Flaming on YouTube

Peter J. Moor
peter@petermoor.nl

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Faculty of Behavioural Sciences
University of Twente, Enschede, The Netherlands

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Abstract

Flaming is defined as "displaying hostility by insulting, swearing or using otherwise offensive language." It seems to be common in comments on the video sharing website YouTube. In this explorative study, flaming on YouTube was studied using surveys among YouTube users. Three general conclusions were drawn. First, flaming is indeed very common on YouTube, although many users say not to flame themselves. Second, views on flaming are varied, but more often negative than positive. Some people refrain from uploading videos because of flaming, but most users do not think of flaming as a problem for themselves. Third, several explanations of flaming were found to be plausible, among which were perceived flaming norms and reduced awareness of other people's feelings. Although some YouTube users flame for entertainment, flaming is more often meant to express disagreement or to respond to perceived offense by others.

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1 Introduction

1.1 Overview

1.1.1 Flaming in Computer-Mediated Communication

A major technological breakthrough of the last few decades is the Internet. It makes various activities very easy, among which are finding all kinds of information and communicating with geographically distant people. However, just like earlier breakthroughs such as the telephone and television, discussions about the Internet have focused on its negative aspects as well as its possibilities (Bargh & McKenna, 2004; McKenna & Bargh, 2000). One of the negative aspects of computer-mediated communication (CMC) is flaming (Bubas, 2001; Riva, 2001). Compared to face-to-face (FtF) communication, CMC seems to be more hostile and offensive. This phenomenon is often called flaming, although the term is controversial.

The term "flaming" originates from the early computing community, and *The Hacker's Dictionary* (Steele et al., 1983) defines it as "to speak rabidly or incessantly on an uninteresting topic or with a patently ridiculous attitude" (p. 158). Early research on CMC adopted the term and used it to indicate different kinds of what seemed to be uninhibited behavior, like "expressing oneself more strongly on the computer than one would in other communication settings" (Kiesler, Siegel & McGuire, 1984, p. 1130) and "the expression of strong and inflammatory opinions" (Siegel, Dubrovsky, Kiesler & McGuire, 1986, p. 161). Definitions and operationalizations of the term have been used inconsistently since. Sometimes the term meant displaying offensive language such as swearing and insults, other times it included all kinds of emotional expressions or even the use of superlatives (Lea, O'Shea, Fung & Spears, 1992; Thompsen, 1996). The term has also been equated with disinhibited behavior, although disinhibition is in fact a theorized cause rather than the behavior itself (Lea et al., 1992). Besides, some researchers have explicitly included words like "electronically" in its definition (e.g. Siegel et al., 1986). Since the term has been adopted from the computer community, this is not surprising. However, it has been argued that defining flaming as an online phenomenon is a way of assuming technological determinism, again confusing the behavior with its theorized causes (Lange, 2006; Lea et al., 1992; O'Sullivan & Flanagin, 2003). Indeed, several studies have compared flaming in CMC to similar behavior in FtF interaction. While some studies supported the claim that flaming is more apparent in CMC (Kiesler, Zubrow, Moses & Geller, 1985; Orenga, Zornoza, Prieto & Peiró, 2000; Siegel et al., 1986; Sproull & Kiesler, 1986), others found flaming to be rare in both conditions (Coleman et al., 1999). Such studies only make sense if flaming is not by definition an online phenomenon. The term "flaming" has been used only rarely in non-electronic contexts, e.g. the classroom (Dorwick, 1993).

Lange (2006) says about flaming that "the term is so oversaturated that it has lost theoretical value (if indeed it ever had any)" and argues that scholars should stop using it. "The term itself means too many things to be useful at this juncture." Although she certainly has a point when calling the word "flaming" problematic, this does not necessitate throwing it away. Words like "knowledge" are also defined in various ways and used in many different contexts, but there is still a common understanding of what the term more or less refers to. With a common understanding of the behavioral patterns that are related to flaming, the phenomenon can be studied in a wide variety of contexts. Even if the behavior has different causes, consequences, intent, use or meaning in different contexts, the behavior itself is still the same.

However problematic its definitions are, flaming is a very real phenomenon. To some people, it even is an actual problem. Several famous people have stopped with maintaining

their weblogs (which are online columns or diaries that readers can comment on), because they received too many hateful feedback (Van Stein Callenfels & Van Woerden, 2007). Comments to online newspaper articles have also been criticized for being unnecessarily rude and uncivilized (Van Den Bergh & De Jongh, 2007). It has even been argued that people should be protected against flaming and other misuses of the Internet's anonymity by the law (Inman & Inman, 1996; Mendels, 1999).

Flaming is very real and must therefore be studied, even if its past definitions have been inconsistent and problematic. For the present research, flaming is defined as "displaying hostility by insulting, swearing or using otherwise offensive language" (Moor, 2007). This definition refers only to the behavior without assuming anything about causes or contexts. While the term "flaming" is used to refer to the behavior, the messages themselves are often referred to as "flames."

1.1.2 Flaming on YouTube

A specific context where flaming seems to be quite prevalent, is YouTube. Basically, YouTube is a video sharing website. Users can upload their own videos and comment on videos of others. Before YouTube was founded in 2005, it was already possible to share and watch videos on the Internet. However, the incredible ease of the system and the fact that videos are automatically associated with other videos having the same keywords have made YouTube one of the most popular websites currently in existence (Cheng, Dale & Liu, 2007). YouTube is used mainly for short videos. Although only videos of less than 10 minutes are allowed from regular users, Cheng and his associates found that most videos are even under 5 minutes in length. YouTube seems to attract a young audience. In 2006, it was estimated that about half of the YouTube users are under 20 years of age (Gomes, 2006) and that the mean age is around 25 (Halvey & Keane, 2007).

Since people can comment on videos and previously given comments are shown to video watchers, Moor (2007) has mentioned YouTube as an example of what he calls the online commenting situation. The online commenting situation is a situation where people can comment on a specific stimulus on a webpage. This stimulus can be anything like a text, a video or a picture, and earlier given comments are usually shown on the same page as the stimulus itself. Although this description seems to fit with YouTube, YouTube has also been called a community (Lange, 2007b). Although the majority of the YouTube users seem to be passive, not uploading many videos and hardly ever using the various communication tools provided by the website, some active users post many videos and often comment on other videos (Cheng et al., 2007; Halvey & Keane, 2007). One form of active YouTube participation is "video blogging" which is the video version of text-based weblogs. Sharing their experiences, ideas and feelings online allows people to get in contact with each other and as such form an online community (Lange, 2007b, 2007c).

Flaming seems to be very common on YouTube. It takes only little time browsing the website to find hateful comments like "BURN IN HELLL!!!" and "are you the biggest nerds of the entire world u fucking gay faggots go fuck all ur dads u discrace."

Lange (2007a) interviewed several YouTube users, mostly active ones. Most interviewees acknowledged "hating comments" to be common and argued it to be distinct from constructive criticism. Whereas criticism is usually on-topic and can be used to exchange views, hating comments are generally unrelated to video content and express general hostility such as "This sucks. Go die."

Reactions to the phenomenon varied considerably. Positive remarks were about the apparent benefit of having honest arguments online. For example, Lange notes that a girl in her late teens "expressed the view that having an arena to argue online was important to her because the same kind of arguing was actually difficult to accomplish in certain offline social

contexts" (p. 10). Other interviewees argued that people should be mature enough to accept criticism and ignore hateful comments. A man in his twenties said: "if you don't want comments from "haters" don't post videos" (p. 11).

Whereas some interviewees expressed being positive or neutral about flaming, others regarded it as a real problem. A teenage boy said that the large number of mean comments on videos makes the YouTube environment unfriendly and as such unsuitable for kids (p. 8). Renetto, a very active user called a "YouTube celebrity" by Lange, has even talked about the problem in a video in 2006. He said that he had received a lot of e-mail from people saying that they would not dare making a personal video and uploading it on YouTube. "Cause you don't understand, people will make fun of me, the way I talk, the way I am, the way I look" (p. 9). Indeed, for some people fear of hateful comments is a reason not to participate on YouTube (Lange, 2007b).

Lange (2007a) offers a possible explanation of the widespread flaming on YouTube. She mentions that many people think of "haters" as users who do not post videos themselves. According to this view, there is a class of YouTube users who "post pointless comments that have nothing or little to do with the video while never having to risk receiving unpleasant criticism themselves" (p. 7). This view suggests that a part of the YouTube audience simply enjoys insulting others. As mentioned before, YouTube has a young audience, and these "haters" might just be bored teenagers who like to take bullying outside the scope of their classroom.

1.1.3 Goal of the Present Research

The goal of the present research is to find out more about flaming on YouTube. This goal serves two purposes.

The first purpose is a very practical one. As mentioned before, YouTube is a very popular website but many people may refrain from participating because of the widespread flaming. If this is indeed the case, flaming on YouTube might be perceived as a serious problem. It is important to know whether many YouTube users think it is indeed a problem, and why they think that flaming is so common. If a solution for this problem should be found, a first step is to gain more insight into the causes and effects of the problem.

The second purpose is more theoretical. As discussed in Subsection 1.1.1, flaming has been a controversial concept since the first researchers started using it in the 1980s. Despite a number of inconsistencies and problems, contexts like YouTube illustrate that flaming is a very real phenomenon. If flaming is indeed common on YouTube as well as in other CMC environments, it is an interesting subject from a social psychological point of view. CMC has emerged relatively recently, and any apparent differences from FtF communication are informative about human communication in general. Therefore, flaming should be studied in various contexts to gain more insight in the variables associated with its occurrence and effects. For this purpose, YouTube is merely one more context in which flaming seems to be common and can hence be studied. Knowledge about flaming on YouTube is also knowledge about flaming in general.

The present research is explorative in nature. Rather than testing specific hypotheses, several general research questions have been formulated. Is flaming indeed common on YouTube, what do YouTube users think of it, and how can its occurrence be explained?

First, it is important to know whether flaming is really common on YouTube. Although one can easily find lots of flaming when reading comments on YouTube, a survey involving actual YouTube users provides stronger support for the perception that flaming is either common or not. To enable comparisons between the present research and research on flaming in other contexts, it is also essential to understand the nature of the YouTube context.

According to Lange (2007b), YouTube is a community. Being a community is a fundamental property of any social context, hence this perception is also addressed in the present research.

- RQ1: Is flaming common on YouTube?
    - RQ1a: Is YouTube a community?
    - RQ1b: Do YouTube users often perceive flaming?
    - RQ1c: Do many YouTube users flame?

The second question addresses the views that YouTube users have on flaming. In her interviews, Lange (2007a, 2007b) found that users had very different views on flaming. While some said that flaming is really annoying or even a reason to refrain from uploading personal videos, others argued that flaming is an honest way of having discussions not found in real life. For the present research, it is studied whether one of these views on flaming on YouTube is most popular. Also, the extent to which flaming is a problem is studied.

- RQ2: What do YouTube users think of flaming?
    - RQ2a: Do YouTube users think of flaming as something positive or negative?
    - RQ2b: Do YouTube users think of flaming as a problem?
    - RQ2c: Does flaming keep people from posting personal videos?

The third question addresses explanations for flaming on YouTube. Several subquestions about more specific explanations will be based on existing research on flaming. Also, YouTube users will be asked directly about their reasons for flaming.

- RQ3: Why do people flame on YouTube?
    - (RQ3a-c, to be given in Section 1.2)
    - RQ3d: What reasons for flaming do YouTube users give?

Section 1.2 will discuss existing research on flaming in different contexts. Since most research has addressed explanations for flaming, some additional subquestions for RQ3 will be given in this discussion. In Section 1.3, all research questions will be presented together.

1.2 Explanations of Flaming

Several explanations of flaming have been put forward. Most of these explanations, which will be discussed shortly, explain why flaming is more common during CMC compared to FtF communication. An underlying assumption, which is fundamental to most explanations, is that CMC lacks many social context cues that are used in FtF communication. This fundamental distinction between communication channels was already made explicit by early CMC researchers (Kiesler & Sproull, 1992; Sproull & Kiesler, 1986). According to this approach, sometimes called "cues filtered out" (Culnan & Markus, 1987), the lack of social cues makes CMC difficult and it causes people to display several kinds of seemingly uninhibited behavior online (Collins, 1992). Although many researchers have criticized the technological determinism assumed by early theories (e.g. Culnan & Markus, 1987; O'Sullivan & Flanagin, 2003; Spears, Postmes, Lea & Wolbert, 2002; Walther, 1994), most theories about flaming use the lack of social context cues in one way or another to explain why flaming is more prevalent online than FtF.

