. If the category of group identity is salient people tend to follow the group rules on how to behave and feel. Similarities inside the group and differences to other groups are focused on. According to SIDE the deindividuated state does not lead to a loss of individuality or self-awareness but it increases the salience of group/social identity and leads to more group-conform behavior (Postmes et al., 2001; Reicher et al., 1995). If behavior is interpreted as anti-normative depends on the group norm (Vilanova et al., 2017). What might seem anti-social behavior from outside a group might be perceived as normal by the group itself. Often group norms are not explicitly stated in online groups, rather they emerge from common behaviors or predominant attributes of group members (Reicher, 1984). In the meta-analysis from Postmes and Spears (1998) SIDE explained CMC behavior much better than classical deindividuation theory. In the study from Postmes et al. (2000) flaming behavior was found to be influenced by social norms within the group which get stronger over time. In other words, the longer an individual is part of a group, the more influence the group norms gain. In another study using the SIDE approach Lea et al. (2001) tested whether anonymity in groups would increase social identity among its members. For this study 56 female participants were put into either a visually anonymous or identifiable group and had to communicate with their group members via computer. The study found that members of the visually anonymous group had identified more with their own group and had higher feelings of group attraction compared to the group that was not anonymous. In another study Postmes and Spears (2002) observed that an increase in the saliency of gender cues led to more gender-stereotypical interactions among anonymous users compared to non-anonymous users. Those results contradict the Equalization Phenomenon (Dubrovsky et al., 1991) proposing anonymity should lead to a more even playing field. Newer research from Amiot et al. (2017) found that in-group norms such as anti-normative behavior (e.g. insults) towards an out-group can lead to said behavior from in-group members. If an individual considers themselves part of the in-group (e.g., a gamer), interacts with someone from the out-group (e.g., not a gamer) and the group-norm includes toxic behavior (e.g., flaming, griefing) the individual is more likely to act out toxic behavior.

Deindividuation compared to SIDE

Classic deindividuation theory focuses more on the negative effects that anonymity can have on behavior (Festinger et al., 1952; Haney et al., 1973; Zimbardo, 1969). An individual can submerge themselves inside a crowd or can conceal their identity through other means (e.g., clothing, internet) which leads to less inner restraints and them more likely to behave in an anti-normative way. The deindividuated state occurs as the result of anonymous conditions within a group causing an individual to lose awareness on who they are (Diener, 1979). This approach was also used to explain various anti-normative behavior in online environments (Douglas & McGarty, 2001; Kiesler et al., 1984).

Classic deindividuation theories claim that anonymity can be one factor that leads to anti-normative behavior. SIDE focuses on the effect a group has on the behavior of its members (S. D. Reicher et al., 1995). In their model anonymity does not affect behavior in a direct way but it increases the effects of group norms. If members of a group are anonymous, they are more likely to behave in a group conform way. Taken together the disinhibition through anonymity can make gaming spaces more vulnerable to toxic behavior with SIDE effects of the social environment keeping up the perpetual cycle (Kowert, 2020). The next chapter will have a look at how SIDE and the classic theory of deindividuation have been applied to explain toxic behavior in online games.

