# Flaming and Gaming – Computer-mediated-communication and toxic disinhibition

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**Abstract**

In this explorative study flaming in online-gaming was examined using surveys of gamers. Flaming is considered a typical manifestation of toxic disinhibition and is defined as displaying hostility towards other people by insulting, swearing or using otherwise offensive language. Three general conclusions were drawn. First, despite many gamers indicating that they themselves do not flame regularly, flaming seems to be very common in online-gaming. Second, the views on flaming differ, being both positive and negative. Gamers indicated to perceive flaming-behavior both as amusing and annoying, although they tend to experience flaming in general more as amusing than annoying. Third, a possible explanation seems to be perceived norms of communication. Time spent on online-gaming seems to be a good predictor of flaming-behavior, with those who play the most also flame the most.

Contents

*Introduction*

Similar to the telephone and television, the introduction of the internet has brought about it a discussion of its possibilities and its negative aspects (Bargh & McKenna, 2004; McKenna & Bargh, 2000). One of these possibilities comes in the form of computer-mediated communication (CMC) allowing people from geographically distant spaces to communicate with each other. The negative aspect of CMC, when compared to face-to-face (FTF) communication, is that it seems to be more hostile and offensive. CMC lacks social psychological influences normally present in face-to-face communication (Ho & McLeod, 2008). Although there have been positive effects associated with computer-mediated-communication, such as encouraging more lively discussions and generating more lively arguments (Connolly, Jessup & Valacich, 1990; Jessup, Connolly & Tansik, 1990; Siegel, Dubrovsky, Kiesler & McGuire, 1986), more recent research on the disinhibiting effect of an online-environment has focused on the negative aspects of CMC. This dark side of CMC has been coined toxic-disinhibition by Suler (2004) and was introduced to describe online-flaming and other acting-out behaviors that often involve damaging the other's or even one's own self-image, without any beneficial personal growth. This phenomenon of acting out has been found evident in Pro-Ana and Pro-Mia blogs (Brotsky & Giles, 2007), social loafing in online communities (Shiue, Chiu, & Chang, 2010), online gaming sites (Williams & Skoric, 2005), hate sites (Chau & Xu, 2007), violent pornographic and pedophilic sites (Malamuth, Linz, & Yao, 2005), cyber bullying (Huang & Chou, 2010), comments on YouTube (Moor, Heuvelman, & Verleur, 2010), online interpersonal relationships (Barak, 2007) and organizational conflicts (Turnage, 2008). Flaming behavior is considered a typical manifestation of toxic-disinhibition (Alonzo & Aiken, 2004; Derks, Fischer, & Bos, 2008). So far the effect of CMC within an online-gaming environment has not been addressed in academic literature. The purpose of this study is to explore the prevalence and possible causes of flaming-behavior within an online-gaming environment.

*Video-games in General*

The early 1990s saw the phenomenon of computer-gaming introduced into home environments (Liebert, 2003). By the end of the 1990s the internet allowed people to use the internet as a gaming-forum. Although gaming may be considered part of cultural mainstream, little academic research on it has been done. Research on video-games in the academic field

has concentrated on adolescent players (Griffith, 1996; Griffith 1997), excessive gaming and addiction (Griffiths, 1991; Griffiths, 1997; Griffiths & Hunt, 1995; Griffiths & Hunt, 1998; Phillips, Rolls & Rouse, 1995; Liebert, 2007; Brian & Wiemer-Hastings, 2005; Griffiths & Wood, 2000) and violent-game-content and increases in real-life aggression (Anderson & Bushman, 2001; Anderson & Dill, 2000; Bartlett, Harris & Bruey, 2008). There has been little published academic research on online-gaming and even less in the type of games that can be played (Meredith, Hussain & Griffiths, 2009). Video-games come in a number of genres. Liebert (2003) suggests a classification of games by their narratives that imply degrees of social engagement. The three proposed genres are stand alone games, local and wide network (LAWN) games and massively multiplayer online role-playing games (MMORPGs). Stand alone games are considered single player oriented games. There is an option to go online and seek a human opponent, but the gamer is not obliged to do so. LAWN games are considered to lay emphasis on tactical game-play. They are multiplayer oriented and cannot be played alone. Essentially two teams play against each other. MMORPGs are typically large, sophisticated, detailed and evolving worlds based on different narrative environments. Typically MMORPGs are structured in a manner that forces gamers to interact with each other (Ducheneaut & Moore, 2004). Concerning social interaction it becomes apparent that from the former to the latter there is a growing notion of such. Whereas stand alone games can be played without any form of interaction with another person, LAWN games require a minimum number of players to be played. Although both genres do not promote social interaction, both offer the possibility to do so. MMORPGs offer the widest range of social interaction, the potentially greatest immersion and the widest range of possible social interactions.