Support for this fundamental distinction between CMC and FtF communication comes from the Media Naturalness Hypothesis (Kock, 2005). According to this theory, people have evolved by Darwinian evolution to communicate FtF. As a species, we have specialized in reading facial expressions and body language, and hearing subtle pitch changes in speech.

Although we can learn to communicate otherwise, parts of our brains have been designed especially for interpreting these non-verbal cues. Mediated communication always lacks at least some of these cues, hence providing suboptimal communication.

Various explanations of flaming will now be discussed, most of which involve the lack of non-verbal cues.

1.2.1 Flaming is Caused by Deindividuation

One of the earliest explanations of flaming is that it is caused by deindividuation. Deindividuation is the term originally used to describe the phenomenon that people behave differently in groups. When individuals are together in groups, they are less inhibited and more prone to indulge in unrestrained behavior that they would not indulge in on their own (Festinger, Pepitone & Newcomb, 1952). Deindividuation, or submergence in a group, occurs when awareness is drawn away from the self by situational characteristics such as anonymity, altered responsibility and sensory input overload (Diener, 1977). Resulting behavior is believed to be impulsive and hyper-responsive to the behavior of nearby others, which may be anti-normative and aggressive.

According to Kiesler et al. (1984), typical CMC situations might be similar to deindividuation in a group. When people are online, they are usually anonymous. The lack of personal cues may draw attention away from the self and others. Indeed, "[except] that it involves submergence in a technology rather than in a group, computer-mediated communication seems to comprise some of the same conditions as are important for one kind of depersonalization experience called deindividuation" (Kiesler et al., 1985, p. 82). Several experiments showed that disinhibited behavior, among which flaming, is indeed more prevalent when people have to communicate anonymously using computers than when they communicate FtF (Kiesler et al., 1985; Siegel et al., 1986). However, when Taylor and MacDonald (1992) found that higher identifiability (operationalized as more biographic information about others) during CMC caused more informal speech and more flaming, they still argued that deindividuation had occurred. They theorized that deindividuation during CMC might differ from the traditional group phenomenon: "when using CMC systems, de-individuation appears to be associated with higher rather than lower levels of self-consciousness" (p. 668).

In a more recent experiment, people were shown to be more deindividualized when communicating online compared to FtF, although they exhibited no more uninhibited behavior (Coleman, Paternite & Sherman, 1999). Also, Yao and Flanagin (2006) failed to find expected effects of self-awareness during CMC on group identification and politeness.

Deindividuation is not studied for the present research. However, the next Subsection will discuss a theory which has emerged as an alternative to deindividuation theory.

1.2.2 Flaming is Caused by a Perceived Norm

Although the deindividuating conditions of CMC were originally believed to automatically lead to anti-normative behavior, Lea and Spears (1991) conducted an experiment on polarization towards group norms in a CMC discussion to show that online behavior can in fact be highly susceptible to perceived norms. When participants were addressed as group members, they showed high conformation. If they were addressed as individuals and thought that the experiment was aimed at finding differences in personal communication styles, their opinions diverged. This effect was reduced and even reversed when participants could see each other during the discussion. Lea and Spears argue that anonymity in CMC does not lead to more anti-normative behavior, but, conversely, it makes people more prone to conform to salient group norms. In a review of the literature on flaming, Lea et al. (1992) argued that

flaming might also be normative behavior when appreciated in the specific contexts in which it happens, instead of being anti-normative like deindividuation theorists suggested.

Deindividuation has not only been criticized in the CMC context. According to Reicher, Spears and Postmes (1995), the theory itself is not widely supported by research and its basic assumptions about the role of self-awareness have changed by several theorists in their attempts to explain empirical results. Reicher and his associates present an alternative theory of deindividuation effects, based on Social Identity Theory (Tajfel & Turner, 1986) and Self-Categorization Theory (Turner, 1987). According to this Social Identity model of Deindividuation Effects (SIDE), deindividuating circumstances do not reduce self-awareness in an individual. Rather, the personal identity makes room for a social identity. This identity switch, called depersonalization (Turner, 1987, p. 50), happens when a group is more salient than the individuality of its members. This is the case in anonymous situations traditionally associated with deindividuation. Two consequences of depersonalization are conformation to perceived group norms and higher attraction of fellow group members. Convincingly, a meta-analysis showed that the results of 60 deindividuation studies could be explained better by the SIDE model than by deindividuation theory itself (Postmes & Spears, 1998).

Some CMC research has focused on effects of group self-categorization, which is identifying oneself as a group member. Visual anonymity has been shown to increase self-categorization, which in turn increased group attraction and other-stereotyping in terms of the group (Lea, Spears & De Groot, 2001). In another experiment, conformation to primed norms was higher in anonymous groups than in identifiable groups (Postmes, Spears, Sakhel & De Groot, 2001). However, if a group identity is more salient when individual participants are visible, like for a group defined by a common gender, visibility instead of anonymity increases self-categorization and attraction of fellow group members (Lea, Spears & Watt, 2007).

In an analysis of online communication between students, Postmes, Spears and Lea (2000) found that different groups developed different communication norms over time. These norms were only applied to communication inside the group. Interesting for the present discussion is that some groups developed communication styles in which flaming was quite common. Although outsiders might think that group members were being offensive to each other, a closer view showed that flames were in fact meant to be funny. For example, the message "i am not in an aggressive mood. If you start that again I'll smack you in the face, yes! Tssss, problems! Look at yourself, stupid bitch!" was replied to with "isn't it nice how time flies by, with all these messages…" (p. 357). Whereas students in one group seemed to enjoy insulting one another, other groups only rarely flamed, indicating that flaming can indeed be normative behavior within a group. Kayany (1998) also found group differences in flaming when analyzing different newsgroups. It seems that flaming can be normative rather than anti-normative within online communication groups. According to Spears et al. (2002), in some ways CMC is actually more social than FtF communication.

Some empirical findings suggest, however, that flaming is not always normative behavior. In a survey among over 100 students, Bellamy and Hanewicz (1999) found a highly significant negative correlation between self-reported flaming behavior and the belief that "there is an unwritten code of conduct that people must follow in chat rooms." This would suggest that flaming is the opposite from normative behavior, although one might argue that depersonalization is an unconscious process which can not be measured by self-report questionnaire items. Also, if flaming is normative within a group and as such not truly hostile, participants may not have perceived their behavior as being flaming.

Mixed support for the SIDE explanation of flaming comes from a study by Moor (2007). He found that people conformed to a flaming or non-flaming norm in the online commenting situation (see Subsection 1.1.2). When existing comments contained flames,

people flamed more often in their comments on a text to which they disagreed. People who had flamed, however, liked a fellow commenter less than people who had not, while the opposite effect would fit better with the SIDE model.

The present research addresses the perception of a flaming norm on YouTube to find whether this is a possible cause of flaming:

- o RQ3a: Is flaming on YouTube caused by the perception of a flaming norm?

1.2.3 Flaming is Miscommunication

In research, messages have often been coded as flames by third party observers, i.e. individuals who themselves are not involved in the communication process (e.g. Aiken & Waller, 2000; Kiesler et al., 1985; Moor, 2007; Postmes et al., 2000). Critics, emphasizing the importance of the context, have argued that it is the perception of the interactants that counts (Lange, 2005; O'Sullivan & Flanagin, 2003; Thompsen, 1996). The earlier discussed analysis by Postmes and his associates (2000) showed that messages could look very offensive to outsiders while in fact they were funny from both the sender's and the receiver's point of view.

The sender and receiver, however, may also perceive messages differently. During FtF communication, non-verbal cues are very important for informing the receiver about the sender's emotional state and the meaning of verbal messages (Carter, 2003; Kock, 2005). For example, simple words like "okay" can be spoken in different tones, making its meaning shift from true agreement to mere compliance, surprise or even annoyance. Body language can subtly let a speaker know that the listener has lost interest in the conversation. Another example is sarcasm. Intonation and facial expression are very important to let the receiver of a message know not to take it seriously. Kruger, Parker, Ng and Epley (2005) say that "nonverbal information is an important cue to the speaker's meaning, particularly when the literal content of the message is ambiguous" (p. 926). CMC environments, lacking many non-verbal cues, may therefore increase communication ambiguity or misinterpretation of messages (Derks, Fischer & Bos, 2008; Kock, 2005).

Kato and Akahori (2004) showed that interpreting the emotional state of a communication partner indeed seems to be harder during CMC compared to FtF communication. In another study, worse interpretation of one another's emotional states was related to more negative emotions (Kato, Kato & Akahori, 2007). Although Kato and his associates concluded that miscommunication causes negative feelings, their method seems not to address the direction of the found correlation. Therefore, another interpretation of their results might be that negative emotions are more prone to be misinterpreted. Sarcasm has also been found to be misinterpreted more often during CMC than during FtF communication (Kruger et al., 2005). Both senders and receivers seemed to be unaware of this effect, overestimating the effectiveness of the communication.

If miscommunication occurs so easily during CMC, it might also be involved in flaming. Perhaps the ambiguity of messages is frustrating and invites people to express themselves more explicitly. More explicit messages from frustrated communication partners may become hostile and aggressive.

Instead of being a consequence of miscommunication, flaming might also itself be a form of miscommunication. Perhaps flames are only perceived as offensive by the receiver of a message, while the sender has no such intention. An illustration of this point is provided by an anecdotal report of an online discussion (Thompsen, 1994). Thompsen describes how some of his ideas in a philosophical discussion are met with disagreement. The sender of the reply, who is called "B" and is known to Thompsen in real life, expresses his disagreement and ends his message with "Sorry, but knowledge/experience/reality in any formulation shouldn't be subjected to that sort of crap." (p. 54). Thompsen is not sure about the intent of this reply,

especially because the word "crap" is used. He feels frustrated and offended, which he makes clear in a reply to B. When B responds, it appears that his first reply had no offensive intent at all. Also, the word "crap" was wrongly interpreted as such: "Of the "crap" line, well, I have been hearing that line used about the kind of work I do for a long time now from hard-core quantitative types and I guess it just rubs off. Don't take it personally." (p. 61). Thinking about the reasons why he had felt so offended, Thompsen blames CMC not only for lacking non-verbal cues but also for being a medium of ambiguous nature. CMC has characteristics of both speech (which is usually informal) and written text (which is more formal). Indeed, the nature of the context is important for deciding whether certain language is appropriate. When questioning participants on a mailing list about flaming, Franco and his associates (1995) received the following response: "I smiled, perhaps ruefully, at the entire flame war. As an English teacher, I have always reminded myself and my students of the great differences between speech and writing." (p. 19).

More evidence for the ambiguous nature of CMC messages, such as flames, comes from McKee (2002). When she analyzed discussions about racial issues on an asynchronous forum for students, she found a lot of hostility which she at first interpreted as flaming. When she interviewed some active discussion participants afterwards, she found that messages were often interpreted more offensive than they were intended to be. Messages that looked like flames, were actually not intended to be insulting. Participants reported that they felt angry when they interpreted a message as offensive and they felt the need to respond right away, resulting in messages displaying their anger. One example is when a participant called Kayla tries to make a point about reparations for slavery by using the analogy of owning a purple car. In the interview afterwards, Kayla explains that she was trying to discuss the subject rationally. Other participants, however, interpreted her message as highly offensive: "Let me get this right, YOU are COMPARING a CAR to a HUMAN BEING!" (p. 425). Kayla reports that she herself felt mad and frustrated when she read these accusations. Examples like this one show that miscommunication can easily occur in CMC and lead to what looks like flaming, with several participants feeling insulted without any initial offensive intent from anyone. In a FtF discussion, the actual meaning of a message can immediately be explained more thoroughly when it is interpreted incorrectly, but this quick feedback is absent in (asynchronous) CMC.

For the present research, it is studied whether miscommunication plays a role in flaming on YouTube:

- o RQ3b: Is flaming on YouTube in fact miscommunication?

1.2.3.1 Reducing Ambiguity: Emoticons

Messages can be interpreted more correctly when supported by non-verbal cues. The importance of these cues is emphasized by the existence of emoticons, also known as smileys (Carter, 2003; Derks et al., 2008). Emoticons are verbal substitutes for non-verbal cues, often facial expressions. They can be added to a verbal message to reduce ambiguity. For example, the most famous emoticon :-) represents a smiling face and can be used to indicate that the sender of the message is smiling (or would be smiling when sending this message FtF). An insult with a smile may suggest sarcasm. Emoticons were already mentioned to make CMC more efficient by Kiesler et al. (1985). In an experiment of Rivera, Cooke and Bauhs (1996), a CMC system was appreciated more when it offered the use of emoticons. Nowadays, they are used so often that many popular CMC systems offer the ability to add pictorial emoticons to messages (Riva, 2001). Emoticons are widely used and understood, although young people may be more familiar with them than older people (Krohn, 2004).

