

Gender Differences in Perceptions of Trolling in Livestream Video Broadcasting

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Abstract

Troll is a commonly used term for disinhibited individuals who create havoc as they lurk and lash out with the purpose of disrupting the environment in online communities. This research focuses on the phenomenon of trolling in a livestream video broadcast scenario. This study investigates the extent that trolling occurs in a livestream, whether there is a difference in the degree of trolling in broadcasts based on gender, and is there a difference in the extent of trolling behavior based on the gender of the viewer. Data were collected from 998 viewers that participate in the live broadcast platform called Twitch through an online survey. Participants answered questions regarding their experiences with overly aggressive, derogatory, and negative behavior, generally trolling, in the channel of their favorite broadcaster. Questions addressed the degree of acceptability of trolling and likelihood of intervention. Findings indicate that female viewers were more sensitive than male viewers in picking up trolling cues. Both males and females agreed that female broadcasters are more likely to be targets of sexual harassment trolling. Male viewers felt that it was more acceptable when male broadcasters were harassed than female broadcasters. Finally, gender is a factor determining intervention behavior.

Keywords: trolls, livestream, Twitch, video broadcasting, gender

Introduction

LIVESTREAMING, BROADCASTING REAL-TIME audio and video content, is a growing phenomenon. Twitch.tv, the largest platform for livestreaming, reports >9 million daily active users, watching >2 million broadcasters, who provide >250 million hours of content a month.¹ Facebook, Twitter, Instagram, YouTube, and Snapchat have all invested in livestreaming video options for their services. The relative percentages of women and men who use Twitch are 35 percent female to 65 percent male.² Stelzner reports that 35 percent of marketers already utilize live video, whereas 63 percent of marketers plan to implement live video in the next year, and 68 percent want to know more about the platform.³

Early research examined the differences in communication styles between genders online suggested that males may have the tendency to be more aggressive and adversarial, contrasted with females, who tend to focus more on cooperation.⁴ Another study found that women who play computer games online exhibited more aggressive tendencies than women who did not play.⁵ The advent of livestreaming, where streamers and viewers form a community and interact in real time, leads to questions concerning gender differences in how aggression in the platform is perceived.

Typically, in live broadcast channels, the broadcaster appears live onscreen, in real time, while viewers may interact through a chat option as the broadcast streams. Unless personally known, the viewer remains relatively anonymous as they interact with the broadcaster. Thus, in any livestream broadcast, there is almost always potential for someone in the community to dominate the chat feature with negative comments or attacks. Many platforms such as Twitch have channel moderators that can address and remove aggressive participants, either deleting the comment before it is visible or banning the transgressor from the channel entirely. Other streaming platforms have not developed this feature. Online trolling has been described as behavior characterized as negative, destructive, and generally disruptive to other members of an online community.⁶ Derogatory comments may be made about the streamer's personal characteristics, their gameplay or performance, or even about others in the chat. It can also escalate to the point of extreme bullying threatening the safety of the streamer or their family referred to as being doxxed, where personal details are exposed online.⁷ The extreme trolling situation for live broadcasters is swatting.⁷ This occurs when the troll finds a streamer's personal information and calls the police to report an incident such as hostage situation at the streamer's house and then

watches the livestream to see when the police break in. This research specifically focuses on trolling in terms of attacks on the streamer in the form of harassing comments that may be personal or in some cases sexual in nature, on bullying behavior, and on general toxicity in the form of negative and derogatory statements in the streamer's chat, resulting in a disruption of the stream.

There has been considerable research on trolling in online forums, but little quantitative research in the online live broadcasting area. The purpose of this study is to provide a preliminary investigation into livestream trolling, specifically with the focus on perception of trolling based on the gender of the broadcaster and viewer. The negative impact of trolling, or any form of bullying, has consequences that impact the online community, including the streamer, the viewers, and any sponsors that support the channel. Strategies such as ignoring the troll and using moderators to police the streaming platform to manage inappropriate content have proven to be minimally effective.⁸ Insights concerning the perceptions of trolling will aid in the development of strategies to mitigate the problem.

