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Effect of online video infotainment on audience attention

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Based on the attention economy theory, this study used the regression analysis method to analyse the effect of online video information entertainment on audience attention's breadth, depth, engagement, and validity. The empirical research results show that highly positive and negative emotions significantly impact the audience's attention in infotainment. We found that content storytelling, star characters, soft news themes, and sensational headlines have a significant positive effect. From the perspective of online video and media platforms, time fragmentation significantly impacts the audience's attention positively and negatively. The diversification of presentation methods, the number of labels, and authoritative media have significant positive effects, whereas the number of topics has a significant negative impact.

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Introduction

We Are Social and Hootsuite have jointly released the latest global digital report, "Digital 2022: Global Overview Report", which shows that there were 4.62 billion social media users worldwide as of January 2022, representing 58.4% of the world's total population. In the past 12 months, the global social media user growth rate has exceeded 10%, with as many as 424 million new users, equivalent to an average of more than 1 million new online media users daily. Nowadays, the average global internet user spends nearly 7 hours daily on the web. At the same time, the 49th "Statistical Report on the Development of China's Internet Network" released by the China Internet Network Information Center in 2022 shows that as of December 2021, the number of netizens in China has reached 1.032 billion, an increase of 42.96 million since December 2020. The internet penetration rate has reached 73.0%, forming the world's largest and most vibrant digital society.

With the popularisation of Internet technology, the network environment has gradually become a significant part of the construction of information infrastructure. The mobile network represented by mobile phones has become the fastest and most convenient way for the audience to meet their needs through, for example, access to information and social entertainment. The effective combination of online media and intelligent terminals has led to an era of media integration. As a result, online videos have become the primary carriers of information dissemination in the era of integrated media. Using videos to provide users with a mobile online video social application that integrates production and sharing has become a new form of social networking used in the news reports of media organisations. With the development of specific media technologies and social platforms such as YouTube and Bilibili, media users consume online videos, and media agencies cater to the needs of their audience (Napoli 2011). For example, Bilibili is a social media platform for sharing online videos (Jia et al. 2018) and exporting ideas and sharing content in the Professional User-Generated Video (PUGV) mode (Zhu and Chen 2015). Internal community products have high interaction rates, a platform basis for good social interaction, a unique bullet screen culture, and a good community atmosphere that inspires users to create actively (Fig. 1).

In such a scenario, users watch a specific story in a news announcement through an online broadcaster's website or social media platform. However, this news content is broken down, and the content units become fragmented and united, resulting in some form of news content that takes precedence over others, putting less popular news content at risk.

In his prediction of today's economic trends, the famous Nobel laureate Herbert Simon pointed out that "with the development of information, what is valuable is not information, but attention". This view has been vividly described by the IT industry and management community as the "attention economy". In business and profit models based on the attention economy, the mass media is the most influential owner of attention resources. Forced by the increasingly mature competitive environment in the market and the limited nature of audience attention resources, the current trend of media commercialisation has increased, and soft news has become a combination of entertainment, news, and other information. As a result, the joy of news has become an inevitable phenomenon under the conditions of the market economy (Webster 2014).

Compared with traditional media channels such as television, social media platforms allow younger people to search and browse for news information (Newman et al. 2021). With video news becoming increasingly common, news and information media meet the audience's consumption needs for information acquisition and interpretation. The content marketing of mobile videos on the news social media platform strengthens the commercial value of news information. For social media platforms, video revenue is directly related to the number of video views and other popularity metrics, and the media can also promote the revenue of the video by increasing video popularity. In this context, the main research objective of this study was to investigate the influence of audience attention under the economic mode of attention by using various video indicators

At present, research on the economic correlation of online news videos has mainly focused on the summary and elaboration of the information value of video news (Harcup and O'Neill 2016), product branding (Rahe et al. 2021), advertising, marketing (Park and McMahan 2020), and economic activity of news websites (Thelwall 2017). However, there is a lack of studies that use empirical analysis to analyse the relationship between infotainment and audience attention to online videos. Top digital media technologies, including social networking sites (e.g. Facebook), blogs (e.g. Twitter), and content and community sites (e.g. YouTube), have changed the market and business dynamics by changing the competitive position of companies and increasing the power of consumers (Mason et al. 2021). They have also significantly impacted the current market form. The entire business model of social media platforms is based on harvesting human attention that can be commoditised (Mason et al. 2021).