Walther and D'Addario (2001) found that messages were interpreted more negatively when either the verbal message or the attached emoticon was negative. In the same study,

however, it was found that the verbal message was much more important for interpretation than the emoticon. This may be an effect of the major difference between emoticons and non-verbal cues in FtF communication: emoticons are added consciously to a message whereas many non-verbal cues are displayed unconsciously (Derks et al., 2008; Walther & D'Addario, 2001). While cues such as facial validity and body language often give hints about someone's true emotional state, emoticons are added to a message deliberately and may have more to do with the sender's intent than with actual emotions. This deliberateness also explains why people use more emoticons in socio-emotional discussions than in task-oriented discussions (Derks, Bos & Von Grumbkow, 2007). When displaying emotions is inappropriate or of no use, emoticons can be omitted easily.

Thompsen and Foulger (1996) studied the effect of emoticons on the interpretation of verbally offensive messages. When positive emoticons are added to messages in an argument, they are perceived as flames less, although this effect is reduced when the verbal messages get more hostile. Apparently, mild insults are interpreted as being less offensive when they are accompanied by an emoticon, while this friendly gesture loses its credibility when combined with more clear hostility.

The effect of emoticons on (mis)communication is also studied for the present research:

- RQ3b+: Is this miscommunication reduced by the use of emoticons?

1.2.4 Flaming is Caused by Reduced Awareness of Others

A central concept to deindividuation theory is reduced self-awareness. However, early CMC researchers theorized that awareness of other people might also be reduced (Kiesler et al., 1984; Kiesler & Sproull, 1992). Apart from deindividuation, this might be an effect on its own. Kayla, the female student interviewed by McKee (2002), reported this effect of CMC: "You forget and you don't worry as much about hurting other people's feelings" (p. 422).

In his anecdotal report, Thompsen (1994) goes even further and describes occasionally confusing his computer with the individual he is communicating with. This phenomenon is called mechanomorphism (Shamp, 1991). Research on social dilemma tasks has found an effect that seems related. Social dilemma tasks are tasks in which two or more individuals can repeatedly choose for maximum personal profit or for cooperation. If they cooperate, total profit is maximized. Individuals seem to cooperate more when communicating FtF than during CMC (Rocco, 1998). Computer-mediated voice communication evokes more cooperation than text chat, suggesting that more social cues somehow lead to more cooperation (Jensen, Farnham, Drucker & Kollock, 2000). A curious finding is that text-to-speech chat, in which participants hear a computer voice speak out what another participant has typed, evokes higher levels of cooperation than normal text chat (Davis, Farnham & Jensen, 2002; Jensen et al., 2000). The neutral computer voice does not add any additional non-verbal cues, so the mere fact that the communication system has more human properties, may cause people to exhibit more social behavior. If people do not to some extent confuse the communication system with the communication partner, this effect seems hard to explain. If, on the other hand, mechanomorphism is a real phenomenon, it can be used to explain flaming in CMC.

Mechanomorphism seems to be outside the scope of the present research. It is studied, however, whether flaming on YouTube is associated with reduced awareness of other people's feelings:

- RQ4c: Is flaming on YouTube caused by reduced awareness of other people's feelings?

1.2.5 Other Explanations of Flaming

Several other explanations of flaming are discussed briefly here. Although they are not used for the present research, they complete the discussion of existing research and hence provide a more informed view on the subject of the present research.

In their "dispute-exacerbating model of e-mail," Friedman and Currall (2003) do not attempt to explain why e-mail communication makes conflicts escalate by giving one specific cause. Instead, they sum up several different processes, among which are reduced awareness of the self and others, reduced salience of social rules, and more difficulty in repairing minor misunderstandings. Flaming, or verbal aggression, might often be caused by multiple causes.

Flaming could also be explained using the Social Learning Theory (Bandura, 1987), which predicts that "seeing others engage in threatening or prohibited activities without adverse consequences can reduce inhibitions in observers" (p. 49). This prediction can be applied to the results of the study by Moor (2007), which showed that people conformed to the flaming norm in the online commenting situation. Offensively insulting a stranger on the Internet may indeed be seen as a threatening activity. Adverse consequences were absent for the earlier commenters and are in general highly improbable in these anonymous situations. The reduced attraction to a fellow commenter, which Moor found, may be similar to the findings of Baron and Kepner (1970). In their experiment, participants were less attracted to aggressive models compared to non-aggressive models, even though they imitated the modeled aggression.

Even when flaming is not modeled, the Internet may be a safe place to hurt other people's feelings because it is often anonymous and it lacks immediate repercussions normally related to aggressive behavior. Teenagers have found the Internet as a relatively safe bullying place (Van Den Akker, 2005; Willard, 2004). Levander (1994) even reports of people grouping together to start flame wars in innocent people's discussion groups, for example by sending graphic messages about cat-killing to cat-lovers. Their intention is to provoke aggressive responses in other people, which they find entertaining. Unfortunately, it is not clear to what extent this deliberate flaming happens on the Internet. Alonzo and Aiken (2004) asked students for what reasons (e.g. entertainment or relaxation) they would flame. However, they considered only the experimental situation and did not relate these reasons for deliberate flaming to real-life behavior.

Yet another explanation of flaming is that it is used to achieve or maintain one's status within an online community. People intentionally try to provoke other people to flame, in which case they themselves make a better or more professional impression than the defensive individual (Lee, Wagner, Cheung & Ip, 2002). Lange (2005) provides two examples of this process and argues that both displaying hostility and accusing another person of it serve social purposes in a community.

1.3 Research Questions

The following research questions have been formulated to guide the present research:

- RQ1: Is flaming common on YouTube?
    - RQ1a: Is YouTube a community?
    - RQ1b: Do YouTube users often perceive flaming?
    - RQ1c: Do many YouTube users flame?
- RQ2: What do YouTube users think of flaming?
    - RQ2a: Do YouTube users think of flaming as something positive or negative?
    - RQ2b: Do YouTube users think of flaming as a problem?
    - RQ2c: Does flaming keep people from posting personal videos?
- RQ3: Why do people flame on YouTube?
    - RQ3a: Is flaming on YouTube caused by the perception of a flaming norm?
    - RQ3b: Is flaming on YouTube in fact miscommunication?
        - RQ3b+: Is this miscommunication reduced by the use of emoticons?
    - RQ3c: Is flaming on YouTube caused by reduced awareness of other people's feelings?
    - RQ3d: What reasons for flaming do YouTube users give?

2 Method

2.1 Overview

A survey among YouTube users was conducted, for which three different questionnaires were used. Each participant was invited to fill out only one questionnaire, without being informed about the existence of the other questionnaires.

Two questionnaires were meant for senders and receivers of flames. Senders of flames were asked about the intentions of their comments. The posters of the videos on which flames were given, called 'receivers' here, were asked about their interpretation of the comments. By asking YouTube users about specific comments that they had submitted or received, the intended meaning and interpretation of flames could be studied. Also, a comparison of intended and interpreted meaning made it possible to investigate whether miscommunication had occurred.

The third questionnaire was a general questionnaire, addressing most research questions by asking about general experience with flaming on YouTube rather than specific comments.

2.2 Selection of Videos, Flames and Participants

To invite YouTube users to fill out one of the questionnaires, two lists were needed. First, to invite senders and receivers of specific flames, a list of comments on videos was needed. Second, for the general questionnaire, a list of random YouTube users was needed. Ideally, both lists would contain samples completely randomly drawn from all existing YouTube users and (recent) comments. In an attempt to approach this ideal situation, a list of videos (i.e. unique video IDs) provided by Xu Cheng was used. This list was generated using the YouTube Crawler (Cheng et al., 2007, pp. 2-3). This software tool starts with some short video lists provided by YouTube at a certain moment, like "Most Viewed" and "Top Rated." The combined list is then iteratively extended by adding videos that are related (according to keyword matches provided by YouTube) to videos already on the list. Hence, the YouTube Crawler can create a large list of (mostly very recent) YouTube videos in a short time. The specific list of videos used for the present research was acquired between February 15 and April 8, 2008, and it contained exactly 161,085 videos.

To select flames, initially a list of 750 videos was created. These videos were picked randomly from the original list, and they were only added to the new list if they were still available (i.e. not meanwhile deleted by the video poster), if there were at least five comments (excluding replies from the video poster himself), and if these comments were (mostly) in English. 12 of the 750 chosen videos were removed from the list afterwards because they had been removed in the meantime or because they did not meet the criteria on a second view. For the 738 remaining videos, the five comments leading the comment list (usually the most recent comments, although occasionally sorted otherwise caused by replies to comments) were rated to be either flames or not by a researcher using the definition given before. Despite the critique on using "outside observers" (see Subsection 1.2.3), this seemed the best method from a practical point of view. Besides, commenters and receivers were themselves asked whether they perceived the selected comments as flames later. With this in mind, comments were rated as flames even when there was doubt (see Subsection 4.2.1 for more information). The first five comments on 235 of the 738 videos were found to contain one or more flames. Because even a little doubt led to the judgment of flaming, this number in itself is not very informative of the occurrence of flaming on YouTube.

Selected flames were inserted into the questionnaire system, such that all senders and receivers could be invited to a unique questionnaire. Each sender was asked about his/her

comment (only the least recent one if more than one comments of the same user had been selected). Receivers were asked about one or more comments that they had received. For practical reasons, participants could only be questioned about comments to one video. Therefore, senders or receivers were not sent a questionnaire invitation if they had already received an invitation for a questionnaire about earlier selected flames.

Invitations were sent using the YouTube messaging system. Some YouTube users have chosen to only receive messages from YouTube Friends. In this case, or when an account had been closed after the video or comment was posted, an invitation could not be sent. If a receiver could not be reached, the associated senders were not contacted either because the miscommunication analysis required comparison between their answers (and receivers were always contacted before commenters). However, due to some technical problems this rule was occasionally broken. All in all, 225 receivers and 353 senders were sent invitations to questionnaires, about 368 selected comments.

For the general questionnaire, YouTube users were selected more easily. Random videos were chosen from the original list, excluding videos which had already been used for the selection of flames. For each selected video, the video poster and the sender of the first comment (i.e. most recent comment, if one or more comments had been given) were selected. If they had not been invited already to one of the questionnaires, they were sent an invitation to the general questionnaire. Again, users were not contacted if their accounts had meanwhile been closed or if they could only receive messages from Friends. In total, 697 YouTube users were invited to fill out the general questionnaire.

2.3 Invitations to the Questionnaires

All selected YouTube users were sent invitations on their YouTube accounts. In these invitations, the general research focus of "communication on YouTube" was given instead of the more specific concept of flaming (see Appendix A).

Each message contained the URL (web address) of the questionnaire. For the general questionnaire, all participants were given the same URL. Senders and receivers of selected comments were given a different URL, which contained a unique ID to identify the YouTube user within the questionnaire system. Instead of using the YouTube usernames, IDs consisted of random character sequences to make sure that participants with bad intentions could not fill out the questionnaire of another YouTube user by simply changing the username in the URL.

Due to some problems with sending the invitations and attempts at solutions, a small number of YouTube users was sent a slightly different message, with the URL cut in pieces or added in an attached (still-image) video rather than included in the message itself. This may have prevented them from participating, but the great majority of the selected users received "normal" messages as given in Appendix A.

2.4 Instruments

2.4.1 Specific Questionnaires

Selected senders and receivers could only fill out their questionnaires once. After they had done this, they could not reach the questionnaire page again. Instead, a message would be given informing them that they had already filled out the questionnaire and they could not do this twice.

The questionnaire for senders (see Appendix B.3) consisted of items measuring general background variables, items about the specific comment that was selected, and items about general experience with YouTube and flaming.

General background variables (see Appendix B.1) included demographics (gender, age and country) and YouTube usage (frequency of watching videos, posting comments and uploading videos).