Anonymity in gaming

Chen et al. (2009) measured the effects of immersion and anonymity on four categories of grief play motivation. They argue that the motivation behind griefing can be influenced by four categories. *Game influenced* (i.e., factors resulting from the game itself like boredom or anonymity), *player influenced* (i.e., from other players who are not considered griefers), *grief influenced* (i.e., from other griefers) and *self-influenced* (i.e., from the personality and immersion of the player). They measured immersion as the number of hours a participant played the game per day and argued that immersed players should spend more time playing. Chen et al. (2009) defined griefers as players who like to cause others to enjoy the game less. Their sample included 200 students from a local university in Singapore who volunteered. Their results showed that anonymity increased the enjoyment of a player in all four categories of grief play motivation. Participants who enjoyed anonymity more than others also showed more enjoyment in grief play. This observation seems to support the *Disinhibition Effect* (Suler, 2004) where it is argued that anonymity leads to less inhibition resulting in more anti-social behavior (i.e. griefing). Zimmerman and Ybarra (2016) examined the effects of anonymity and social modeling on aggressive behavior in an online word game. Their results showed that anonymous participants reported higher temptation to show aggressive behavior towards other players compared to non-anonymous participants. Their results are consistent with findings from other studies that indicate an increase in inappropriate or aggressive behavior through anonymity (Christopherson, 2007; Hayne & Rice, 1997). Although they drew attention to the limitations of their study including the fact that the word game they used, is far from comparable to a modern multiplayer online game. Chen and Wu (2015) tried to explain their findings on cheating behaviors in online gaming using the SIDE-model. They argue that SIDE and deindividuation theory had mostly been applied in laboratory studies which reduces ecological validity. For this reason, they relied on self-reporting surveys to collect their data. A total of 1400 surveys were collected of which 961 met their criteria and were used in their analysis. Their results showed that playing with strangers (i.e., anonymous gaming) led to significantly more cheating practices in games compared to playing with known individuals. This effect seemed to be mediated by group identification withing the player community. Players identified themselves more with a group when anonymous and were thus more likely to act according to the group norm. Chen and Wu (2015) argue that their findings are consistent with the assumption that SIDE is better suited to explain cheating in online games than classical deindividuation theory. Hilvert-Bruce Neill (2020) found results supporting the claim that norms can lead to aggressive behavior in an online

environment. Normative beliefs about online aggression significantly predicted *general* (e.g., insults about skill/intelligence) and *prejudiced* (e.g., sexist, racist insults) cyber-aggressive behavior. Furthermore, gamers find aggression more tolerable and acceptable when it is encountered online, opposed to face-to-face situations. According to Kowert (2020) research into toxic behaviors in online multiplayer games is a relatively new area of study. Only a few studies have been conducted and most of them lack an empirical basis to build any theories from. Research has pointed to various factors which could explain creation and sustainment of toxicity in games.

Environmental and community factors

The online environment in games grants relative anonymity (i.e., others do not know you) and invisibility (i.e., others cannot see you) that can lead to the online disinhibition effect described by Suler (2004). Anonymity can also lead to more group conform behavior as describes in the SIDE-model (Reicher et al., 1995). If the community in online games already engages in toxic behavior an anonymous individual would be more likely to follow this group-norm.

Personality, age and Gender

There are a variety of personality and social factors that are positively correlated with toxic behavior among online-game players (Hong & Cheng, 2018). *Sadism* (i.e., the tendency to enjoy letting others suffer), *psychopathy* (i.e., a personality disorder including lack of empathy and persistent antisocial behavior) and *Machiavellianism* (i.e., a person is willing to manipulate, deceive and exploit others to reach their own goals) are all positively correlated with toxic behavior in games. According to the results of Hong and Cheng (2018) sadism has the strongest correlation with toxic behavior of the three. Most of the participants in Saarinen (2017) linked toxic behavior to young age and felt they been immature when they engaged in flaming in the past. According to Chen and Wu (2015) men are much more likely to cheat in online games than woman.

Gameplay factors

Cook (2019) argues that especially imbalance between skill levels of players might be a driving force in toxicity. A big gap in skill level can lead to frustration which can show itself in toxic behavior. Shores et al. (2014) observed that players who like to play more competitively had higher scores on a toxic behavior measure than players who enjoy a less competitive playstyle. Toxic behavior in online games can have various negative implications like less enjoyment of the game, anxiety, lower self-esteem and depression (Blackburn & Kwak, 2014; de Mesquita Neto & Becker, 2018).

Possible solutions to counteract toxicity in online games

To counteract toxic behavior Saarinen (2017) created a list of possible solutions that gaming companies can use.

Pre-emptive

Results of Saarinen (2017) suggest that players enjoy playing when skill levels are matched. With equal skill-level, players are neither bored nor frustrated and put their efforts into playing the game. He suggests a *skill-based matchmaking* system like employed in CSGO and Dota2. Cheating is perceived very negatively by gamers and can ruin the enjoyment of all players involved. Therefore, an *anti-cheat software* should be in place. Although rules of a game are stated in documents like ROC and EULA, the participants of his study found them long and cumbersome to read. They wished for *well-defined and compact set of rules* with the aim to reduce the need for morn-based interpretations.