Trolling has been defined in many ways. In this study it is defined as a situation in which an individual intentionally makes a remark that triggers others to create an argumentative exchange, disrupting the original activity.⁹ Previous research focused on the motivations for online trolling, the factors that enable online trolling, and the gender differences of online trolling.¹⁰ It was found that there were gender differences in how trolling was perceived in online situations. We have extended the body of current research by adding the variable of the livestream interaction.

Research on toxicity and trolling has focused primarily on online forums and gaming. Early research examined trolling in feminist forums, which were found to be very vulnerable to the disruptive techniques used by trolls.¹¹ Online video gaming communities, especially massively multiplayer online (MMO) games are prime breeding grounds for trolling. Trolling, sometimes referred to as "griefing," can occur through the disruption of gameplay. Grievers are those who cause other players so much angst that they may quit the game or not play the game at all.¹² Trolling also occurs in the general in-game chat feature. Researchers have found that destructive socially disruptive activities in online games are enjoyed by the individuals committing them as much as nongrievers, who come up with ways to thwart them.¹³

Studies have focused on communication within MMO games, looking at the impact of the lack of visual cues and sometimes verbal cues without considering the trolling phenomenon directly.¹⁴ In this case, it was noted that the addition of vocal cues impacted the level of anonymity in the activity. Also, typically in MMO games, there is a degree of anonymity for all players, as the actors communicating may not know who they are talking to in real life on both sides. Although less studied than other types of online forums, the nature of livestream broadcasting means that trolling in these forums is a different phenomenon. In this case, the broadcaster is live and usually on camera; rather than harassing an avatar or an anonymous profile, trolls in livestream broadcasting channels can see the actual target of their toxic remarks or behavior. The anonymous troll can take advantage of this vulnerability. The discourse is much more personal and, therefore, has the potential to be more hurtful and

traumatic. Karhulahti examined trolling in livestreaming of Esports. In this case, he followed a male player of League of Legends in which severe trolling took place between game participants.¹⁵ His conclusion was that some degree of trolling is expected in livestreaming and that spectators enjoy the suspense and drama created by trolling; however, he only studied a male broadcaster.¹⁵

This study is guided by the following research questions:

- Does the perception of the severity and extent of trolling behavior differ based on the gender of the viewer and broadcaster?
- Does the intent of viewers to intervene to stop trolling behavior differ based on the gender of the viewer and broadcaster?

Methodology

Measures

Items were written specifically for Twitch with input from both broadcasters and moderators of examples of trolling behavior common on the platform. This aided in refining the wording of the survey tool to fit the context and language of the streaming community while maintaining the integrity of the measurement tools. A small pretest with experts in the streaming community was done to determine the appropriateness of the questions. All scales were written in 5-point Likert format where 1 = strongly disagree and 5 = strongly agree. Actual wording of the items is presented in Table 1.

Method

The study was promoted to viewers of livestream broadcasts on Twitch, a livestreaming site viewed by millions of active users daily.¹ The data were collected through an online survey posted in the Twitch subreddit community and on Twitter. The study was promoted throughout social media

TABLE 1. SURVEY ITEMS

Survey items
I have witnessed others being toxic toward the broadcaster in this channel
I have witnessed others making inappropriate sexual comments to/about the broadcaster in this channel
Even when the conversation turns inappropriate, it is all in good fun in this channel
I have witnessed others bullying the broadcaster in this channel
Broadcasters sign up for some amount of harassment by viewers on these channels
I have tried to intervene or stop a toxic situation in this channel in the past
I have seen others try to intervene or stop a toxic situation in this channel in the past
I have personally had sexual comments made toward me in this channel
No one seems to mind when the conversation becomes personal in this channel
I have witnessed others discussing sexual matters in this channel

with support and endorsement of a moderator with authority in the community. There was no specific incentive offered for taking the survey. This method returned 998 usable surveys.

Sample characteristics

The survey asked respondents to self-report demographic data. 76.9 percent of respondents identified as male, 21.6 percent as female, and 1.5 percent indicated they identified with "other." The average age of the sample was 26.43 years (standard deviation [*SD*]=7.45, with a range of 68 years). Most of the sample indicated they were White/Caucasian (79.7 percent), with the remainder identifying as Hispanic (5.8 percent), African American (2.7 percent), Asian (6.7 percent), and other (5.2 percent). Respondents said they watched an average of 11.5 broadcasters each week (with an *SD* of 16).