The selected comment was given, with the title of the video which had been commented on. Also, a link to the YouTube page with the video was provided such that a sender could refresh his/her memory by having a look at the video that was commented on. Some questionnaire items about the selected comment measured specific background variables (i.e. the intended recipient of the comment and the familiarity of the sender with the video poster). Other items measured the purpose of the comment and the assumed interpretation of the comment by the receiver. Also, the definition of flaming was given, and the sender was asked whether he/she would call the comment flaming. The main goal of these items was comparison between senders and receivers to find out whether miscommunication had occurred (RQ3b). Since purposes and interpretations of comments were measured, however, results were also informative about reasons for flaming (RQ3d) and interpretations of flaming (RQ2a). Most items about the comment were multiple choice, although with some items room was supplied for submitting any information not covered by the pre-defined answers.

The items concerning general experience with YouTube and flaming were eight of the sixteen items used in the general questionnaire (see Subsection 2.4.2). Items that were believed to be influenced by the preceding items about a specific comment, were omitted from this questionnaire.

If senders had chosen "offending someone" as the purpose (or one of several purposes) of their comment, they were given a second questionnaire page. This page contained only one open question, asking them why they would like to be offensive (RQ3d).

Other senders were directly redirected to the last page (see Appendix B.2). On this page, they were thanked for their cooperation. They were given the opportunity to give any additional comments about flaming on YouTube, and they could give their e-mail address if they would like to be informed about the research focus and results afterwards.

The questionnaire for receivers (see Appendix B.4) was very similar to the questionnaire for senders. Items about a specific comment were formulated slightly different, to be appropriate for the perspective of the receiver. For example, the assumed purpose of a comment was asked instead of the actual purpose. All items concerning background variables and general YouTube experience were exactly the same as the ones used in the questionnaire for senders. The questionnaire for receivers could contain multiple comments, in which case all specific items were repeated for each individual comment in turn. The questionnaire for receivers did not contain any optional pages.

2.4.2 General Questionnaire

The general questionnaire had a different URL and did not require or check participant IDs. Instead, IP addresses and timestamps were saved with completed questionnaires such that double entries from the same person (actually, the same computer) could be found afterwards and dealt with appropriately.

For measuring general background variables, the general questionnaire contained the same items as the specific questionnaires (see Appendix B.1).

After the items concerning background variables, sixteen items addressing general experience with YouTube and flaming were given (see Appendix B.5). These items contained statements, to which agreement could be specified on a 5-point Likert scale. Table 1 gives the associations between these items (as well as their counterparts on the specific questionnaires) and the research questions. Item G03 (as well as its counterpart S03) may look confusing, because it does not measure RQ1a directly. Item G03 measures whether commenters get back

to videos to read any responses to their comments. If YouTube is a community, such interactivity may be expected.

If participants agreed (either slightly or completely) to the statement that they flame regularly in comments on videos (G16), they were given a second questionnaire page. This page provided eight more statements, to which agreement could be specified. These statements were about several reasons for flaming. Also, participants were given the opportunity to express any reasons for flaming not covered by the provided statements. All items on this page (summarized as "GQ page 2" in Table 1) were used to address RQ3d. Participants who did not admit flaming regularly, were not given this page.

The last page of the questionnaire was the same one used for the specific questionnaires (see Appendix B.2), allowing participants to give any additional comments and leave their e-mail addresses.

Table 1
Associations between General Questionnaire Items and Research Questions

	RQ1a community	RQ1b perceive flaming	RQ1c many users flame	RQ2a positive or negative	RQ2b a problem	RQ2c not upload videos	RQ3a flaming norm	RQ3b miscommunication	RQ3c reduced awareness	RQ3d other reasons
G01 (S01) video sharing website	X									
G02 (S02) community	X									
G03 (S03) get back later	X									
G04 forget about feelings									X	
G05 (S04) see flaming		X					X			
G06 (S05) norm YouTube							X			
G07 (S06) norm spec. videos							X			
G08 annoying			X							
G09 amusing			X							
G10 meant funny			X							
G11 honest disagreement			X							
G12 not upload videos						X				
G13 problem for others					X					
G14 problem for self					X					
G15 (S07) flamed once			X				X		X	
G16 (S08) flame regularly			X				X		X	
GQ page 2 reasons for flaming										X

3 Results

Section 3.1 will provide information about the number of participants and their characteristics. In the remainder of this chapter, the results will be discussed for each research question in turn. All significance tests mentioned in this chapter were 2-sided.

3.1 Participants

The questionnaire for senders was filled out by 95 participants (26.9%), and the questionnaire for receivers by 41 participants (18.2%). Only for 14 of the selected comments (3.8%), both the sender and receiver filled out the questionnaire. The general questionnaire was filled out by 157 participants, but eight of them seemed to have submitted invalid answers to the questions (e.g. the same agreement to all Likert items). Of the 149 serious participants (21.4%), seven had used the open question at the end to make clear that they did not fully understand the concept of flaming. Results of these participants on items about flaming were omitted, while results on all other items were kept. Also, some participants who had been invited to one of the questionnaires did not fill these out but instead replied using the YouTube messaging system. These replies have not been used for any statistical analyses, but some of them are cited when appropriate.
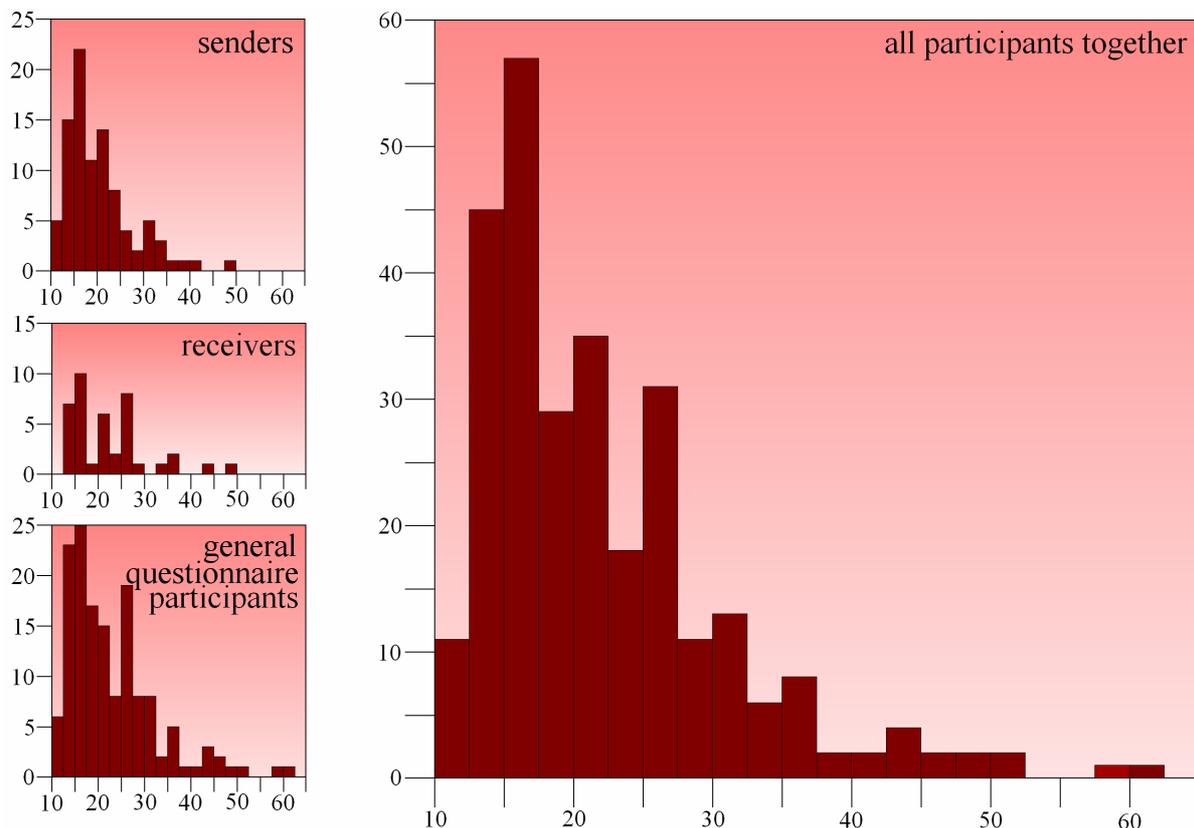

Figure 1. Age distributions of participants

The majority of all participants was male (75.1%). This percentage was highest for receivers (78.0%) and lowest for senders (73.7%).

The average age was 21.77 years ($SD = 8.77$). Participants on the general questionnaire had the highest age ($M = 22.72$, $SD = 9.61$), and senders had the lowest age ($M = 20.18$, $SD = 7.24$). The age distribution was heavily skewed (see Figure 1), with 50.7% of the participants aged under 20 and 69.6% under 25. A significant gender difference was found

(t(145) = 3.09, p = .002), with men being more than 5 years older (M = 24.10, SD = 9.87) than women (M = 18.62, SD = 7.49).

For all three questionnaires, most participants were from the USA (41.1% of the senders, 56.1% of the receivers, 39.6% of the general questionnaire participants). Also, many participants were from the UK (13.7%, 7.3% and 8.7%, respectively) and Canada (12.6%, 14.6% and 6.0%). For each questionnaire, more than half of the participants were from one of these three countries. Of the remaining participants, many were from continental Europe (22.1%, 9.8% and 25.5%). Interestingly, the majority of continental European participants on the general questionnaire (25 of 38, or 16.8% of all general questionnaire participants) was from Spain (see Subsection 4.2.2).

Wachting videos on YouTube was popular among participants. Not one participant said never to do this. A large majority said watching videos "often" (77.9% of senders, 87.8% of receivers, 77.2% of general questionnaire participants). Posting comments on videos was done less frequently, although most participants still selected either "often" or "sometimes" (together 85.2% of senders, 80.5% of receivers, 73.8% of general questionnaire participants). Larger differences between the groups were found for uploading videos. Receivers were found to upload videos most often (34.1% "often" and 51.2% "sometimes") and senders to do this the least (46.3% "never" and 30.5% "seldom"). Among the participants on the general questionnaire, all answer categories were popular with the least participants having selected "seldom" (18.1%) and the most "sometimes" (32.9%).

According to Fisher's exact test, all three YouTube usage measures were interrelated (all three p-values .011 or lower). Besides, age was related to both commenting frequency (F(3) = 2.63, p = .05) and video uploading frequency (F(3) = 2.63, p = .05). Both relations were U-curved. Participants who said to upload videos either "often" or "never" were older on average (25.13 and 24.69, respectively) than participants who did this "sometimes" or "seldom" (20.64 and 20.41). For commenting, a slightly different pattern was found, where participants commenting "never" or "seldom" were oldest (27.00 and 25.54) but participants commenting "sometimes" were younger (20.70) than participants commenting "often" (22.39).

Because most background variables were strongly interrelated and some of them clearly showed ceiling effects, they are omitted from the remainder of this chapter. Although some relations between background variables and other questionnaire items were found, these were nearly impossible to interpret correctly.

3.2 Is flaming common on YouTube?

3.2.1 The Nature of the YouTube Context

RQ1a addressed whether YouTube is a community or not.

The statement of questionnaire item G02 called YouTube a community, while it was called "nothing more than a video sharing website" in item G01. Agreement to both statements was expected to be significantly negatively correlated. This was indeed found, although the correlation was far from perfect (r(147) = -.29, p < .001). Although 66.4% of the participants agreed to some extent (i.e. selected 4 or 5) with perceiving YouTube as a community and the average agreement was 3.75 (SD = 1.19), the statement about seeing YouTube as nothing more than a video sharing website was not met with the same amount of disagreement (M = 2.85, SD = 1.44, 44.3% disagreement and 40.3% agreement). Apparently, "nothing more than a video sharing website" was not the opposite of "a community."

Getting back to the same video after commenting (item G03) was positively related to seeing YouTube as a community (r(147) = .24, p < .01), but not negatively related to seeing YouTube only as a video sharing website. About half of the participants (51.6%) agreed to

some extent with the statement about getting back after commenting, yielding slight agreement on average ($M = 3.33$, $SD = 1.45$). The results for senders and receivers were similar, although senders also agreed on average with the statement about YouTube being only a video sharing website ($M = 3.39$, $SD = 1.41$).

Most participants agreed with the perception of YouTube as a community, and the interactivity of getting back to a video page after commenting was also found for about half the participants. With regard to RQ1a, these results are supportive of the notion that YouTube is (perceived as) a community.

3.2.2 The Occurrence of Flaming

RQ1b addressed how often YouTube users perceive flaming and RQ1c addressed whether many YouTube users flame.

