

A Study on the Correlation between Danmaku Videos and Audiences' Repetitive Viewing Behaviours - A Case Study of Bilibili Danmaku Video Network Videos

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Abstract:

With the rise of online video platforms, Danmaku videos have steadily gained popularity among young people. Danmaku's instantaneous, synchronous, targeted, and cumulative features offer viewers a novel viewing experience, improve the social and interactive aspects of video views, and even impact the frequency with which users watch videos again. As a popular video website at present, Bilibili provides rich video content for audiences and supports the Danmaku function. This study targets Bilibili Danmaku videos and focuses on how Danmaku videos affect the audience's viewing motivation and experience as the research theme. Descriptive statistics and result analysis were utilized in this study to investigate the reasons behind repeat viewing and the effect of the Danmaku on the viewing experience. Questionnaires were employed to gather viewing data from video audiences in the Bilibili life division. According to the findings of the study, Danmaku greatly improves the overall viewing experience for viewers as well as their enjoyment of the show and sense of community. The study concludes that Danmaku facilitates the audience's behavioral decisions of repetitive viewing to a certain extent. This study provides an empirical analysis to explore the role of Danmaku in video viewing behavior and makes strategic recommendations for video platforms to improve user experience and foster community engagement.

Keywords: Danmaku video; Repetitive viewing; Bilibili; Audience behavior.

1. Introduction

This study focuses on the Danmaku culture of online video platforms and its impact on audience behavior. In light of the advent of digital media, watching videos on internet video platforms has become a popular pastime for young people. This study has important theoretical and practical implications for understanding how Danmaku shapes audiences' viewing habits and social interactions. This study focuses on the impact of Danmaku videos on the audience's repeated viewing behavior, aiming to reveal the role of Danmaku culture in video consumption.

This paper uses a questionnaire survey as a quantitative research method to survey the audience in the living area of Bilibili's Danmaku video network to collect data on their motivation to watch the same video over and over again and the impact of Danmaku on their viewing experience. The advantage of this method is that it can efficiently collect audience behavior data, and deeply understand the audience's viewing motivation and experience through descriptive statistics and result analysis. To improve the

representability and reliability of the data, questionnaires were distributed randomly through WeChat, Weibo, and other platforms, and strict data screening and cleaning were carried out.

The ultimate research objective of this study is to explore how Danmaku videos promote repeat viewing behaviour among audiences and to provide video platforms with strategic recommendations for enhancing user experience and community interaction. To achieve this goal, several research sessions were conducted, including questionnaire design, data collection, statistical analysis and interpretation of results.

2. Overview

2.1 The Origin and Development of the Danmaku Video Website

The term "Danmaku" (literally bullet curtain) originally originated in the military and was gradually applied to the AGC (animation) world as the Danmaku shooter theme gained popularity in games. In 2007, Japanese video site

Niconico officially launched a real-time comment feature that allows viewers to post subtitles while a video is playing, which appear at the top of the screen and move from left to right as the progress bar advances. When a large number of viewers participate in real-time comments on a video, the video will present a large number of images with floating subtitles, similar to those presented in early shooting games, so this function was subsequently called “Danmaku”, and videos using this technology are also called “Danmaku video” [1].

In addition to making viewings more enjoyable, Danmaku comments create a novel social media platform that the audience finds engaging [2]. Simultaneously, Danmaku culture has advanced significantly. Subsequently, Danmaku videos also appeared on the Chinese Internet. In 2009, Bilibili Danmaku video website was established. Scholar Zhang suggested that Danmaku video websites can be regarded as a branch of video-sharing websites, which mainly publish AGC works, such as original animation works, related music or personal performances, secondary creations, or spoofs [3]. As a typical Danmaku video website, Bilibili has quickly gained the love of many young users by providing novel and youth-friendly content and services. Meanwhile, with the technical support of the new medium of Danmaku screen, Bilibili has emerged in the video service industry and even replaced AcFun Danmaku screen network in the two-dimensional space [4].

Nowadays, Danmaku culture has widely penetrated many corners of the Internet, becoming a standard feature on mainstream video platforms such as Youku, Tudou, LeTV, iQIYI, Tencent Video, Bilibili, and AcFUN. In addition, it has also extended to online broadcasting platforms such as Himalaya FM and online game platforms such as Yin Yang Master, and even in some online film and TV dramas, Danmaku has been cleverly integrated into the video content as an element that attracts viewers [1]. Some audiences said that the video with Danmaku and the original video are two different works, which reflects that the Danmaku culture is spreading from the secondary field to a wider age group, satisfying the various needs of users of interest circles, such as the desire for expression and interaction, and prompting more people of different age groups to participate in it.