Evidently social interaction of some kind is present in most forms of online-gaming. But what effect does game-genre and to a further extent game-content have on computer-mediated-communication?

### Flaming

Flaming is a term that has been used to describe all kinds of disinhibited online-behavior (Moor, Heuvelman & Verleur, 2010). Definitions have been "expressing oneself more strongly on the computer than one would in other communication settings" (Kiesler, Siegel & McGuire, 1984, p1130) and "the expression of strong and inflammatory opinions"

(Siegel, Dubrovsky, Kiesler, & McGuire, 1986, p. 161). The definition has even included all kinds of emotional expressions and use of superlatives (Lea, O'Shea, Fung, & Spears, 1992, Thompsen, 1996). It is apparent that the definition of flaming has been inconsistent. The essence of the New Hacker's Dictionary definition of the term flaming is that a message is "directed with hostility at a particular person or people" (Raymond (1996).

The adopted definition of flaming will be "exhibiting hostility towards other people by insulting, swearing or using otherwise offensive language" (Moor, 2007).

*Games and prior research*

A game is defined as an exercise of voluntary control systems, in which there is a contest between powers, confined by rules in order to produce a disequilibrial outcome (Avedon & Sutton-Smith, 1971). In this competitive environment it comes naturally that each participant wants to succeed. Losing the game however can lead to frustration, which subsequently can lead to aggression (Berkowitz, 1962). According to Berkowitz frustration is the "interference with the occurrence of an instigated goal-response at its proper time in the behavior sequence" (Berktowitz, 1962, p. 26).

Research on video-games has very much focused on violent game-content and its effect on aggression. Playing video-games with violent content has been suggested to lead to an automatic learning of aggressive self views (Uhlmann & Swanson, 2004), an increase in aggressive behavior by increasing aggressive thinking (Carnagey & Anderson, 2005) and an increase in aggressive behavior, cognition, affect and cardiovascular arousal (Anderson, 2003). A host of other negatives outcomes have also been documented, such as the increased likelihood of endorsing real-life violence (Dill, Brown & Collins, 2008), seeing others as more hostile (Bushman & Anderson, 2002) and being less likely to experience empathy (Funk, Buchman, Jenks & Bechtholdt, 2003) or engage in pro-social behavior (Anderson, Sakamoto et al, 2008). Regardless of video game content however, games are competitive by nature and this alone may lead to heightened feelings of aggression and hostility, which can become the basis for aggressive attitudes and behaviors (Williams, 2002). This is especially true for gamers who are primed for competitive games. Gamers primed for competitive game-play tend to think more in aggressive terms, than do gamers in cooperative game play (Anderson & Morrow, 1995). Based on these findings gamers who play for competitive reasons are expected to exhibit more flaming-behavior than do gamers who play for

cooperative reasons. A similar relationship may be expected when comparing gamers of violent and non-violent video-games. Gamers of violent video-games are expected to exhibit more flaming-behavior than those who play non-violent video-games.

Concerning flaming little to no academic research on online-gaming has been done. Other studies have identified the lack of academic knowledge on gamers. So far it has only been evident that there is no one profile that applies to all gamers (Meredith, Hussain & Griffiths, 2009). Research on MMORPGs has provided data for this specific genre. Although females also play these games, they are still a minority and often older than their male counterparts (Liebert, 2007). The average MMORPG-gamer is in his or her mid twenties and plays and spends an average of roughly 22 to 23 hours a week on gaming (Liebert, 2007; Yee, 2007). It is unclear however in how far this profile may apply to stand-alone gamers and LAWN gamers.