Participants on the general questionnaire showed agreement with statement G05 about often seeing flaming when reading comments on videos ($M = 3.75$, $SD = 1.30$). Most participants (64.8%) showed agreement, 38.0% completely (i.e. 5) and 26.8% slightly (i.e. 4). In contrast, only 19.1% showed disagreement (i.e. 1 or 2). Participants on the specific questionnaires showed even higher agreement (senders: $M = 4.11$, $SD = 1.27$; receivers: $M = 4.12$, $SD = 0.98$). It is, however, easy to subscribe this difference to the availability heuristic.

Several participants mentioned the regular occurrence of flaming on YouTube in their answers to the open question. For example, a 19-year old woman from the USA typed: "I see a lot of flaming these days and it seems to be on almost every video." A 28-year old man from Peru mentioned having over 700 videos himself, and typed that "[no] video is exempt of being flamed."

Self-reported flaming behavior was low. On the general questionnaire, 66.0% disagreed with statement G15 about having flamed one or more times, 12.1% disagreeing slightly (i.e. 2) and 53.9% disagreeing completely (i.e. 1). Average agreement to the statement was low ($M = 2.14$, $SD = 1.46$). Receivers admitted having flamed slightly more ($M = 2.61$, $SD = 1.60$), and senders even showed slight agreement on average ($M = 3.53$, $SD = 1.44$). Again, the availability heuristic might have been involved.

As could be expected, flaming regularly was reported even less often. On the general questionnaire, 84.4% disagreed with statement G16 about flaming regularly, 8.5% slightly (i.e. 2) and 75.9% completely (i.e. 1). Only 4.2% showed agreement, either slightly (i.e. 4) or strongly (i.e. 5). Average agreement was very low ($M = 1.45$, $SD = 0.91$). Again, receivers showed slightly more agreement ($M = 1.59$, $SD = 1.25$) and senders even more ($M = 2.34$, $SD = 1.54$).

Flaming regularly was significantly correlated with having flamed at least once ($r(139) = .60$, $p < .001$). Also, a significant correlation was found between having flamed at least once, and often seeing flaming when reading comments ($r(139) = .25$, $p = .002$). No significant correlation was found between flaming regularly and often seeing flaming.

RQ1b, about the frequent perception of flaming on YouTube, can be answered positively. Participants indeed indicated perceiving flaming often. The answer to RQ1c, about many YouTube users exhibiting flaming behavior, is negative. Most participants denied having flamed even once, and only a small minority admitted flaming regularly. These results may indicate that a minority of YouTube users is responsible for the flaming that the majority frequently perceives. Another plausible interpretation is that many YouTube users submit comments perceived as flames from time to time, but they do not call their own behavior flaming because they understand the good intentions of their own comments.

3.3 What do YouTube users think of flaming?

RQ2 addressed the views on flaming that YouTube users have, and whether they think of it as a problem.

The general questionnaire items concerning interpretations and consequences of flaming were interrelated in many ways. All significant correlations (α = .01) are displayed in Figure 2. The three items representing non-negative interpretations (G09, G10 and G11) were all correlated to one another ($r \geq$ .30), and they were all correlated negatively with the negative intepretation that flaming is annoying (G08, $r \leq$ -.27). Most people disagreed with the non-negative interpretations G09 (M = 2.31, SD = 1.32), G10 (M = 2.18, SD = 1.17) and G11 (M = 2.51, SD = 1.41). Although agreement varied considerably, complete disagreement (i.e. 1) was the most popular answer category for all three statements (41.8%, 39.7% and 34.8%, respectively). Different results were found for statement G08 which calls flaming annoying (M = 3.70, SD = 1.43), where complete agreement (i.e. 5) was the most popular answer category (44.4%).

Thinking that flaming is a problem for other YouTube users (G13), was significantly correlated with thinking of flaming as a problem for the self (G14, r = .28), with finding flaming annoying (G08, r = .23) and with considering flaming a reason not to upload videos (G12, r = .24). The latter three (G08, G12 and G14) were also correlated to one another, but less significant (.01 < p < .05). Although the general view was that flaming is a problem for "some YouTube users" (G13, M = 3.93, SD = 1.22), most participants disagreed with the statement that flaming was a problem for themselves (G14, M = 2.38, SD = 1.44). Only 22.0% agreed to some extent (i.e. 4 or 5) with this statement, whereas 43.4% strongly disagreed (i.e. 1). Flaming was considered a reason not to upload videos to some extent (i.e. 4 or 5) by 22.7%, while 42.6% strongly disagreed (i.e. 1). Average agreement to G12 was low (M = 2.32, SD = 1.39). Unexpectedly, significant positive correlations were found between finding flaming a reason not to upload videos (G12) and two of the three non-negative interpretations of flaming (G10: r = .30; G11, r = .27).
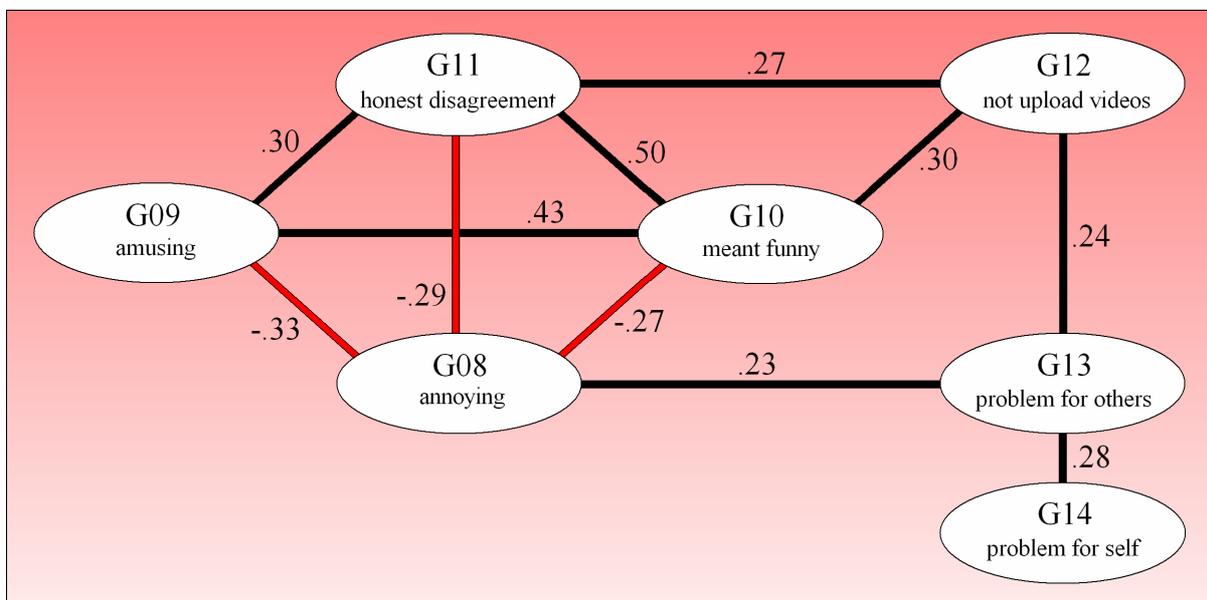

Figure 2. Significant correlations (α = .01) between general questionnaire items concerning RQ2
Note: negative correlations are shown in red

On the specific questionnaires, senders and receivers were asked about the (assumed) interpretation of the selected comments. Receivers felt offended by 27.0% of the comments,

while they found 27.0% funny and appreciated the sender's opinion in 31.7% of the cases. Senders seemed to assume slightly more negative interpretations of their comments. When they were asked how they thought their comments had been interpreted by the video posters, they selected feeling offended more often (31.6%), appreciating the given opinion less often (21.1%) and finding a comment funny less often (24.2%). The fourth answer category, appreciating provided information, was the least popular for both receivers (7.9%) and senders (6.3%). Interestingly, another interpretation was found several times in the answers to the open question. 6.3% of the receivers gave an answer like "I didn't care," while 7.4% of the senders gave such answers (e.g. "he did not care i wouldent").

Table 2 shows the relations between the judgment of a comment as flaming according to the sender, and its purpose and interpretation. Table 3 shows the same relations for receivers.

Comments were judged to be flaming more often by senders who believed that the receivers had interpreted them as offensive, but this association was very weak ($p = .12$, see Table 2). For receivers, the relation between feeling offended and judging a comment as flaming was even weaker ($p = .15$, see Table 3). The judgment of flaming was more strongly negatively associated with appreciating the information in a comment ($p = .01$) and finding a comment funny ($p = .08$).

Although Table 3 shows that comments which were called flames were also interpreted more in negative ways and less in positive ways, compared to non-flames, most relations lacked statistical significance.

Like in earlier research (e.g. Lange, 2007a), participants expressed different views on flaming in their answers to open questions. Many participants argued that it's negative. A 25-year old man from the USA typed: "I think is ridiculous & annoying that people find it funny to flame (…) with no other purpose then to try to get a "rise" out of the other user(s)." Several participants emphasized the difference between pointless flaming and more constructive forms of critique, like a 21-year old man from the Netherlands: "Why can't people just be nice, encouraging or at least give supporting critique?" A 17-year old boy from the UK typed: "Yes, some funny comments (a tad crude) are acceptable sometimes, but others are meant purely to offend." Some also mentioned that flaming makes YouTube an unsuitable place for children, or that they knew people who have stopped making videos because of the flaming. According to the same 17-year old boy just cited, "many people want the flaming to stop."

Table 2

Relations between Senders' Judgments (Flaming or not Flaming) and Comment Purpose / Interpretation

	p-values[1]	Direction of relation
Purpose: giving opinion	.28	negative
Purpose: providing information	.08	positive
Purpose: being funny	.43	negative
Purpose: offending	.03	positive
Purpose: provoking	.08	positive
AI[2]: appreciated opinion	1.00	positive
AI[2]: appreciated information	1.00	positive
AI[2]: found it funny	.15	negative
AI[2]: was offended	.12	positive

[1] *p-values were established using Fisher's exact test*
[2] *AI = assumed interpretation by the video poster*

Table 3

Relations between Receivers' Judgments (Flaming or not Flaming) and Comment Interpretation / Purpose

	p-values[1]	Direction of relation
Interpretation: appreciated opinion	.01	negative
Interpretation: appreciated information	.38	negative
Interpretation: found it funny	.08	negative
Interpretation: was offended	.15	positive
AP[2]: giving opinion	.20	negative
AP[2]: providing information	.25	negative
AP[2]: being funny	.70	negative
AP[2]: offending	.04	positive
AP[2]: provoking	.44	positive

[1] *p-values were established using Fisher's exact test*
[2] *AP = assumed purpose of the sender*

Other participants took the position that flaming is not bad. A 20-year old man from Germany typed that "many people do it and arent actually serious, so it is just a -fun- way of interacting." A few participants argued that flaming is a harmless way of communicating. For example, a 16-year old boy from Denmark typed: "well, i dont really think "flaming" on youtube is bad or anythign its just peoples oppinion." Also, several participants mentioned that flaming, however negative it may be, is a side-effect of vivid debate and as such is not entirely negative. For example, a 14-year old girl from the USA typed "thats the only way a specific person can get his/her point accross with others understanding." A 17-year old boy from the UK gave an extensive plea for non-censored debate: "Flaming, as you call it. Is largely pointless, but as humans I feel we need to provoke each other, it's what drives us forward in every field. (…) I think the reason for the high 'flame' right on YouTube though is because people can obviously be as offensive as they want without any consequences, it's almost like a license to be outrageous. But it's all good, freedom of speech, say what you want."

Several participants argued vaguely that flaming can be good and bad, like a 13-year old girl from the UK: "flaming is alright to use on youtube sometimes but it depends what for." One 44-year old man from the UK was very specific about what would be appropriate: "flaming should not include death threats or threats of physical violence, nor racism. sexism is ok though."

Many participants made clear that they perceived flaming as something inevitable which can best be ignored. For example, a 35-year old man from the USA typed: "I dont see anything wrong with it and ignore most of the comments." A 14-year old girl from the USA typed: "well i think flaming is like whatever....i dont take it too harshly and its just a comment.." Perhaps some kind of habituation is involved, as expressed by a 47-year old man from the USA: "I us to ger mad at some comments to my vids but not any more."

Altogether, the answer to RQ2a is that YouTube users think of flaming both in positive and negative ways. While some participants expressed their distaste of flaming, others argued that people should be able to express their opinions. Many participants gave opinions somewhere in between, calling flaming a negative side-effect of the important freedom of speech. Although various opinions about flaming were given, most participants found flaming annoying, not amusing and not "just an honest way of expressing disagreement." Although flaming is not perceived as purely evil by everyone, most YouTube users seem to dislike it and to think of it as something negative.