2.2 Characteristics of Danmaku

Danmaku has three distinctive features, the first is timelessness and synchronicity. Danmaku breaks the feedback form of traditional mass media, allowing rapid information exchange and real-time response, and providing the audience with a collective and synchronous viewing experience. From the Media Richness Theory perspective, Danmaku videos enrich the audience’s communication experience to a certain extent [5].

The second is pertinence. Danmaku language shows a unique pertinence, focusing on screen elements at specific time points in the video, such as figures, behaviors, or immediate evaluation of specific events. Under the same time node, the focus of different audiences may vary according to their personal preferences and viewing habits. When these multiple perspectives are presented in real-time through the form of Danmaku, they not only enrich the interpretation level of the video content but also promote the exchange of ideas among viewers.

Cumulativity is also an important feature of Danmaku. With the increase in video playback, the number of Danmaku also accumulates, forming a significant cumulative effect. On the one hand, the unique display method of Danmaku makes the Danmaku that are sent months or even a year apart in time eventually appear next to each other or superimposed on the same video screen, thus providing the audience with an interactive experience across time. Secondly, some clever Danmaku, such as accurate jokes about certain behaviors in the video or humorous answers to the protagonist’s questions, can often trigger strong resonance among the audience.

2.3 Literature Review

With the development of Danmaku culture, Danmaku video has gradually moved from niche fields such as two-dimensional space to mass vision, which has stimulated scholars’ research interest in topics such as how users use Danmaku video websites and how Danmaku affects users’ specific usage behaviors and movie-watching experience. In general, the academic research on Danmaku video websites shows an increasing trend year by year.

Tang and Tian in “Study on the Influencing Factors of Users’ Usage Behaviour in Danmaku Video Sites - Taking Bilibili as an Example” studied and modeled the Danmaku usage behaviour of users in Bilibili through qualitative research, and finally came up with the core influencing factors in five aspects: website function, resource content, webpage environment, users’ learning needs and emotional needs [6]. Scholar Ji, on the other hand, explored the realization of user interaction from the perspective of users’ interactive behaviour in Danmaku videos and argued that Danmaku provide new possibilities for the development of video socialization. At the same time, he also pointed out the problems of unrefined quality of Danmaku and the challenge of Danmaku to traditional viewing habits in his paper “Study on the new form of interaction in video socialisation under the innovation of Danmaku technology - Taking Bilibili Danmaku video network as an example” [7]. Wang’s article “Research on the Interaction Mechanism of Danmaku Community--Taking Danmaku Video Website Bilibili as an Example” takes Collins’ chain of interaction rituals as the theoretical basis to study the components and results of the interaction rituals in the Bilibili

community [8]. Scholar Yang also explained the significance and inspiration of the interactive communication mechanism based on the interactive ritual chain theory in his article “Research on the communication mechanism of Danmaku in Online Video -- Taking the Second Season of National Treasure on Bilibili as an Example” [9].

According to the data survey, the number of video submissions and playback data in the life division of Bilibili has been in a leading position for a long time, and it is one of the video types with the highest attention from the majority of Bilibili users [10]. In such videos, Danmaku such as „watching for a second time“, „watch with everyone“ and „I am here again“ appear frequently, reflecting users’ tendency to watch the same video repeatedly. The term „repetitive viewing“ describes the actions of users who watch the same video content multiple times, a phenomenon that has also drawn some scholarly attention. In their study „Study on the Communication Characteristics of Repeated Viewing of Mobile Short Video - Taking Tiktok Short Video as an Example“, Shen and Zhao used Tiktok as an example to explore the communication characteristics of repeated viewing of mobile short video and the influencing factors behind it [11]. In addition, Li and other scholars studied the motivation of film and television audiences to watch film and television works repeatedly from the perspective of psychology [12].

3. Research Method

This paper chooses a questionnaire survey as a quantitative research method to investigate the motivation of the audience in the living area of Bilibili to watch the same video repeatedly and the impact of Danmaku on the viewing experience during repeated viewing. Questionnaire surveys are widely used in social science research and market analysis for their advantages of efficient data collection, economy, ease of quantitative analysis, and rapid feedback, providing researchers with an economical, controllable, and easily scalable method of data collection. Therefore, in this study, the use of a questionnaire survey research format helps to provide an in-depth understanding of the motivations for repeat viewing behaviours of the audience in the life division of Bilibili, and how Danmaku shapes their viewing experience.