There are a number of gamers whose gaming-behavior may be considered excessive and on the verge of becoming or already being pathological. Pathological gaming is considered as "the inability to control excessive gaming habits despite associated social or emotional problems" (Lemmens, Valkenburg & Peter, 2011). This type of gamer shows increase in real-life aggression. Interestingly this is regardless of video-game content. Considering the pathological nature of these gamers, increases in real-life aggression could be explained by withdrawal symptoms. Alternatively this could also be explained by heightened exposure to a competitive environment, which could consequentially lead them to think in more aggressive and hostile terms than do non-pathological gamers, who have less exposure to such an environment. Regarding the latter assumption it seems plausible that this type of gamer would exhibit more aggressive and hostile behavior online, which could manifest itself in flaming-behavior.

Gender may also possibly play an important role in flaming-behavior. Although females are just as likely to feel anger the way males do (Archer, 2005), they differ in aggression behavior. Women tend to aggress more relationally, whereas men tend be more aggressive physically and verbally (Archer, 2005, Crick & Rose, 2000, Geen, 1998; Huesmann, Moise-Titus, Podolski & Eron, 2003). Flaming-behavior is pretty straight-forward and will be considered a direct form of aggression.

Literature provides a number of possible factors that could heighten feelings of aggression, which in turn could lead to flaming-behavior. These factors include motivation for gaming (competition vs. cooperation), game-content (violent vs. non-violent), gender, pathological gaming tendencies and time spent on gaming. The hypotheses that will be tested are as follow:

1. Competitive gamers will have a higher flame-score than cooperative gamers.
2. Gamers of violent-video-games will have a higher flame-score than gamers of non-violent-video-games.
3. Female gamers will have a lower flame-score than male gamers.
4. Gamers who spend more time gaming will have a higher flame-score than gamers who spend less time gaming.
5. Pathological gamers will have a higher flame-score than non-pathological gamers.

## Methods

### Participants

In this study a total number of 247 (237 male and 10 female) German-speaking gamers participated. Their mean age was 24.58 years, ranging from 14 to 68. They were approached via a number of online-gaming communities.

### Measurements

### Pathological-Scale

To assess the level of pathological-gaming a seven-item addiction scale, developed by Lemmens, Valkenburg and Peter (2009), was used. This scale included one item for each of the seven underlying criteria of pathological-gaming, being salience (Did you spend all day thinking about a game?"), tolerance ("Did you start spending increasing amounts of time on games?", mood modification ("Have you played games to forget about real life?"), relapse ("Have other unsuccessfully tried to reduce your game use?"), withdrawal ("Did you feel bad

when you were unable to play?"), conflict ("Did you have fights with others (e.g. family, friends) over your time spent on games?") and problems ("Have you neglected other important activities (e.g., school or work) to play games?"). Each item was preceded by the statement: "During the last six months, how often…". Gamers could then rate each of the seven statements with 1 (never), 2 (rarely), 3 (sometimes), 4 (often) and 5 (very often). In order to compare groups based on their pathological score groups were created, scoring 7-15 places someone in the non-pathological group, 16-25 in the excessive-gamer group and 26-35 in the pathological group.

### *Aggression questionnaire*

In order to assess the level of aggression experienced during online-game-play participants were asked to rate the statements of the short-aggression-questionnaire (Bryant & Smith, 2001). The questionnaire consists of 12 items to which participants had to respond to on a 5-point scale (1 = totally disagree; 5 = totally agree). The participants were asked to rate the statements upon reflecting their feelings during online-gaming (How did you feel during online-gaming?).

### *Self-report on flaming*

In order to assess flaming-behavior participants were asked to rate in how far they insult, swear or offend during online-game-play. The participants were asked to respond to four items. The items each consisted of one of the four elements that define flaming-behavior (insulting, swearing, offending and feelings of hostility). Each item could be scored from 1 (Totally disagree) to 5 (totally agree). The flame-score is the sum of scores on these items ranging from 5 points (non-flamer) to 20 points (strong-flamer).

Additionally participants were asked to respond to items that assess motivations and experiences of flaming-behavior. Items from prior research on flaming on YouTube (Moor et al. 2010) were modified to the online-gaming scenario. Participants indicated reasons for flaming-behavior such as disagreement and entertainment. One additional item included the possibility of accrediting flaming-behavior to loosing.