Reactive

An *in-game tool for muting other players* should be provided to counteract written and verbal flaming. Silenced players are not able to communicate to the individual that has muted them. According to Saarinen (2017) players are aware that the high amount of toxic behavior cannot be handled by the companies themselves. That is why there should be an *in-game tool to report players* for toxic behaviors. Gaming companies *taking a visible stance against* toxic behavior was seen as a positive thing by the participants.

Personal service

A game company should be able to help a player when all other methods have failed. Saarinen (2017) proposes *personal customer service* with the aim of resolving issues that could not be solved by automatic tools. There is an additional method mentioned by Blackburn and Kwak (2014), called *player councils or tribunals*. The players themselves get replays of toxic incidents and can decide if toxic behavior has been shown and if the player should be punished.

Discussion

This literature review examines if toxicity in multiplayer online games is connected to the anonymity online environments provide. A short history of anonymity research in FtF environments was given, followed up by studies looking into the effects of anonymity in online environments (CMC), ending in a presentation of the few existing studies on the effects of anonymity in online gaming. In the next chapters findings will be summarized, compared to one another and critically reviewed by the author of this thesis.

Anonymity in FtF environments

Researchers such as Haney et al. (1973) and Zimbardo (1969) were looking for answers too why individuals are behaving in an anti-social or rather anti-normative way . They argued that people can obscure their identity through clothes or hide in a crowd which leads to a state of deindividuation. Festinger et al. (1952) define the state of deindividuation as a condition where an individual cannot be seen or paid attention to. The anonymous individual experiences fewer inner restraints (e.g., fear of social judgements, guilt, shame) and is more likely to show anti-normative behavior. If this concept is applied to explain toxic behavior in online multiplayer games, it would provide a quite simple answer. Gamers are relatively anonymous online which leads to less inner restraints and more anti-social behavior (i.e., toxic behavior). But researchers do not agree on the underlying factors that lead to a deindividuated state. Zimbardo (1969) claims environmental factors are leading to a deindividuated state, while Diener (1979) focuses on self-awareness. Later research by Postmes and Spears (1998) even doubts the existence of a deindividuated state. Nevertheless, the theory of deindividuation has been applied in online environments to explain anti-social behavior (Douglas & McGarty, 2001).

Anonymity in CMC

Communication on the internet provides large amounts of social behavior to research and analyze due to its popularity (Joinson 2001). With research into the effects of anonymity in online environments, first mentions of positive effects due to anonymity appeared (Joinson, 2001; Pedersen, 1997; Suler, 2004). According to Pedersen (1997) privacy is a key component in regulating the amount of social contact. Too much can overwhelm an individual leading to feelings of invasion and to little may results in loneliness. One function of anonymity lies in *catharsis* meaning the unhindered expression of emotion. Individuals feel less restrained (i.e., inhibited) to show their emotions because they cannot be evaluated by others when there is no possibility to identify them. *Catharsis* by Pedersen (1997) can be compared to *benign disinhibition* by Suler (2004). According to Suler (2004) anonymity and invisibility helps individuals in sharing their feelings and secrets to others with less fear of negative reactions from their peers. Joinson (2001) supports this claim and states that anonymity leads to more self-disclosure (i.e., sharing of feelings, goals and dreams). Although anonymity seems to have its benefits, there is also evidence showing that anonymity can lead to bad or anti-normative behavior in online environments (Douglas & McGarty, 2001; Kiesler et al., 1984; Suler, 2004; Wright, 2013). Although most studies might use different terms (e.g., decharacterization instead of deindividuation) and explanations (e.g., social cue models, self-awareness or the environment) the core message stays the same (i.e., anonymity can lead to anti-normative behavior). This changes with the