3.1 Sample Description and Data Collection

In order to empirically analyze whether the repeated viewing behavior of users towards life-divisional videos of Bilibili is directly related to the video display, the author designed a questionnaire for users’ viewing habits, content preferences, viewing experience and other dimensions. The questionnaire consisted of 23 questions and was randomly distributed on WeChat, Weibo, and other social media platforms popular among young people in

July 2024. 228 questionnaires were returned, of which 68 samples indicated that they had “never watched the same video in the Bilibili Life Division repeatedly”, which was considered an invalid sample, and the final valid sample was 160 samples. The final valid sample was 160.

In the valid sample, the proportion of men and women was the same; the age distribution of participants was dominated by the younger group of 18-24 years old, accounting for 45.18 percent, followed by the age group of 25-34 years old, accounting for 26.34 percent. In contrast, the participation of participants in the age group over 45 years old was lower, accounting for only 3.51 percent.

This questionnaire was collected from participants in an anonymous form, and participants voluntarily participated in filling it out without providing personally identifiable information. In addition, all the collected information will be strictly used for the academic analysis and report writing of this study, which is protected by relevant privacy rights and interests.

3.2 Research Hypothesis

As an emerging interactive method, Danmaku has a non-negligible impact on users’ viewing decisions and experiences. It is a topic of great research value to explore how Danmaku affects users’ repeated viewing behavior and how this interaction can enhance the viewing experience. The purpose of this study is to explore the relationship between Danmaku and the repeated viewing behavior of video audiences in the life division of Bilibili, as well as the specific impact of Danmaku on the viewing experience. It is hypothesised here that when audiences watch life-division videos with Danmaku attached on Bilibili, the presence of Danmaku will stimulate their behaviour of multiple viewings of the same video content, thus positively contributing to the user’s viewing decision and experience.

4. Research Result

4.1 Descriptive Statistics

The data gathered from the questionnaire shows that over half of the users (66.66%) will watch the video of the Bilibili life division every day, and 27.19% of them will watch such videos multiple times a day; When asked about the multifaceted impact of the existence of Danmaku on the viewing experience, the view that Danmaku increases the pleasure of watching was highly supported (73.24%), and the vast majority of participants agreed that “Danmaku helps me better understand video content” (74.56%) and “generate a sense of social belonging” (71.49%). At the same time, the distraction of the Danmaku is more common, with 37.72% of people believing that the effect of the Danmaku on distraction is relatively serious, and 35.09% of people thinking that it is very se-

rious, with a total of 72.81%. When asked whether they had ever repeatedly watched the same video in the life division of Bilibili, 70.18% said yes, as shown in Figure 1, and among this group, the number of times they had re-

peatedly watched the same video was mainly concentrated in the range of 4-10 times, with the highest proportion (32.5%) in the range of 7-10 times.

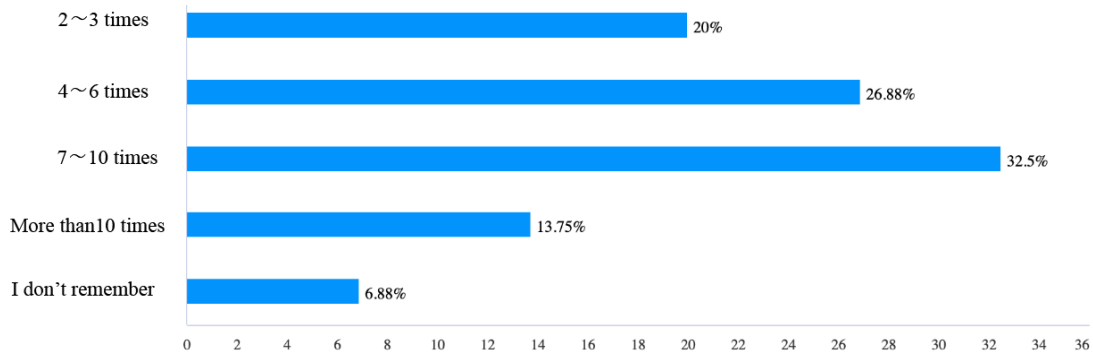


Fig. 1 Graph of survey results on the highest number of repeat viewings of videos in the life division of Bilibili.