In order to assess in how far flaming is common in online-gaming participants were also asked to indicate in how far they perceive flaming-behavior during online game-play.

Demographic data covered were age, gender and time spent on gaming per week. To indicate the number of hours spent per week on gaming participants could choose from a number of time categories. Although this study will classify games as stand-alone, LAWN-games or MMORPGs participants were asked to fill in which game and genre they played manually. The LAWN-genre is not a commonly known genre, as it supervenes on a number of different subgenres, which actually might be considered as a genre itself by gamers. Despite the need to further distinguish genres and possible subgenres, this will not be addressed further.

Participants were also asked to indicate their reason for playing online-games. In this sense motivations for game-play are either competitive or cooperative. Additionally participants were asked to answer whether the game they play is of a violent or non-violent nature.

## Results

### Reliability

As a measurement of reliability Cronbach's Alpha was calculated for the pathological-scale, the aggression questionnaire and self-report-on-flaming. Each subset is sufficiently reliable with alpha scores of 0.783, 0.82 and 0.816 respectively.

### Descriptive Statistics

Of the 247 participants 237 were male and 10 female. The mean age for males is 24.48 and 27.2 for females. Whereas 44.5% of males indicated that competition was their main motivation for playing online, 80% of females play online for this reason. 71.4% of males and 80% of females play violent games. The largest represented online-genre is LAWN games with 215 of participants playing games of this genre. Only two participants fall into the stand-alone genre and 6 into the MMORPG genre. A total number of 16 participants indicated to play web-based games, which do not fall into any of the mentioned genres. Descriptive statistics concerning game spent on online-gaming per week in regard to age are presented in table 1. In table 2 the findings on flaming-presence in online-gaming are presented.

**Table 1:**

Time spent on gaming per week by age

| Time spent gaming per Week | Adolescent (11-20) | Early Adulthood (21-35) | Midlife (36-50) + Mature Adulthood (51-80) | Total |
|---|---|---|---|---|
| <4 h | 8 | 15 | 2 | 25 |
| 4-8h | 7 | 21 | 7 | 35 |
| 8-12h | 5 | 26 | 4 | 35 |
| 12-16h | 7 | 21 | 0 | 28 |
| 16-20h | 9 | 17 | 2 | 28 |
| 20-24h | 9 | 11 | 1 | 21 |
| 24-28h | 5 | 8 | 1 | 14 |
| 28-32h | 7 | 9 | 1 | 17 |
| 32-36h | 5 | 0 | 0 | 5 |
| 36-40h | 3 | 2 | 0 | 5 |
| >40h | 13 | 18 | 3 | 34 |
| | | | | |
| **Total** | **78** | **148** | **19** | **247** |

**Table 2**

Means and standard deviations of agreement to "Motivations and Experiences regarding flaming"

| Item | Statement | Mean | Standard deviation |
|---|---|---|---|
| 1 | I often see flaming when I play online-games | 4.17 | 1.142 |
| 2 | I think flaming is a norm for communicating in online-gaming | 2.98 | 1.272 |
| 3 | When I see flaming in online-gaming, I find it annoying. | 3.05 | 1.353 |
| 4 | When I see flaming in online-gaming, I find it amusing. | 3.54 | 1.271 |
| 5 | I think flaming is usually meant to be funny. | 2.2 | 1.125 |
| 6 | I think flaming is just an honest way of expressing disagreement. | 2.42 | 1.256 |
| 7 | I think that flaming in online-gaming is a problem for some gamers. | 4.04 | 0.997 |
| 8 | Flaming is a problem for me. | 2.38 | 1.353 |
| 9 | I have flamed one or more times during online-gaming. | 3.39 | 1.513 |
| 10 | I flame regularly during online-gaming. | 2.19 | 1.406 |
| 11 | I flame when I am loosing during online-gaming | 2.19 | 1.294 |
| 11 | I flame when I am loosing during online-gaming | 2.19 | 1.294 |

*Hypothesis testing*

To test the first three hypotheses the means on the flame-score were compared with an independent sample t-test. The first hypothesis assumed competitive gamers to flame more than cooperative gamers. No statistically significant difference was found, $t(243) = -.963$, $p = .336$. The second hypothesis claimed gamers of violent games would flame more than gamers of non-violent video games. To test this hypothesis an independent sample t-test was used. The analyzed data rejects this assumption, $t(243) = .672$ with $p = .502$. Equal variances could be assumed for hypothesis 1 and 2. The equal variance assumption did not hold when comparing groups based on gender. Statistical significant differences were found, $t(12,257) = 2.283$, $p = .041$.