introduction of SIDE (Reicher et al., 1995). The meta-analysis of Postmes and Spears (1998) did not find any evidence that deindividuation leads to anti-normative behavior. They claim that group norms are better suited to explain behavior in an online environment. According to Reicher et al. (1995) anonymity does not lead to anti-normative behavior, instead it increases the effect group norms have on group behavior. They tested their claim in various studies which were all supporting the idea of SIDE (Postmes et al., 2000; Postmes et al., 2001; Postmes & Spears, 2002). Newer research from Amiot et al. (2017) reported similar results while hinting at the importance of in-group versus out-group effects. Members of a group tend to seek similarities inside the in-group and differences towards the out-group. Applying SIDE to the question if toxicity in online games is affected by anonymity would lead to following statement: If toxic behavior is considered a norm in gaming, anonymous individuals would be more likely to adjust their behavior to be in line with the group norm (i.e., more likely to show toxic behavior themselves). Although studies in CMC were conducted in online environments (e.g., email, blogposts, instant messaging) none of them were carried out in online gaming. If results from SIDE or disinhibition can be applied to explain behavior in online games remains a central question. Anonymity in CMC does seem to encourage antisocial behavior, but researchers do not agree on the underlying processes. Some argue that deindividuation and disinhibition caused by anonymity can lead to anti-normative behavior. While newer research tends to explain online behavior through group effects mediated by anonymity. In both cases anonymity seems to play an important role.

Anonymity in Gaming

Chen et al. (2009) researched motivation behind griefplay and observed that anonymity is associated with griefing. Players who enjoyed being anonymous were more motivated to engage in griefing compared to participants who enjoyed anonymity less. They argued that anonymity in online games leads to disinhibition and therefore more engagement in antisocial behavior. As griefing is considered to be part of toxic behavior (Kwak et al., 2015), these results are in favor of the premise that anonymity has an effect on the toxicity in multiplayer online games. In a more recent study Chen and Wu (2015) tested if SIDE can explain cheating in online multiplayer games. The results from their study were in favor of the SIDE-model. Participants who played with strangers (i.e., anonymous) were more likely to cheat in games than individuals who played with acquaintances. This first result would support deindividuation and disinhibition theory. Their results also showed that this effect was mediated by group identification, thus supporting SIDE. Anonymous participants were more likely to identify themselves with the group and therefore act according to the group norm. According to Chen and Wu (2015) cheating has become a norm in online gaming and anonymous players were showing more cheating behavior. Zimmerman and Ybarra (2016) tested if anonymity has an effect on aggressive behavior in an online word game. Their results also support the notion that anonymity can lead to anti-social behavior. The question remains if their results can be applied to modern online multiplayer games, due to the word game used not being comparable to the complexity of modern games. According to the SIDE-model anonymity does not lead to anti-normative behavior, instead it strengthens group norms. In Dota2 and CSGO individuals play in teams consisting of four other known or unknown players. According to Reicher (1984) group norms in online environments can emerge from common behaviors. This implies that frequent toxic behavior could become a norm which

increases the chances of other group members engaging in toxic behavior too especially when they are anonymous. According to SIDE anti-social behavior might not be considered anti-social, anti-normative or toxic by the group that engages in such behavior (Vilanova et al., 2017). What could seem toxic from outside a group might be perceived as normal by the group itself. This claim is supported by Foo and Koivisto (2004) who issued similar claims in the case of grieving. Some players might not be aware that they are grieving and causing distress to other players. Kowert (2020) argues that some researchers go even as far as to predict that toxic behavior will be normalized, leading to a state where harassment in games is seen as something harmless and acceptable.

Defining toxicity

Kowert (2020) argues that toxicity is defined quite vaguely which can lead to confusion while researching its causes. Researchers have assessed toxicity as a broad term with little differentiation between the types of toxic behavior. The inconsistencies in the topic are likely resulting from the novelty of the research area. Only a few studies have been conducted and most of them lack an empirical basis from which a theory could be deduced. To compare results, it is important that researchers use the same definition of toxic behavior. For this reason, Kowert (2020) created an extensive list defining toxic behaviors and tried cataloging them with all their variants.