However, the current research includes part of the specific characteristics of news information, such as title characteristics (Mast and Temmerman 2021), celebrity effect (Farivar et al. 2022), news value (Harcup and O'Neill 2016), and other aspects that positively influence news dissemination and attract users' attention. Still, the theoretical unity of these variables is lacking. This paper introduces the concept of "infotainment", which can include all these indicators. Our metrics were refined based on language characteristics, news reporting methods, and social media platforms to quantify infotainment clearly. The entries were clear and appropriate enough to be applied to other platforms.

Meanwhile, this study used the empirical analysis method to analyse the relationship between infotainment and audience attention, which fills the current research gap. In addition, we also applied the previous characteristics of paper news or text to the video format, which further described the degree of entertainment of other forms of news. Finally, this study used knowledge in psychology and communication to classify and measure infotainment and user attention to complete the model construction.

This study examined the relationship between information video entertainment and the audience's attention in online video social application platforms to identify the characteristics of information videos that impact the audience's attention.

Theoretical foundations and literature review

Attention economy. The economy is determined by what is scarce (Goldhaber 2006). In a situation of information overload, people's limited attention resources are scarce (Hogan 2001). In this case, attracting attention tends to create commercial value, and people's attention becomes a finite economic resource (Boyd 2010), a commodity (Jakobsson 2010), or a form of capital. The economic model that results from this focus is the attention economy.

Different media environments have different assessment indicators of attention value. For example, in traditional media, advertisers invest more in advertising fees to occupy more intensive periods to attract users to buy (Zulli 2017). In the new media era, news companies must rely on popular social media (e.g. Facebook) to compete for attention from a limited audience

Fig. 1 Information partition video interface on the Bilibili platform. A screenshot of the interface captures relevant details about videos, including the video link, title, publisher or media source, and release time.

(Myllylahti 2018). The indicator evaluation of the online attention economy is based on different scholars with different definitions. In addition to some intuitive metrics such as click-through rate (Marwick 2017) and engagement with likes or re-tweets (Zulli 2017), some abstract concepts exist. Popularity encompasses metrics such as views, comments, and subscriptions (Burgess et al. 2020; García-Rapp 2016). Quantified and public metrics on social media, such as click-through rates, increase the target audience's value (Marwick 2017). On a video platform, the number of video playbacks, shares, comments and other indicators reflect the popularity of the video. Video publishers pay extra attention to the number of likes, coins, and collections because these metrics can primarily affect their income. For example, "coins" are a circulating currency on the Bilibili platform. Coins work similarly to tips. Users will give coins to their favourite videos (Bilibili Danmuku Video Network 2023).

The revenue and heat of the video are calculated by the weighted average of the number of video page views and other popularity indicators. Video popularity can promote the recommendation of the video within the platform, which creates a virtuous cycle of video promotion and revenue. Therefore, individuals and the media can directly or indirectly promote economic value by increasing video popularity. At the same time, since these indicators can reflect some extent, the commercial value triggered by attention, this study was conducted in the context of the early attention economy. Therefore, we investigated the effect on audience attention under the economic model of attention, with audience attention as the dependent variable.

In addition to indicator naming, scholars have noted the huge impact of celebrities on the attention economy. The influence of celebrities has sometimes transcended media influence, changing the structure of the unusual attention economy and providing a new way to engage the audience (Clancy 2015). Celebrities increasingly seek to build their brands on digital platforms by commodifying their personalities (Smith and Fischer 2020), achieving sufficient economic importance (Marshall 2021). Various video metrics, serving as criteria, can help advertisers evaluate celebrities' popularity and commercial value (Jiang 2018).