The fourth hypothesis assumed that gamers who spend more time gaming will have a higher flame score than those who spend less time gaming. Analyzing the data with an ANOVA found differences of marginal significance ($F(10,236) = 1.758$; $p = .069$). To scrutinize data further confidence interval were calculated with the Least Significant Difference test. Significant differences were found between the 40 hours a week group compared to four groups who play up to 16 hours a week. This is also true for the 28-32 hours a week group. The 40 hours a week group scored 1.22 to 5.01 ($p = .002$) than the less than 4 hour a week group, .01 to 3.56 ($p = .049$) higher than the 4-8 hours a week group, .039 to 3.64 ($p = .039$) higher than the 8-12 hours a week group, 0.99 to 4.75 ($p = .003$) higher than then 12-16 hours a week group and 0.66 to 5.04 ($p = .011$) higher than the 28-32 hours a week group.

The fifth hypothesis stated that gamers who score higher on the pathological scale will have a higher flame score than gamers who score lower. The data suggests this to be the case. After performing an ANOVA it appeared that the means differ significantly ($F(2,244) = 10.306$; $p = .000$). Again the Least Significant Difference test was performed to further scrutinize the data. Results suggest that the non-pathological group of gamers have a significantly lower flame-score compared to the excessive gamer group and the pathological group. The former scoring 0.89 to 2.86 higher ($p < 0.001$) and the latter 0.56 to 5.08 higher ($p = .015$).

## Discussion

### Flaming Prevalence – Online-Gaming Vs YouTube

The present study aimed to explore the prevalence of flaming-behavior in an online-gaming environment as well as to shed some light on possible causes of its occurrence. The phenomenon of flaming has been proven to be prevalent in a number of online-communities,

such as YouTube. This is also true for online-gaming. A large number of participants indicated that they regularly perceive flaming-behavior during online-gaming. Compared to similar research conducted on YouTube, the reports of observing flaming-behavior are higher in an online-gaming environment than on YouTube. Albeit a number of gamers indicating to have flamed at least once, the majority of gamers do not engage in flaming-behavior on a regular basis. Gamers tend to show higher agreement on these items, than do people active on YouTube.

The views on flaming are varied. Whereas some find it annoying behavior, others find its occurrence amusing. Comparing this to the research done by Moor et al on YouTube it becomes apparent that flaming is perceived in a somewhat different way. In online-gaming flaming is perceived as annoying, but to a slightly lesser extent. The most striking difference is that flaming is considered to be fairly amusing by gamers, whereas the majority of YouTube users do not regard flaming as amusing. This difference is very interesting. This could be the result of different environments. The online-gaming environment is competitive. This promotes feelings of hostility and aggression. As flaming-behavior is very common repeated exposure may be assumed. This may have a desensitizing effect on how flaming-behavior is perceived for gamers. The YouTube environment is an entirely different one. Its purpose is to share videos and music and it has a much greater social character so flaming-behavior would seem a lot more out of context, as aggressive and hostile feeling are not promoted in this environment or at least to a lesser extent. Apart from the difference in environments, conversations or dialogs could be shorter lived, as the text will not be displayed permanently in online-games. Flaming-behavior in online-gaming is short-lived compared to comments on YouTube that tend to persist.

Flaming only poses a problem for a minority of gamers. The majority do not seem to have a problem with flaming-behavior in online-gaming, although many believe it to be a problem for others. This is similar for users on YouTube. Although the discrepancy in levels of agreement seems striking, this may very well be the result of the third person effect. (Davison, 1983). The essence being that people overestimate the impact a message conveyed by mass media has on a third person.

A unique item of this questionnaire regarded loosing as a potential catalyst behind flaming-behavior. This item was met with mild disagreement, indicating that loosing itself is not often a reason for flaming.