According to the data in Figure 2, the main reasons for the main test respondents to watch the same video repeatedly include the need to learn the information or skills in the video continually (76.88%), the video content is appealing enough to be worth watching over and over again (57.5%),

and to find more details or to dig out the easter eggs (50%). The interactive fun of Danmaku (36.25%) and the need for social interaction (44.38%) were also reasons for a certain percentage of respondents to watch the video repeatedly.

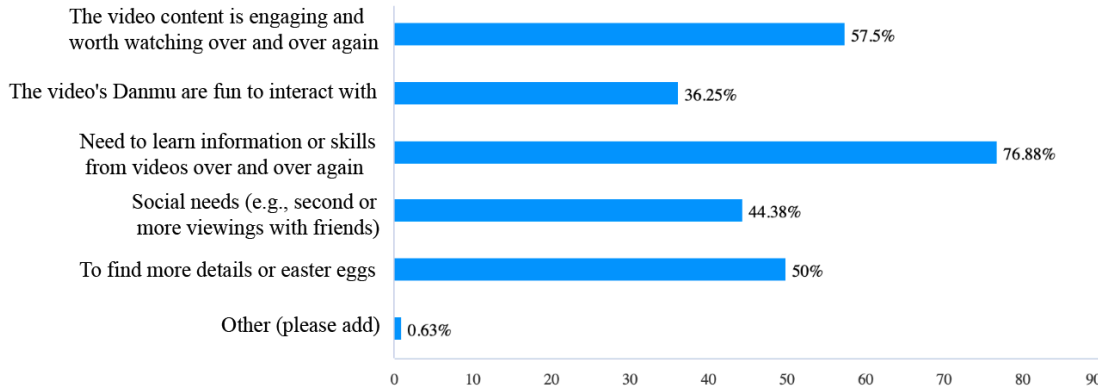


Fig. 2 Graph of survey results on reasons for repeated viewing of life-division videos.

However, when asked about the impact of Danmaku on their decision to watch lifestyle videos, the majority of respondents affirmed that Danmaku influenced their repet-

itive viewing behavior to some extent, with 70% of them saying that the impact was large or very large (as shown in Figure 3).

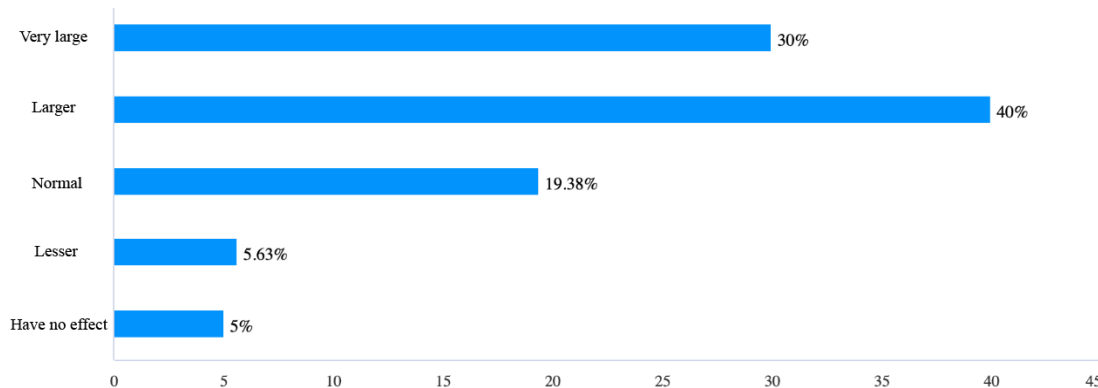


Fig. 3 Investigation of the degree of influence of pop-ups on repetitive viewing decisions.

In the process of repeatedly watching the video, more than 80% of the respondents thought that it was helpful or very helpful for them to deepen their understanding of the video content, while only a few people (5.43%) denied this view; meanwhile, 85% of the respondents said that their views on an event, behavior or character in the video were influenced by the discussed views of the updated Danmaku and thus changed; 72.83% of the participants found new content or details of the video because of Danmaku in the process of repeated viewings the same video.

In addition to this, more than half of those who filled out the form (55.7%) had stopped watching videos because they didn't like the content of the Danmaku, and about one-third (33.77%) had turned off the Danmaku feature because they didn't like the content of the it, with a small number (10.53%) saying that they wouldn't stop watching the videos or turn off the Danmaku even they didn't like the content of the Danmaku.