Results

T tests that explored differences in responses of male versus female viewers and layered *T* tests (gender of viewer by gender of their favorite broadcaster) were conducted to explore significant gender differences in experience with trolling. The first set of questions involved understanding the prevalence of trolling in livestream channels. Our first item, "I have witnessed others being toxic to the broadcaster in this channel" had a mean response of 2.46 (*SD* of 1.18, where 1=strongly disagree and 5=strongly agree). Males who watched a female broadcaster showed no significant difference in their responses to this statement when compared with men who watched other male broadcasters. However, females reported more agreement that they had witnessed toxic behavior toward a female broadcaster more (mean=2.92, *SD*=1.17) than a male broadcaster (mean=2.34, *SD*=1.12, $p<0.05$). We then asked specifically about bullying behavior with the item "I have witnessed others bullying the broadcaster in this channel." The sample's mean response to this item was 2.04 (*SD*=1.04, where 1=strongly disagree and 5=strongly agree). Again, males watching female versus male broadcasters did not show a significant difference in the level of bullying witnessed. Females, however, who watched other female broadcasters agreed they had witnessed more bullying toward the female broadcaster (mean=2.44, *SD*=1.27) than toward male broadcasters (mean=2.02, *SD*=1.10, $p<0.05$). When asked the level of agreement to the statement, "I have witnessed others making inappropriate sexual comments about the broadcaster in this channel," the mean response of the sample was 2.23 (*SD*=1.30) where 1=strongly disagree and 5=strongly agree. When exploring gender differences, we found that males who watched female broadcasters agreed more with the statement (mean=2.84, *SD*=1.28) than those who watched males (mean=1.34, *SD*=0.81, $p<0.05$). Females watching females also agreed more to this statement (mean=3.21, *SD*=1.26) than females watching males (mean=2.23, *SD*=1.33).

Questions were also asked to explore how acceptable trolling or toxicity was to viewers. For example, the question, "Even when the conversation turns inappropriate, it is all in good fun," was asked. Females showed no significant difference in their responses to this question based on whether they watched male or female broadcasters. However, males

who watched females agreed less that inappropriate conversations were in good fun (mean=3.72, *SD*=1.24) than men who watched other men broadcast (mean=4.04, *SD*=1.13, $p<0.05$). In addition, agreement to the question "Broadcasters sign up for some amount of harassment" was asked to determine how "acceptable" trolling was perceived to be in a live broadcasting environment. The overall mean response to this statement was 2.08 (*SD* of 1.20, where 1=strongly disagree and 5=strongly agree), indicating that in general, viewers disagreed that harassment was just "part of the job" of broadcasting. Men watching females agreed significantly less with this statement (mean=1.27, *SD*=1.87) than men who watched other male streamers (mean=2.19, *SD*=1.24, $p<0.05$). Females did not differ in their agreement to this statement based on the gender of their favorite broadcaster.

Finally, it was explored how likely it was that the community would intervene on behalf of the broadcaster when trolling was present. The respondents were asked "I have tried to intervene or stop a toxic situation in the past." The mean response for the entire sample was 2.84 (*SD* of 1.49, where 1=strongly disagree and 5=strongly agree). Men watching women demonstrated higher agreement with this statement (mean=3.32, *SD*=1.4) than men who watched other men (mean=2.59, *SD*=1.46, $p<0.05$). Female viewers were not more likely to intervene based on gender. Viewers were also asked if they had witnessed others intervening on behalf of the broadcaster when trolling was present. The mean response here was 3.46 (*SD* of 1.35, where 1=strongly disagree and 5=strongly agree). Similar to the last question, females did not report a difference in witnessing interventions based on gender of broadcaster. Males, however, agreed more that they had seen others intervene when watching female broadcasters (mean=3.83, *SD*=1.12) than other males (mean=3.31, *SD*=1.4, $p<0.05$).

Discussion

This research focused on whether the perceived severity and extent of trolling behavior differ based on the gender of the viewer and broadcaster, and whether the gender of the viewer and broadcaster influenced whether or not the viewer or the community intervened in the trolling situation.