Most participants indicated not finding flaming a real problem for themselves and not refraining from uploading videos, although most participants thought that flaming is a problem for other YouTube users. Several participants, although a minority, indeed said refraining from uploading personal videos because of flaming. Also, several participants mentioned that they knew other people who have done so. Hence, the answers to RQ2b and RQ2c are similar. Flaming is indeed perceived as a problem and it is indeed a reason for people not to upload personal videos, but only for a minority of YouTube users. To most YouTube users, flaming is not a problem.

3.4 Why do people flame on YouTube?

3.4.1 The Perception of a Flaming Norm
RQ3a addressed whether a perceived flaming norm is a possible cause of flaming on YouTube.

Agreement on the statements about believed flaming norms was varied. The statement about flaming being a norm on YouTube (G06) was met with similar levels of agreement (34.5%), disagreement (37.3%) and neutrality (28.2%), yielding a neutral average ($M = 2.89$, $SD = 1.34$). The statement about flaming being a norm for commenting on specific videos (G07) was met with a little more agreement (38.0%) than disagreement (31.0%), yielding a slightly higher but still neutral average ($M = 3.13$, $SD = 1.35$). Agreement to both statements was significantly correlated ($r(140) = .66$, $p < .001$).

Senders and receivers showed slightly more agreement to the statement about flaming being a norm on YouTube (senders: $M = 3.38$, $SD = 1.40$; receivers: $M = 3.39$, $SD = 1.20$) and to the statement about flaming being a norm for commenting on specific videos (senders: $M = 3.73$, $SD = 1.33$; receivers: $M = 3.46$, $SD = 1.29$). Many senders (42.1%) strongly agreed (i.e. 5) to the latter statement. One explanation would be that senders felt the need to justify the offensive tone of their comments.
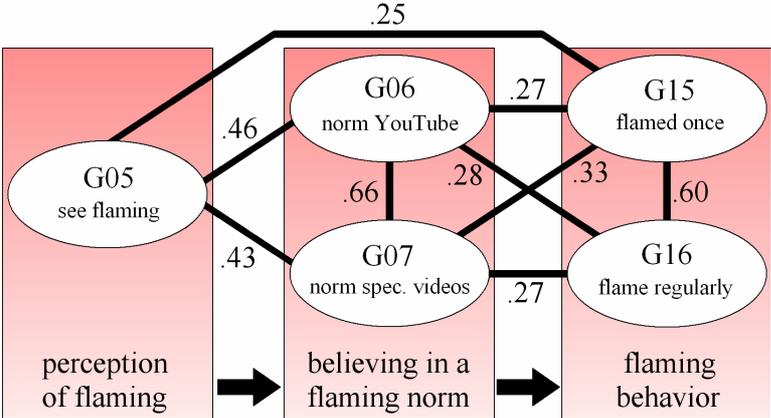

Figure 3. Significant correlations ($\alpha = .01$) between general questionnaire items concerning RQ3a

As can be seen in Figure 3, believing in either kind of flaming norm was significantly correlated with a plausible cause, perceiving flaming regularly (G05). Also, believing in a flaming norm was significantly correlated with having flamed at least once (G15) and flaming regularly (G16). It is clear from Figure 3 that the results are compatible with the SIDE model, which predicts that people conform to perceived norms in (more or less) anonymous CMC contexts. YouTube users may indeed, after seeing lots of flaming, think that flaming is normative behavior and conform to this norm.

One sender of a comment (a 20-year old man from Germany) who admitted that his comment on a sport video was meant to be offensive and provoking, gave this reason on the open question: "i think their is a comment -battle- going on about specific videos of football clubs, one finds comments like 'Go Chelsea! Arsenal sucks!' or similar everywhere, so i am just trying to fit in." Although he did not call his own comment (which contained "Work As A Team, Retards!!!!!") flaming, this example shows that the perception of a norm (in this case, an ongoing battle) can be a reason to submit offensive and provoking comments. A perceived norm was given as a reason for flaming by a small number of other senders as well (see Subsection 3.4.4).

However, the data from the general questionnaire provide no information at all about the directions of the relations shown in Figure 3. Hence, alternative interpretations are possible. For example, participants may have indicated believing in a flaming norm to justify their own flaming behavior. And even if the causal direction is from believing in a flaming norm to flaming behavior, no measures of depersonalization were taken in the present research. Perhaps YouTube users imitate flaming behavior simply because they see that the behavior is not punished, as predicted by the Social Learning Theory. Although the results clearly agree with the SIDE model, alternative interpretations are plausible as well. Only few senders on the specific questionnaire mentioned a perceived flaming norm.

The answer to RQ3a is that flaming on YouTube might indeed be caused by the perception of a flaming norm, although results of the present research are inconclusive.

3.4.2 Flaming as Miscommunication

RQ3b addressed the notion that flaming might in fact be miscommunication.

To study miscommunication, information from senders and receivers of selected comments must be compared. However, only for 14 comments, both the sender and receiver filled out their questionnaires. 14 senders and 12 receivers were involved, because two receivers had each given feedback on two comments that they received. None of the 14 comments contained any emoticons, so RQ3b+ cannot be answered at all.

For nine comments (64.3%), senders and receivers agreed on the person at whom the comment was aimed. This was the video poster for four comments (28.6%) and another commenter for the other five comments (35.7%). Although receivers were not the target persons of any of the remaining five comments according to the senders, they thought to be so for three of them. A similar difference was found for all (non-coupled) senders and receivers. Receivers thought most often that comments were primarily aimed at themselves (44.4%), while comments were actually aimed at them in only 26.3% of the cases. Comments were more often aimed at other commenters (28.4%) and almost as often at other persons in the video (25.3%).

11 sender-receiver couples (78.6%) did not know each other, and two couples (14.3%) knew each other on YouTube without having regular contact. For one couple, the receiver said to have regular contact with the sender while the sender said not to know the receiver.

Only eight couples (57.1%) agreed upon whether a comment could be considered a flame (flaming: 3; not flaming: 5). Judgments of senders and receivers were not related at all (Fisher's exact test, $p = 1.00$).

To find out whether miscommunication had occurred with the 14 comments, discrepancy indices were calculated for the four measures about purpose and interpretation (see Figure 4). These indices were based on differences in answer categories, hence perfect agreement would yield an index of 0 and larger discrepancy indices mean larger differences. The answer category addressing provocation was ignored in these calculations, since it could only be selected for (assumed) purpose and not for (assumed) interpretation.

Three remarkable findings can be seen in Figure 4. First, the largest discrepancy index was found for the sender's purpose and the receiver's interpretation. The combination of these two measures can be considered the core of the communication process. With good communication, one might expect that a comment is interpreted by the receiver exactly as it is meant by the sender. These measures, however, seem to differ more (i.e. an index of 1.57) than any other couple of measures within Figure 4.

The second remarkable finding is that within-participant measures were not very similar either. Senders thought that a comment had been interpreted different from the intended purpose (1.36) and receivers also thought that the intended purpose of a comment was different from their interpretation (1.29). The fact that these indices are not very close to 0, suggests that both senders and receivers assume comments to be interpreted different from their intended purposes. An interesting remark comes from a 48-year old Canadian man on the general questionnaire: "often people say exactly what they don't mean when they are flaming."
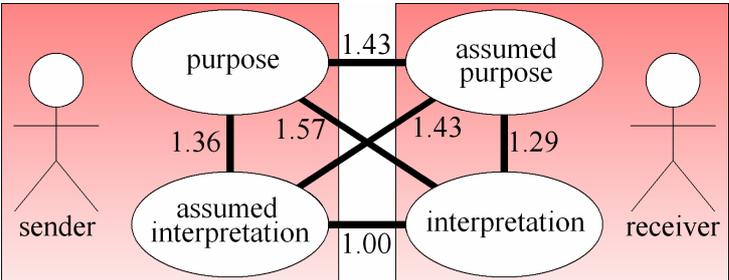

Figure 4. Discrepancy indices between purpose and interpretation measures
Note: discrepancy indices were calculated by counting the number of answer categories (except provocation) selected for one measure but not for the other, and averaging this number for all 14 couples

The smallest discrepancy index (1.00) was found for the interpretation by the receiver and the sender's belief of this interpretation. For individual couples, this index was never higher than two. Still, only three couples (21.4%) had complete agreement for these measures (an index of 0). Although the average index of 1.00 is still not very close to 0, this index is clearly smaller than the one for actual purpose and interpretation (1.57). Apparently, senders not only believe that their comments are interpreted different from the intended purposes, but they also understand relatively well how their comments are interpreted.

When the data from all participating receivers and senders are analyzed, differences in the (assumed) purpose are found. While receivers often thought that comments were meant to be offensive (49.2%) or provoking (42.9%), senders indicated these purposes less often (24.2% and 15.8%, respectively). When asked about the (assumed) interpretation of comments, differences for "offensive" were much smaller (senders: 31.6%; receivers: 27.0%). It is important to realize that most senders and receivers did not give feedback on the same comments, so these differences may be caused by self-selection rather than actual differences in (assumed) purposes. In fact, these differences regarding offense and provocation were not found for the 14 sender-receiver couples.

Altogether, these results suggest that miscommunication might indeed be involved with flaming on YouTube. Video posters may think too often that comments are primarily aimed at them, and they may think that comments are intended to be offensive or provoking when they are not. Also, they may interpret comments different from their intended purposes, although senders understand relatively well in what way their comments are interpreted.

However, these are only implications. Since there were only 14 couples for which answers could be compared, no conclusions can be drawn at all. Although some interesting implications have been given, RQ3b cannot be answered.

3.4.3 Reduced Awareness of Other People's Feelings

RQ3c addressed reduced awareness of other people's feelings as a possible cause of flaming.

On average, participants on the general questionnaire did not agree with statement G04 about occasionally experiencing reduced awareness of other people's feelings during commenting ($M = 2.03$, $SD = 1.27$). Almost half of the participants (49.7%) disagreed strongly (i.e. 1), and most others disagreed slightly (20.1%) or were neutral (15.4%). Only 14.8% agreed either slightly or strongly to the statement.

Reduced awareness of other people' feelings during commenting was related to flaming. Significant correlations were found between reduced awareness of others and having flamed at least once (G15, $r(139) = .33$, $p < .001$) as well as flaming regularly (G16, $r(139) = .32$, $p < .001$). Indeed, a 16-year old male receiver typed: "These people don't understand that the people they flam are real people with real emotions." Interestingly, an 18-year old man from Australia who had sent someone quite an offensive comment, argued that he had been in a bad mood and no harm was intended: "I myself have seen the mistake I have made and am now going to apologise."

Reduced awareness of other people's feelings indeed seems to be related to flaming, possibily being a cause as RQ3c suggests. However, an alternative interpretation of the results might be that flamers try to justify their behavior by blaming reduced awareness of others. If they would flame on purpose, however, one might wonder why they would admit their behavior on an anonymous questionnaire but still try to find excuses for it. Hence, the answer to RQ3c is positive: reduced awareness of other people's feelings is indeed a plausible cause of flaming on YouTube.

3.4.4 Other Reasons for Flaming

RQ3d addressed what other reasons for flaming YouTube users might have.

No more than six participants on the general questionnaire admitted flaming regularly (i.e. showed agreement to G16). Only these six participants were asked to specify agreement with statements about reasons for flaming. The most popular reasons were expressing disagreement and making a point more clear (both: $M = 4.50$, $SD = 0.84$). Slightly less popular were provoking others ($M = 3.83$, $SD = 0.98$) and seeing other people flaming ($M = 3.67$, $SD = 1.63$). Some participants claimed to flame only when commenting to videos of friends, while others did not ($M = 3.17$, $SD = 1.84$). Only one participant agreed with the statement that offending someone is funny ($M = 2.33$, $SD = 1.63$). The least popular reasons for flaming were being amusing and hurting someone (both: $M = 2.17$, $SD = 1.60$).

On the specific questionnaires, the most popular purpose of comments among senders was giving an opinion (selected by 61 senders, or 64.2%). Only few comments were meant to be provoking (15.8%). Other reasons were not very popular either (offending someone: 24.2%; providing information: 22.1%; being funny or amusing: 18.9%). Receivers assumed different purposes. Although giving an opinion was often believed to be one of a comment's purposes (44.4%), this was also true for being offensive (49.2%) and provoking (42.9%). Providing information and being funny were selected far less (both 12.7%). One should keep in mind that senders and receivers did not fill out the questionnaire about exactly the same sample of videos, so these differences may reflect strong self-selection as well as something else.