4.2 Result Analysis

The findings show that a variety of factors contribute to the audience's repeated viewing of the videos in the Bilibili's life division. Three primary factors center around the video content: the videos contain knowledge and skills that are valuable to learn again, the content itself is intriguing, and the videos contain additional details and easter eggs that can only be discovered through repeated viewings. Even while it influences the replay rate of the original movie, the Danmaku's enjoyable interactions only make up a small portion of the total, indicating that they do not directly affect it in a way that can be measured by the survey's statistics. However, the findings also equally point to the extent to which Danmaku influences the audience's repetitive viewing decisions, and this contradiction could possibly be attributed to the leading tendency of the question settings or the logical gaps in the questions themselves, which biased the completers' understanding of the Danmaku in the different topics. For instance, the description of the exact number of Danmaku was not clearly presented in the question, and participants, therefore, chose their subjective impression of the volume of Danmaku covering the top of the video to make up for this gap, thus having an impact on the objectivity of the survey results. Such avoidable or less problematic gaps in the set-up need to be attended to, enhancing the professionalism and rigour of subsequent in-depth studies.

Compared to the more ambiguous association between Danmaku and repetitive viewing behaviours, the findings more significantly demonstrate the positive effect of Danmaku on enhancing the sense of repetitive viewing experience. Generally speaking, the number of video Danmaku for the same video grows as the release time

increases, and the updated content of the Danmaku not only brings deeper understanding and more diversified thinking perspectives to the viewers, but also hints at the overlooked details for the viewers. Most of the questionnaire participants indicated that the maximum number of repeat viewings was in the range of 7 to 10, and during more than one repeat viewing, the cumulative amount of Danmaku increased and the video content of the Danmaku was updated, which enhanced the overall viewing experience of the video for the audience who watched the video repeatedly, and further facilitated the decision-making of the next viewing behaviour.

In general, the survey results are consistent with previous research hypotheses, and the study on the correlation between barrage and repetitive viewing behavior is the main exploration direction of this study.

5. Discussion

A preliminary claim is made based on the survey results that Danmaku has some influence on viewers' decisions to watch content again. The claim highlights four key features of Danmaku that improve the audience's viewing experience: instantaneous and cumulative relevance, deepening comprehension of the content, enhancing viewing perspectives, and accessing new content. The factors that lead to Danmaku affecting users' repetitive viewing behaviour are discussed here.

5.1 Platform Recommendation Mechanism

Video social platforms such as Bilibili have a set of personalized recommendation mechanisms. They analyze users' consumer behavior, click and browse behavior, etc., and make intelligent content recommendations based on algorithms according to product scenarios, and user and context information. Sun dissected the operation process of the video personalized recommendation model in "Research on Personalised Video Recommendation Methods Based on Social Networks", showing the all-around collection of user data by the platform recommendation mechanism [13]. After the platform deepens the individual preference positioning through the user's likes and coins and other behaviours, the probability of similar videos appearing in the relevant recommendations is increased, and to some extent, it also improves the probability of the user revisiting the favorite video through the recommendation mechanism.

5.2 Social Interaction Needs

The Usage and Gratification Theory suggests that audiences choose appropriate media channels based on their needs, and social needs are a common motivation for media exposure [14]. In the questionnaire survey, 5.34

percent of people often send Danmaku on their initiative, while 62.28 percent occasionally post them, choosing to do so at “famous scenes”. Therefore, it can be seen that the repeated viewing of Danmaku videos is directly proportional to the expectation and need of individuals to gain feedback and recognition in the process of social participation. Some participants mentioned enthusiasm for being a “high-energy guy” or “subtitle guy” and other “Danmaku roles”, watching videos repeatedly and reminding others of the next scene or adding subtitles for each line of dialogue by sending barrages. This social need to provide information for participating in discussions prompted them to watch videos repeatedly.

6. Conclusion

This study uses Bilibili as a platform to study users' behavior of repeatedly watching videos in the life division, verifies the hypothesis that there is a correlation between barrage and users' repeated viewing behavior, and concludes that Danmaku has a positive role in improving users' viewing experience and making repeated viewing decisions. In-depth research on the correlation between users' repetitive viewing behavior and Danmaku has a practical role in improving the quality of video services and optimizing the platform recommendation mechanism for Danmaku video websites such as Bilibili. It helps the platform better understand users' use and understanding of the Danmaku function, gives full play to the advantages of high interactive participation, and improves the audience's viewing experience. Future research also needs to continue to pay attention to the overall trend of Danmaku development, and while providing scientific guidance to the majority of content creators, strengthen the platform's control and screening of Danmaku to reduce the adverse experiences and negative impacts caused by some Danmaku.

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