Gamers on average agree moderately that flaming is a norm in online-gaming. Only a few participants agreed that flaming is funny. The results for these items are similar to those found by More et al.

A striking observation of the results is that even though many gamers indicate that they do not flame, many observe flaming behavior. It could be the case that flaming-behavior observed online is initiated by a minority of gamers. This could be partially supported as one group differs significantly from a number of other groups concerning their flame-score.

*Aggression and CMC*

Computer-mediated-communication has a disinhibiting effect on expressing ones emotions. This can become problematic when these emotions are negative, such as aggression. In this study the aggression score correlates with the flame score of gamers with $r = .505$. The relationship is not perfectly linear but it suggests that emotions, in this scenario aggression, play a role in expressing flaming-behavior. Although this relationship is only one of correlation it offers some support, that CMC has a disinhibiting effect on expressing ones feelings. However when comparing different groups who were expected to have heightened feelings of aggression due to their competitive motivations for participating in online-gaming against gamers who play for cooperative reasons there was no significant difference. Violent games also failed to have an effect on flaming-behavior. The best predictor for flaming is time-spent on gaming. However it remains unclear what motivates people to engage in flaming-behavior. Albeit gamers who play less than 4 hours a day exhibit significantly less flaming-behavior than those who play 40 hours or more a week, they do not differ significantly on their aggression scores. Consequentially aggression and CMC cannot account fully for the occurrence of flaming-behavior.

 The term Online Sense of Unidentifiability (Lapidot-Lefler & Barak, 2012) has been introduced to describe factors that promote negative online disinhibition in CMC. This term includes non-disclosure of personal data, invisibility and lack of eye-contact. When considering these factors one aspect becomes very apparent. Acting-out behavior, such as flaming, has no repercussions for the individual who engages in such behavior. If this person is part of an online-gaming-community they may be excluded from this community. In real-life the insulting or offending of another person can have immediate and direct repercussions. The insulted or offended may decide to institute legal proceedings against the offender or decide to engage in physical violence against the offender. It could also damage the offenders'

reputation as he or she is violating rules of social conduct, just to name a few. Whereas the online-gaming-communities have rules against flaming-behavior and may exclude someone who breaks these rules, there are little other sanctions that can be implemented in an online-community to restrain people from flaming.

*Flaming and Pathological score*

After grouping participants into groups regarding their score on the pathological scale, it was apparent that gamers in the lowest pathological score-group exhibit less flaming-behavior than do gamers in the excessive group and pathological group. The latter two show no statistically significant differences. This could be an effect of prolonged exposure to a competitive environment and could possibly imply a gradual development from excessive gaming-habits to pathological gaming-habits.

*Limitations*

This study is of course limited by its methodological choice of data-collection. Online-surveys are prone to assessing an incomplete general picture, as there might be a certain type of possible participants who do not participate. Data-collection was facilitated by a diverse collection of smaller and larger online-gaming communities. Many of these communities have rules of conduct in which flaming and acting-out behavior is prohibited. As participants were approached via these online-gaming communities, people who play online-games but do not take part of such a community are obviously not included. Another flaw in trying to assess a general picture of flaming-behavior in online-gaming is the fact that most participants played games that would fall into the LAWN-genre. The MMORPG-genre is therefore most possibly underrepresented. Despite the fact that many online-gaming communities have rules of conduct, which prohibit behavior such as flaming it is unclear in how far gamers truly have an understanding of this concept, albeit some understanding of the concept is implied. Some items, such as gaming-motivation might have restricted gamers in revealing their true motivation for playing online-games. Also items concerning participants' attitude towards flaming would benefit from being refined and possibly adding more items, to reduce the level of restriction in possible answers.

Albeit the differences in flaming-behavior between male and female gamers, due to the small sample size of females (n = 10), this difference may be due to a small sample size and might not be representative of female gamers. Also the other genres are underrepresented, especially MMORPGs. As the new online-games increasingly make an internet connection mandatory in

order to play, stand-alone games might be on the verge of extinction, which would mean this genre becomes superfluous.