Less than half of the senders judged their own comments as flaming (44.2%), while the majority of comments was found to be flaming by receivers (60.3%). For senders, the

judgment of a comment as a flame was associated most strongly with their purpose of offending someone (Fisher's exact test, $p = .03$, see Table 2 in Section 3.3). However, 36.8% of the comments were judged to be either flaming or meant to be offensive, but not both. Flaming was also weakly associated with the purpose of being provoking ($p = .08$), but surprisingly a similar positive association was found with the purpose of providing information ($p = .08$). Receivers also judged comments as flaming more often when they believed that the intention was to be offensive (Fisher's exact test, $p = .04$, see Table 3 in Section 3.3).

Most senders seem to have used one or more of the open questions to provide more information about the reasons for their comments. To make all this information accessible, these answers have been categorized based on their content. Although such categorizing is subjective and the percentages given for these categories merely represent the judgments of one researcher, they are believed to be good indications of the popularity of certain reasons for flaming.

Of all senders, 63.2% has given information about the reasons for their comments by using the open questions. A popular reason is that senders themselves felt offended, or perceived offense to others which they wanted to respond to (22.1% of all senders). Some typical explanations were "I would like to be offensive when I see that someone has offended me" (an 18-year old woman from the USA) and "because they were insulting somebody else first" (a 15-year old girl from the UK). Some participants argued that flaming is a justified reaction to flaming, for example a 23-year old man from the USA: "Flaming does have a value if it's for a good cause. Flaming ignorant people or disrespectful pricks is a good thing. (…) Flaming the flamers is also a good thing." Others, however, displayed a little doubt about their response style, like a 12-year old boy from Canada: "I "flamed" because i was angered by the poster because he was insulting another youtube person. That may sound dumb because i'm just doing what he did but yeah." A 15-year old boy from Canada argued that his comment (which included "all u haters must die") was meant "to make the people who hate the vid angry." Some senders who did not mention being offended as a reason for their comments, argued that flaming is not very special on YouTube (4.2%). For example, a 15-year old boy from Norway typed: "well i did not see that what i did was wrong. I see people flaming each other everyday on youtube." Also, one participant of the general questionnaire (a 16-year old boy from the USA) typed in his answer to the open question: "When someone flames, someone flames back, and it keeps going at for a couple of comment pages."

Another popular reason given in the open questions was that the video was bad enough to legitimize very critical comments (13.7%). A 14-year old boy from the UK typed: "sometimes sucky videos get u angry, so u cant help urself." A 34-year old man from the USA argued that he was "tired of people waisting my time with useless vids" and that he hoped that the poster of the video under attention "wont post useless videos again." Also, several senders accused video posters of using wrong video titles to get more views, like a 20-year old Canadian man: "His video was fake. He lied on the name so people would view. This is unfair. Thats why i insulted him." A 24-year old American man on the general questionnaire called flaming "typical to any anoynmous community" and added "I think youtube suffers a bit more, as there is a baseline expectation that videos need to be funny and relevent to the viewers interest to have any worth." Interestingly, one video for which three "flames" had been selected and which was called "loud and pointless" by a 25-year old female sender from Canada, seemed to be intended to annoy viewers. The receiver, a 22-year old woman from the USA, admitted to "post videos in order to provoke people."

While most senders gave external reasons for their comments (e.g. other YouTube users being offensive or posting bad videos), a small number of senders (5.3%) admitted flaming for personal entertainment. A 19-year old man from Lithuania called flaming "my job

:DD" and a 36-year old woman from the USA typed: "Just something I find a bit amusing when I am bored. I need a little reaction to break the ice." A 31-year old man from the USA first typed "I like to stir the pot, and see if I can get a adverse reation out of some random person. Hopefully, they won't show up to my front door with a gun someday LOL," after which he got bored and pasted some random text and insults into the questionnaire. A 16-year old boy from the USA had commented on a video with "Koreans can't do anything right." As the reason to be offensive, he typed "because i dislike chinese people." A 20-year old woman from the USA who had commented on a video with "OMG your fucking ugly stop it" thought that the video poster would be offended by her comment: "she should be with that face." While such comments and their explanations seem offensive to the receivers, it seems that the senders enjoy themselves typing them. A 30-year old man from the USA typed on the general questionnaire: "flaming is exiting as long as we are anonymous."

There is no simple answer to RQ3d. There seem to be several reasons why people flame on YouTube, some of which seem to be more popular than others. When the results from the general questionnaire and the specific questionnaires are taken together, it seems that giving an opinion and expressing disagreement are more popular reasons for flaming than offending someone. Several senders explicitly mentioned the bad quality of a video or a misleading video title as a reason. Also, flaming was often done because commenters felt offended themselves. This provoked offensive reactions which were not meant to be hurtful only for the sake of being amusing. Rather, offending the offender felt justified for many people. This suggests that flaming on YouTube may often start without offensive intent from anyone but rather get out of hand after some perceived offense, as in the study of McKee (2002). Some people also mentioned that flaming is very common on YouTube and, therefore, their behavior is not special. Such answers are supportive of RQ3a, but they were not given very often. Finally, only a few participants showed that they found flaming an amusing activity, suggesting that flaming is not done for mere entertainment most of the time.

4 Discussion

4.1 General Conclusions

Several subconclusions have been given in Chapter 3. Here, several general conclusions about flaming on YouTube are given.

First, flaming is common on YouTube. Although most YouTube users don't flame themselves, they perceive it regularly. Also, many users consider YouTube a community.

Second, views on flaming are varied. Most YouTube users seem to think of it as something annoying, which should be viewed as a negative side-effect of freedom of speech rather than as an entirely evil phenomenon. While most users do not think of YouTube as a problem, a minority thinks otherwise. For some users, it is even a reason to refrain from uploading personal videos.

Several causes or reasons for flaming were found to be plausible. Conformation to perceived norms and reduced awareness of other people's feelings are two phenomena that may underlie flaming behavior on YouTube. Several kinds of miscommunication may also play a role, although the present research failed to find enough evidence for any such conclusions. The effect of emoticons could not be studied at all. Finally, while some YouTube users intentionally offend others for mere entertainment, most flaming seems to be meant to express disagreement or an opinion. Feeling disappointed by a video or feeling offended by either a video or another commenter may be popular reasons for flaming.

4.2 Limitations

4.2.1 Flaming: Still a Problematic Term

Even with the definition given by Moor (2007), flaming is a problematic term.

In the first place, it is very subjective and context-specific. Judging whether comments are flames or not, is extremely difficult. Certain words are usually thought to be indecent or offensive, but they can be harmless when senders and receivers understand that no offense is meant or taken. It is the overall hostility rather than the presence of profanity that defines flaming (Turnage, 2007). However, senders and receivers may have different views on comments (O'Sullivan & Flanagin, 2003). For an outside observer, as a third person, it is even harder to decide in what way comments are meant or interpreted. Because the observer in the present study found many comments hard to judge as either flaming or not, many comments raising little doubt were selected for this study. More than half of the participating senders did not perceive his/her own comment as flaming. This might have been a reason to omit these comments from all analyses, but there is a reason why this has not been done. The sender is only one person in the communication process, although an important one. A sender may indicate that his comment is not flaming, while the receiver thinks otherwise. Moreover, the selected "receivers" were actually the video posters. Many comments were in fact aimed at other people than the video posters, often other commenters. Sometimes, entire groups of people (e.g. Koreans) were offended in one comment. It would be very hard to decide which persons should judge such a comment as flaming or not, but is is clear that the sender alone is not the only person involved. Although it would be fair to say that an outside observer is usually a worse judge than the sender of a comment, the observer used the same perspective to judge all possible flames. Although using an outside observer is an important threat to the validity of this research, it seems there was no obvious alternative.

Besides, the definition of flaming, although carefully formulated, may be too vague or difficult for some people. Several participants on the general questionnaire mentioned that they did not fully understand what was meant with flaming. Afterwards, it is difficult to

decide whether this should be attributed to the vagueness of the definition or to the fact that participants may not have read the definition. After debriefing the participants, one replied that he had not seen the definition of flaming and had confused it with another meaning: "Another term for homosexual is flamer over here. That's what I thought your survey was referring to when I filled in answers." Although the definition of flaming was given on the questionnaire page (and framed with a salient color), participants may still have missed it.

Also, while the term "offensive" seems to be a key word in the definition of flaming used in this study, no near-perfect correlations between offensive purpose or interpretation and the judgment of flaming were found. Some senders even indicated in answers to the open questions that a certain amount of offense had been intended, while they had not judged their comments as flaming.

Altogether, the concept of flaming seems to be problematic in research. It is very subjective, and apparently people don't even always judge offensive comments as flames.

4.2.2 Selection Biases

As described in the previous Subsection, the selection of flames has doubtful validity. Some other selection biases seem to have been present as well.

The selection of participants and comments started with a sample of (mostly recent) YouTube videos. The number of videos in this sample was very high and videos from the sample were randomly drawn. However, the entire sample is biased by the very way in which it has been drawn from all YouTube videos. Videos were added to the sample if they were in a way connected to videos already in the sample. This is probably the main reason why several subjects seemed to be overrepresented within the sample. For example, the Chinese occupation of Tibet, the election of the next Democratic presidential candidate and a boy band called the Jonas Brothers were found remarkably often among the videos used for this research. One reason for this might be that these were very popular subjects when the video sample was drawn, but it is probably also influenced by the bias in the selection procedure. This would also bias the samples of participants and comments used for this study.

Probably a bigger problem is the fact that active YouTube users (i.e. users who upload more videos or give more comments) had a bigger chance to be invited for participating in this research than passive users. For all three questionnaires, YouTube users were invited when they had uploaded a video or commented on a video. Although this is a major bias in the participant sample, it is not necessarily a problem for the goals of the present research. One could argue that it is the active YouTube users that are most interesting. Their views and experiences are more interesting than those of people who have YouTube accounts without uploading videos or commenting. Still, some conclusions must be interpreted more carefully because of this bias. For example, RQ2c addressed flaming as a reason for people not to post personal videos. The percentage of YouTube users actually refraining from posting videos because of flaming is probably bigger than the one in this study, since these users are relatively passive YouTube users.

Relatively many participants filling out the general questionnaire were from Spain (16.8%). One explanation could be that YouTube is particularly popular in Spain, and that fewer Spanish participants were found for the specific questionnaires because only English comments were selected. A closer look at the results, however, made clear that 22 of the 25 Spanish participants had filled out the general questionnaire within 2.5 hours on the same day. Questionnaires were submitted from different computers and the results seemed to be valid, so the most plausible explanation is that a Spanish participant has shared his invitation with his friends without doing any harm (except biasing the participants sample a little).

On the specific questionnaires, self-selection may have been influential. When people are asked to explain what they meant with some offensive comment that they are not proud of

afterwards, they are probably more prone to leave the questionnaire empty. Also, people may experience a threat to their privacy when they see their own comment embedded in a questionnaire. Several invited YouTube users replied (using the YouTube messaging system) that they did not want to cooperate simply because they did not know and hence not trust the researcher.

Another problem for many invited YouTube users may have been the fact that the research was in the field of Psychology. One participant typed: "However if you find something wrong with my mind I can give you my doctors address. LOL. (that was a kind of half laugh)." Other users interpreted the survey invitation even as offensive: "you are assuming that i am psycho or mentaly out of control , therefore i will not take any part in what you are wishing me to do." The term "psychology" may evoke negative reactions in people, which may have produced a self-selection bias in which only people with some knowledge of psychology cooperated.

4.2.3 Problems with Questionnaire Items

The questionnaires used for this research consisted mostly of multiple-choice questions, such that quantitative analysis could be performed. This yielded some problems, however. A few invited YouTube users replied that the questionnaire did not provide the opportunity to give exactly the right answers to questions. Also, answer categories may have influenced the results. It is easy to imagine that people don't know exactly how they meant or interpreted a comment, and that they selected the answers which seemed most acceptable to them. Open questions would have been more valid, yet they would have given results which are much more difficult to analyze.

In fact, the open questions that were provided on the questionnaires were used by many participants. These questions may have provided the most interesting results, although it was difficult to decide in what way these results could be used.

In hindsight, some items should have been formulated more carefully. For example, what does it mean if a participants thinks of flaming as a norm? Does the term "norm" basically mean that it is very common, or does the term imply approval? Perhaps participants did not know the precise meaning either, which might be a reason why agreement to the norm statements was so varied.