Possible Solutions

Saarinen (2017) mentioned possible solutions to counteract toxic behavior. The following chapter tries to expand on those thoughts. If predictions from the SIDE-model can be applied in games, players themselves would hold an important role in reducing toxic behavior. As long as players engage in toxic behavior, it can be considered a group norm and other unknown (i.e., anonymous) players would be more likely to behave in toxic ways. Leading by the example players could stop engaging in toxic behavior and therefore change the norm to something better (e.g., fair play, friendly environment). If gaming companies would take a more active stance against toxic behavior, as mentioned by Saarinen (2017), it could lead to some players overthinking their actions and might help in changing the current norms in online multiplayer games. Although this was not researched in this literature review the influence of twitch streamers (e.g., someone playing a game live on the internet while others can watch and interact) should be assessed. With some streamers reaching followers in the millions and thousands of daily views (Social Blade, 2021), their impact on the gaming scene could be detrimental. The *player councils or tribunals* mentioned by Blackburn and Kwak (2014) are already in place in the MOBA *League of Legends*. If an individual gets reported for toxic behavior in-game, a replay of the incident can be reviewed by other players who decide if the accused is guilty or not. Found guilty the player may receive various punishments ranging from being muted for a period of time to a permanent ban from the game. Valve is looking to implement a similar system into Dota2 (Down, 2021) while CSGO has its own system trying to counteract cheating. Aside from researchers and companies there seems to be a lot of responsibility in the hand of the players themselves. Another approach is mentioned by Märtens et al. (2015) including a program that measures toxic expressions in-game. For the tribunal to work players need to report toxic behavior. The approach from Märtens et al. (2015) does not require the reporting of players, instead it measures toxic remarks independently. The

information from the system could be used to design a live-system that displays the odds of winning according to the communication used by a team. They argue that toxic communication can lead to more game losses. If players want to win and see the effects of their communication in real time they might be willing to change their behavior. Although the possible solutions mentioned above might not completely eliminate toxicity, controlling it would lead to a more positive gaming experience for newcomers and veterans alike.

Future research

There has been a lot of research if anonymity has an effect on behavior in online environments but not specifically in online multiplayer games. Future research should look more into what is affecting toxic behavior in online games and how it could be counteracted. Less toxicity can lead to a more positive gaming experience for the players, shed more light into the motivation behind toxic behavior and save companies a lot of money that gets spend trying to reduce it (Blackburn & Kwak, 2014). Some researchers even go as far as claiming toxic behavior could be normalized and accepted as part of multiplayer online games (Kowert, 2020). Toxicity needs to be defined in a uniform way and researchers should agree to use the same definition. A new and extensive catalogue has been created by Kowert (2020) and could be used for future research. To generate large amounts of data on toxic behavior in online games, approaches similar to Märtens et al. (2015) can be used. They designed a method to filter and analyze large amounts of data on toxic speech in the online game Dota. They stated that their approach could be used in similar games without large amounts of effort. Through more data collection researchers would be able to evaluate what motivates players to engage in toxic behavior and what kind of interventions could help reducing it. This literature review has focused on various effects anonymity can cause in social situations. Besides anonymity there are loads of other factors which can influence toxicity in online games. Factors including age, gender, gameplay and personality all have been researched in context of toxicity. Although some researchers still use disinhibition or deindividuation to explain anti-social behavior online, more recent studies suggest that SIDE would be better suited to explain behavior online.

Conclusion

With the limited amount of research on the topic (Chen & Wu, 2015; Chen et al., 2009; Zimmerman & Ybarra, 2016) no definite conclusion can be made as to whether anonymity influences the toxicity in online multiplayer games. Although the studies presented all showed effects that anonymity can lead to more toxic behavior, more research has to be conducted.

CMC could be interpreted as any form of communication online, including multiplayer online games. If these relatively new environments can be compared to blogposts, email and instant messaging usually used in CMC research is questionable and has not been done in this literature review. Therefore, it remains uncertain if these findings from CMC research can be applied to multiplayer online games.

Nevertheless, anonymity seems to play a key role in explaining anti-social behavior in online environments to this date. Whether anonymity affects behavior in a direct way or indirectly through group norms cannot be answered with certainty. More recent studies suggest that SIDE is better suited to explain behaviors in online environments. Therefore, future studies should focus on the SIDE approach.

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