According to the psychological theory, the following factors affect attention: the characteristics of the object of attention, the nature and task of the activity, the knowledge and experience of the individual, the mental state of the individual, and the state of the individual's willpower. News media can shape the "characteristics of the object of attention" according to the "nature and task of the activity (the user watches the video)". Therefore, videos with different characteristics can be quite attractive to most users. At the same time, the various factors that affect attention are independent of each other. Considering that the purpose of this study was to measure the degree of entertainment, the main factors are the characteristics of the attention object and the nature and task of the activity. In addition, the effects on individual behavioural characteristics, such as the time and extent to which users are active on social media, and information dissemination, such as their responses to video releases, can also significantly affect their attention to the video (Figueiredo et al. 2014; Kanuri et al. 2018; Spasojevic et al. 2015).

In summary, based on the preceding discussion, this study examined the impact of online videos on audience attention based on online video characteristics and the elements of platforms that enable social media activities.

Eye-catching means: infotainment. Since online video has become one of the main formats of consumer content on the web (Lopezosa et al. 2019), news videos have become the fastest-growing category among watched videos online (Peer and Ksiazek 2011). Social media allows users to derive value from generating content and interacting with society (Carr and Hayes 2015). The entire business model of social media platforms is based on capturing human attention that can be commoditised, and news outlets rely on the audience platform for media operations and business activities (Naughton 2018).

From the perspective of traditional news organisations, most of these videos are not watched on their websites but rather on video-sharing websites (Peer and Ksiazek 2011). In such circumstances, the presentation of news content on social media has the following main aspects: the difference between online news and traditional content mainly focuses on news topics and reporting methods

(Beatty 2016; Harcup and O'Neill 2016). Stylistic trends in the news (Molek-Kozakowska and Wilk 2021) tend to be light-hearted and enjoyable. The news media also needs to create online videos to attract the audience. Successful online news videos follow most traditional standards for making elements but show more relaxed content (Peer and Ksiazek 2011). The apparent audience preference for online and traditional TV videos demonstrates the unique features of broadcasting news videos on social platforms.

Journalists often choose recent controversial topics on the YouTube platform to appeal to younger audiences. Newspaper workers also use humour and emotion to present information in a relaxed and entertaining way, contributing to the modernisation of journalism through a fun speaking style and a strong focus on audience interaction (Lichtenstein et al. 2021). Some journalists preferred topics that could spark debate, claiming that "the hope is that the use of entertainment will make people more interested in politics". In other words, as the content producer, the news media mainly adjusts the news content and presentation form to share similar specific characteristics to attract attention. At the same time, journalists will use powerful words such as *lash* and *growl* to express emotions, which goes beyond the standard journalistic practice of objectivity and is commonly used in writing Twitter news (Molyneux and McGregor 2021). Accordingly, information entertainment has become an effective means for the media to catch the audience's attention.

As mentioned above, celebrities can attract attention and generate economic benefits. However, these social media celebrities are controversial, and some of their initiatives tend to exacerbate contradictions (Peifer 2020). The attention political elites receive in newspapers is often related to the attention they receive on social media (Kruikemeier et al. 2018). Individuals increase their business value by attracting followers (Farivar et al. 2022). Social media stars positively impact brands by increasing their influence (Jain et al. 2021) and promoting brand marketing (Khamis et al. 2016; Phua et al. 2020). The popularity caused by the number of followers will increase the perception of the opinions of web celebrities. Large following bases of Instagram influencers are considered more popular (De Veirman et al. 2017). Fans on social platforms will have a positive bias against influential people (Lou 2022). Social media celebrities as advertising tools can have a considerable impact on their followers by, for example, promoting positive attitudes towards endorsements, product purchase possibilities, and corporate brand image (Janssen et al. 2022).

The concept of infotainment was proposed in the 1980s and means "a particular type of journalism, or a general shift in news content" (Lofton 2012). Kaid and Holtz-Bacha (2008) explained the concept of infotainment with four different emphases: diverse content phenomena such as soft news, personalisation, and human interest in traditional hard news television formats; types of shows that combine seriousness with fun, factual perspectives with private feelings, such as talk shows; journalists in a famous, relaxed, or emphasised style; and informative television genre that introduces musical, dramatic, and fictional elements. Under such definitions, infotainment has two relatively obvious entertainment directions: content and presentation. According to this study, content refers to the objective characteristics of the entertainment information itself. The presentation method relates to the features of information release (video form) and release channel (social media platform). Therefore, this study considers infotainment to convey information through sensationalism, entertainment or stimulation, vulgarising and shallow serious information to attract the audience's attention.