When specifying the (assumed) purpose of a comment, participants could choose it to be provoking. This answer category was not given for the (assumed) interpretation of a comment. To make the discrepancy indices (see Figure 4) as valid as possible, provocation was ignored altogether. Still, the mere fact existence of this answer category has probably influenced whether other answers were selected. This difference between items was unnecessary and could have been avoided with a little more care.

4.3 Recommendations for Future Research

Reflecting on the present research, opponents of the term "flaming" may argue that flaming has once more been proven to be a problematic concept. Even with a carefully formulated definition, it is very difficult to decide whether comments are flames or not. Also, the judgment of flaming was far from perfectly correlated with one of its key aspects, being offensive. Indeed, opponents might conclude that another study has failed on addressing flaming correctly. Scholars interested in flaming might answer that, despite these fundamental problems, the current study has also shown that flaming is a very real phenomenon. Only a few participants indicated not to understand the concept, whereas a majority indicated seeing it often on YouTube. As found in earlier research by Lange (2007a, 2007b), many YouTube users think that flaming is a problem for others, and indeed for a minority it is. Flaming on YouTube is not only common, for some it is even a problem. Instead of ignoring flaming

because it is such a difficult concept, it can be argued that it is a very real phenomenon worthy of more extensive research.

With regard to its causes, the present study has not rejected any of the causes suggested by the literature. This may indicate that flaming simply does not have one single cause. Future research should investigate the different causes further.

Perceived flaming norms seem to play a role on YouTube. Future research should find ways to study the direction of this relation, and to find out whether depersonalization plays any role. Without measures of depersonalization, it is difficult to ascribe these findings to processes predicted by the SIDE model (Reicher et al., 1995). Instead of depersonalizing and conforming to perceived norms, YouTube users might imitate flaming behavior simply because they see that it is not punished, as predicted by the Social Learning Theory (Bandura, 1977).

Miscommunication should also be investigated more thoroughly. The methods used for the present research were promising, but it is clear that large numbers of participants are vital. Several interesting implications have been given, which should be studied with more participants. Also, it is clear that many comments are not primarily aimed at video posters. Rather, comments on a video might be compared to discussion forums where people respond to each other and get back after some time to read replies of others. Hence, for a decent study of (mis)communication on YouTube, more people should be involved than just the commenter and the video poster.

Ultimately, many comments on many video could be compared to find patterns in commenting. Perhaps flaming usually starts with either a disagreeing comment misinterpreted as offense (cf. McKee, 2002), with a user forgetting about someone's feelings (cf. Thompsen, 1994) or with one of the few YouTube users who like to flame for fun (cf. Levander, 1994). A "flame war" could then go on, simply because YouTube users who feel offended want to stand up for themselves or for others. And, caused by the widespread occurrence of such flaming, many users may start thinking that it's a norm on YouTube, causing them to flame more often when they don't like videos (cf. Reicher et al., 1995). Other patterns of causes can also be imagined. The ultimate goal of future research would be to find how different causes of flaming interact, on YouTube as well as in other CMC contexts.

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Appendix A – Participant Invitations

A.1 Invitation for "Senders"

Hello [YouTube username],

My name is Peter Moor (age 24) and I'm a student of Psychology at the University of Twente in the Netherlands. For my Master's thesis, I am currently studying communication on YouTube. I hereby invite you to fill out a questionnaire about a comment that you have given on a video. It is anonymous and it will take less than 10 minutes of your time. If you would like to cooperate, I would be very grateful!

You can find the questionnaire here:
[questionnaire URL, including unique user ID]

Kind regards,
Peter Moor

A.2 Invitation for "Receivers"

Hello [YouTube username],

My name is Peter Moor (age 24) and I'm a student of Psychology at the University of Twente in the Netherlands. For my Master's thesis, I am currently studying communication on YouTube. I hereby invite you to fill out a questionnaire about one or more comments that you have received on a video. It is anonymous and it will take less than 10 minutes of your time. If you would like to cooperate, I would be very grateful!

You can find the questionnaire here:
[questionnaire URL, including unique user ID]

Kind regards,
Peter Moor

A.3 Invitation to the General Questionnaire

Hello [YouTube username],

My name is Peter Moor (age 24) and I'm a student of Psychology at the University of Twente in the Netherlands. For my Master's thesis, I am currently studying communication on YouTube. I hereby invite you to fill out a questionnaire about your experiences with YouTube. It is anonymous and it will take less than 10 minutes of your time. If you would like to cooperate, I would be very grateful!

You can find the questionnaire here:
[questionnaire URL]

Kind regards,
Peter Moor

Appendix B – Questionnaires

B.1 Items Measuring Background Variables

What is your gender?
{Multiple choice: Male / Female}

What is your age?
{Open question}

What country are you from?
{Open question}

How often do you watch videos on YouTube?
{Multiple choice: Often / Sometimes / Seldom / Never}

How often do you post comments on videos?
{Multiple choice: Often / Sometimes / Seldom / Never}

How often do you upload videos on YouTube?
{Multiple choice: Often / Sometimes / Seldom / Never}

B.2 The Last Page

Questionnaire - almost done

Thank you for filling out the questionnaire. Your help is appreciated!

If you wish to share any additional comments about flaming on YouTube, please give your comments here:
{Open question}

If you want to be informed about the goals and results of this research project, please give your e-mail address.
Your e-mail address will not be linked to your questionnaire answers, and it will not be given to any third parties. It will only be used once to inform you about this study.
{Open question}

B.3 Questionnaire for "Senders"

Questionnaire about YouTube

Thanks for your willingness to cooperate on this research project. Below, you will be questioned about a specific comment that you have given on a YouTube video. It is important that you answer the questions as honest as possible. The results will be analyzed anonymously, and they are only used for this specific study.

<Items measuring background variables. See Appendix B.1.>

On a video called [video title] you have given the following comment:
[comment]

The following questions are about this comment. If you wish to have one more look at the YouTube page of this video, you may use this link:
[link to YouTube video, opens in new browser window]

At which person was your comment primarily aimed?
{Multiple choice: The video poster / A person in the video who is not the video poster / Another commenter / Not to anyone in particular / Other}

How well do you know [receiver username], who posted the video?
{Multiple choice: I don't know [receiver username] / I know [receiver username] on YouTube but we don't have regular contact / We have regular contact on YouTube / I know [receiver username] even outside YouTube}

What was the purpose of your message? You may select multiple answers if you think your message had more than one purpose.
{Multiple choice: Giving an opinion / Providing information / Being funny or amusing / Offending someone / Provoking reactions}
Other, namely: {Open question}

How do you think the poster of the video interpreted your message? Again, you may select multiple answers. The video poster...
{Multiple choice: appreciated the opinion I gave / appreciated the provided information / found it funny or amusing / was offended}
Other, namely: {Open question}

Flaming is a term that refers to the act of "displaying hostility by insulting, swearing or using otherwise offensive language." Would you call this comment flaming?
{Multiple choice: Yes / No}

Below are a number of statements. For each statement, please specify to what extent you agree.
1 = disagree
2 = slightly disagree
3 = neutral / not sure
4 = slightly agree
5 = agree

<S01> To me, YouTube is nothing more than a video sharing website.
<S02> I see YouTube as a community.
<S03> When I post a comment on a video, I usually get back to the same video later to see whether anyone has responded to my comment.
<S04> I often see flaming when I read comments on videos.
<S05> I think flaming is a norm for commenting on YouTube.
<S06> I think flaming is a norm for commenting on specific YouTube videos.
<S07> I have flamed one or more times in comments on videos.

<S08> I flame regularly in comments on videos.

<The following is an additional second page, which is only given when a sender selects "offending someone" as one of the purposes of his/her message.>

Questionnaire - page 2/2

You have made clear that one of the purposes of your message was to offend someone. Please explain why you would like to be offensive.
(Please be very honest. Remember that all results are analyzed anonymously.)
{Open question}

<The last page. See Appendix B.2.>

B.4 Questionnaire for "Receivers"

Questionnaire about YouTube

Thanks for your willingness to cooperate on this research project. Below, you will be questioned about one or more specific comments that you have received on a YouTube video. It is important that you answer the questions as honest as possible. The results will be analyzed anonymously, and they are only used for this specific study.

<Items measuring background variables. See Appendix B.1.>

On your video called "[video title]" you have received the following comment:
[comment]

The following questions are about this comment. If you wish to have one more look at the YouTube page of this video, you may use this link:
[link to YouTube video, opens in new browser window]

At which person do you think was this comment primarily aimed?
{Multiple choice: Me (as video poster) / A person in the video who is not me / Another commenter / Not to anyone in particular / Other}

How well do you know [sender username], who posted this comment?
{Multiple choice: I don't know [sender username] / I know [sender username] on YouTube but we don't have regular contact / We have regular contact on YouTube / I know [sender username] even outside YouTube}

How did you interpret this message? You may select multiple answers.
{Multiple choice: I appreciated an opinion that was given / I appreciated certain information that was provided / I found it funny or amusing / I was offended}
Other, namely: {Open question}

What do you think was the purpose of this message? Again, you may select multiple answers.
{Multiple choice: Giving an opinion / Providing information / Being funny or amusing / Offending someone / Provoking reactions}

Other, namely: {Open question}

Flaming is a term that refers to the act of "displaying hostility by insulting, swearing or using otherwise offensive language." Would you call this comment flaming?
{Multiple choice: Yes / No}

<If more than one comments are given, then all comment-specific items are repeated here for each additional comment. Only the first lines of text referring to the comment and the video are slightly different from the lines with the first comment.>

Below are a number of statements. For each statement, please specify to what extent you agree.
1 = disagree
2 = slightly disagree
3 = neutral / not sure
4 = slightly agree
5 = agree

<S01> To me, YouTube is nothing more than a video sharing website.
<S02> I see YouTube as a community.
<S03> When I post a comment on a video, I usually get back to the same video later to see whether anyone has responded to my comment.
<S04> I often see flaming when I read comments on videos.
<S05> I think flaming is a norm for commenting on YouTube.
<S06> I think flaming is a norm for commenting on specific YouTube videos.
<S07> I have flamed one or more times in comments on videos.
<S08> I flame regularly in comments on videos.

<The last page. See Appendix B.2.>

B.5 General Questionnaire

Questionnaire about YouTube

Thanks for your willingness to cooperate on this research project. While filling out the questionnaire below, please try to answer the questions as honest as possible. All results are anonymous, and they are only used for this specific study.

In this questionnaire, the term "flaming" will be used.
Flaming refers to the act of "displaying hostility by insulting, swearing or using otherwise offensive language."

<Items measuring background variables. See Appendix B.1.>

Below are a number of statements. For each statement, please specify to what extent you agree.
1 = disagree
2 = slightly disagree
3 = neutral / not sure

4 = slightly agree
5 = agree

<G01> To me, YouTube is nothing more than a video sharing website.
<G02> I see YouTube as a community.
<G03> When I post a comment on a video, I usually get back to the same video later to see whether anyone has responded to my comment.
<G04> When I post a comment on a video, I sometimes feel like I forget about people's feelings.
<G05> I often see flaming when I read comments on videos.
<G06> I think flaming is a norm for commenting on YouTube.
<G07> I think flaming is a norm for commenting on specific YouTube videos.
<G08> When I see flaming in comments, I find it annoying.
<G09> When I see flaming in comments, I find it amusing.
<G10> I think flaming is usually meant to be funny.
<G11> I think flaming is just an honest way of expressing disagreement.
<G12> Flaming is a reason for me not to upload personal videos.
<G13> I think that flaming on YouTube is a problem for some YouTube users.
<G14> Flaming is a problem for me.
<G15> I have flamed one or more times in comments on videos.
<G16> I flame regularly in comments on videos.

<The following is an additional second page, which is only given to participants agreeing with statement G16.>

Questionnaire - page 2/2

You have made clear that you flame regularly in comments on videos. The following statements are about your reasons for flaming. For each statement, please specify to what extent you agree.
1 = disagree
2 = slightly disagree
3 = neutral / not sure
4 = slightly agree
5 = agree

I flame because I want to express my disagreement.
I flame because I find it funny to offend someone.
I flame because I think I can make my point more clear that way.
I flame when I see other people flaming.
I flame only when I comment on videos of friends.
When I flame, it is meant to hurt someone.
When I flame, it is meant to be amusing.
When I flame, it is meant to be provoking.

If you think that the given statements do not allow you to express why you flame on YouTube, please express your reasons for flaming here:
{Open question}

<The last page. See Appendix B.2.>