In response to the first research question, it was found that males did not report significant differences in the prevalence of several trolling behaviors based on whether they watched male or female broadcasters. For example, male viewers showed no significant difference on the frequency of witnessing toxic or bullying behaviors based on the gender of the broadcaster they watched. Females, however, did report more agreement to witnessing trolling behaviors such as bullying and general toxicity when they watched other female broadcasters versus when they watched male broadcasters. When asked about trolling in the form of comments that were inappropriately sexual in nature, both men and women who watched female broadcasters reported witnessing significantly higher levels of this form of trolling.

In general, it seems that female viewers who watch female broadcasters report witnessing trolling on a much broader scale than male viewers who watch female broadcasters. Universally men and women respondents acknowledged that female broadcasters face more sexually charged trolling.

Past research has often focused on gender-specific trolling; however, this research is among the first to explore the phenomenon in a livestreaming context and this research is also unique in the fact that it identifies that women and men may have a different perspective of what constitutes trolling based on the gender of the individual being trolled.

Interestingly, even though male viewers did not necessarily report witnessing as many trolling events in general as female viewers, there was a pronounced gender difference in how acceptable men found trolling behavior based on the gender of the broadcaster they viewed. Male respondents who watch female broadcasters agreed less with the statements that trolling is in good fun and just part of the platform when they watched female broadcasters than when they watched male broadcasters. Therefore, our male respondents appear to be more lenient regarding the amount of trolling that occurs when watching a male broadcaster versus a female broadcaster. Females did not differ on how acceptable they found trolling based on whether they were viewing men or women broadcasters.

Our second research question explored the extent to which gender of the viewer and broadcaster influenced the likelihood of the viewer or community to intervene in a trolling situation. Men were more likely to have personally intervened in a trolling situation when they were watching a female broadcaster rather than a male broadcaster. Females reported no significant difference in their likelihood of intervening based on the gender of the broadcaster. Men are also more likely to report that they have witnessed others intervening when a female broadcaster is trolled, whereas women viewers again did not report a significant difference.

Although trolling behavior violates the usage agreements of many platforms and major platforms such as Twitch and Facebook recognize that they must do something to mitigate the problem of cyberbullying, harassment, and trolling,¹⁶ the reality is that the massive amounts of activity occurring on these platforms makes it impossible for the platforms to completely police themselves with bots or content scanning systems. These platforms must rely on users to help identify and prevent harmful user behaviors. Identifying how to educate people about unacceptable trolling and harassment behaviors and understanding what spurs individuals to take action against trolls is an important first step in reducing the frequency at which livestream broadcasters are exposed to trolling.

Limitations

The sample for this study was obtained from viewers' livestream broadcasts on Twitch.tv primarily; therefore, care should be taken in generalizing to other platforms. The next step might include other live broadcast mediums such as Mixer, as well as live broadcasts on major social media sites such as Facebook, Twitter, and YouTube. Also, less than a third of the respondents were female. Even though this is a larger percentage than many studies in the area of online gaming, and even though this is a fairly accurate representation of the demographics on this particular platform, this still limits the generality of the research, particularly in platforms (such as Facebook) that are more evenly divided between men and women. In addition, all items were self-

reported; therefore, some impression management or socially desirability bias might be present in some responses, even though such biases were mitigated by stressing that the survey was anonymous and that responses would only be presented in aggregate form.

Conclusion

In 2018, Twitch and Facebook were both found to be platforms where the highest amount of severe online harassment took place, and one-third of Americans reported being exposed to "severe harassment" while online.¹⁶ Trolling behavior online is not new but research in the area of live-stream broadcasting is sparse. There are ethical considerations for companies who use or provide livestream broadcasting services to consider, in that they are potentially exposing the broadcaster to personal attacks from trolls. Many online platforms such as message boards and forums mean that trolling behavior is directed at a disembodied post, text, or avatar. Live broadcasts give trolls actual human targets to unleash their destructive and disruptive behavior on in real time. Understanding the prevalence and effects of trolling in this platform is critical. This research is an initial attempt to understand how the gender of the broadcaster may impact the severity of trolling in this context as well as how the rest of the online community responds to hostile participants.

Author Disclosure Statement

No competing financial interests exist.

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