It remains unclear why people engage in flaming-behavior. Although aggression correlates with flaming, it is by no means obvious how these aggressive feelings come to be and why some choose to express them and others possibly not. The fact that especially excessive gamers and pathological gamers tend to have a higher flame-score than others cannot answer the question as to why they engage in flaming-behavior. One possibility is that due to their vast experience in gaming, they ridicule the less experienced. This could offer a potential vicious circle as flaming could increasingly be seen a social norm in online-gaming. The fact that flaming-behavior is not exclusive to online-gaming suggests that aggression expressed in flaming comments does not originate from aggression solely based on the gaming experience. Regarding the aggression scores no significant differences were found between groups, where significant differences in flaming behavior were evident. Concerning flaming measuring trait-aggression might offer a better explanation as to why people engage in flaming-behavior and others do not, despite them scoring similar on the online-gaming aggression questionnaire.

Another possible explanation for gamers who spend nearly their entire week with gaming, simply flame, because they find it amusing. This would relate the concept of trolling. A troll is defined as someone who posts a comment "in order to attract predictable responses or flames" (Raymond, 1996). Trolling is derived from the phrase "trolling for newbies" and a well-constructed troll is a post that induces lots of newbies and flamers to make themselves look even more clueless. This could also explain why flaming is perceived as amusing in online-gaming. In order to assess why gamers find flaming amusing it also seems important how they interpret these comments. In a gaming context it may very well be possible they believe a flame to be the result of a frustrating gaming experience for the flamer, which in turn is amusing for them.

Perceived norms are also of crucial importance. Gamers tend to find flaming amusing, although not overly funny. If flaming is considered amusing people might engage in flaming-behavior to amuse his or her fellow gamers.

A lot of research still needs to be done to fully grasp the phenomenon of flaming. An emotion, such as aggression, is not enough to explain flaming. Obviously aggression does play a role, but it is unclear what sets off the flaming-behavior in CMC. As the data of this study suggests, excessive time spent on gaming tends to show a higher flame-score and for the group of gamers who spend more than 40 hours a week on gaming the self report on regular flaming is the highest. It is unclear however why this group flames more than others.

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Appendix

Questionnaire

Age:

Gender:

Time spent on Online-gaming per week (estimate of participant)

Favourite Game (to be filled in by respondent):

Genre of favourite game (to be filled in by respondent) :

Gametype: Violent vs Non-Violent

Motivation: (competition vs cooperation)

Pathological gaming (1-5, never, very often)

During the last six months, how often Did you…

(1) Salience: ''Did you spend all day thinking about a game?''

(2) Tolerance: ''Did you start spending increasing amounts of time on games?'

(3) Mood modification: ''Have you played games to forget about real life?''

(4) Relapse: ''Have others unsuccessfully tried to reduce your game use?''

(5) Withdrawal: ''Did you feel bad when you were unable to play?''

(6) Conflict: ''Did you have fights with others (e.g., family, friends) over your time spent on games?''

(7) Problems: ''Have you neglected other important activities (e.g., school or work) to play games?''

Short-Version Aggression questionnaire (1-5, totally disagree-totally agree)

How did you feel during online-gaming?

Given enough provocation, I may hit another person.

There are people who pushed me so far that we came to blows

I have threatened people I know

I often find myself disagreeing with people.

I can't help getting into arguments when people disagree with me.

My friends say I'm somewhat argumentative.

I flare up quickly, but get over it quickly.

Sometimes I fly off the handle for no good reason.

I have trouble controlling my temper.

At times I feel I have gotten a raw deal out of life.

Other people always seem to get the breaks.

I wonder why sometimes I feel so bitter about things.

Self report on flaming (strongly disagree – disagree – neutral – agree – strongly agree)

When playing online-games I…

…insult other players

…swear at other players

…offend other players

…feel hostile towards other players

Flaming-Motivation/Observation

I often see flaming when I play online-games

I think flaming is a norm for communicating in online-gaming

When I see flaming in online-gaming, I find it annoying

When I see flaming in game, I find it amusing

I think flaming is usually meant to be funny

I think flaming is just an honest way of expressing disagreement

I think that flaming in online-gaming is a problem for some gamers

Flaming is a problem for me

I have flamed on one more times during online-gaming

I flame regularly during online-gaming

I flame when I am loosing during online-gaming

Likert scale: 1, disagree; 5, agree