Research hypothesis and model building

After the explosion of social media news reading, social media can now be seen as a source of softening news (Baumgartner and Morris 2009). However, owing to the limited attention resources, there is fierce competition between media, so the choice of news audience is crucial for the media to produce news.

Hypotheses

Infotainment. News media selects and processes the information content to attract audience attention (Lichtenstein et al. 2021; Molyneux and McGregor 2021). In this case, news content refers to news value, focusing on describing the characteristics of the news itself. Harcup and O'Neill (2016) measured the content characteristics of news information by summarising 15 specific requirements for news coverage from newspapers and social media related to entertainment information.

Journalists firmly believe that subjective factors such as emotions, opinions, and personalisation are necessary to engage the public (Welbers and Opgenhaffen 2018). Methods of political popularisation include "emotionalisation" (Umbricht and Esser 2014). Both good and bad news refer to reports with extreme emotions that are mainly used to judge the emotional tendencies of the event. Good news or information with positive emotions refers to recovery, breakthrough, healing, victory, and celebration. In contrast, bad news or information with negative emotions is equivalent to events such as death, injury, failure, and loss (Harcup and O'Neill 2016). Reports with relatively obvious emotional tendencies have a certain appeal to the audience and can attract audience attention; thus, we can make the following assumptions:

H1: Emotional polarisation positively affects the audience's attention.

H1a: Positive emotion positively affects the audience's attention.

H1b: Negative emotion positively affects the audience's attention.

Paying attention to social media influencers is an everyday activity for users. Influential people can increase their business value by attracting followers (Farivar et al. 2022). Research proves that celebrities on social media increase user attention and expand communication influence, promoting branding marketing (Khamis et al. 2016; Phua et al. 2020). Politicians with higher visibility on social media also tend to have higher visibility in traditional media formats such as newspapers (Kruikemeier et al. 2018). Online celebrities can positively influence related products, such as celebrity brands and brands endorsed by activist celebrities (Jain et al. 2021).

The media popularises politics through five strategies: sensationalisation, scandals, emotionalisation, ordinary people narratives, and privatising public figures (Umbricht and Esser 2014). Fairchild (2007) discovered the phenomenon of "idols" in the attention economy, engaging the audience by shaping star characters and the show's dramatic development. Media use storytelling techniques to compete in the ongoing struggle to grab people's attention (Strömbäck 2008) and expand the audience's political reach (Clark 2016). The study speculates that the entertainment characteristics of characters and narratives will impact attention under the following assumptions:

H2: Celebrities can positively affect the audience's attention.

H3: Content storytelling positively impacts the audience's attention.

Soft news topics such as health and joy are posted more frequently on social media such as Facebook (De Swert 2007).

Young people on Instagram like to follow a few specific topics in soft and hard news (Hendrickx 2021). However, some studies have suggested no apparent difference between hard and soft news coverage on social media (Van Aelst et al. 2017). Also, there are exact differences in news topics across social platforms (Kalsnes and Larsson 2017). That is to say, diverse topics such as hard and soft news affect audience attention, so we assume the following:

H4: News topics impact the audience's attention.

H4a: Hard news topics positively impact the audience's attention.

H4b: Soft news topics positively impact the audience's attention.

News headlines are also humourous and witty (Harcup and O'Neill 2016). The use of direct speech, emotional expression, question form, puns, and allusions in the title strengthens the appeal of mainstream media to the general audience (Molek-Kozakowska 2013, 2017). Compelling headlines and oversimplified information are more likely to attract public attention (Hervik et al. 2021). This study suggests that sensational titles are effective in attracting audience attention under the following assumption:

H5: Sensational headlines positively affect the audience's attention.

Features of online video and social media platforms. Online videos released by social and news platforms in Europe and the United States generally do not exceed 60 seconds. The programmes launched by the mobile online video news service Now This News are mainly 6, 15, and 30 seconds long. As a result, believing that different platforms have different online video time requirements, which reflects the impact of time on attracting audience attention, we made the following assumption:

H6: Time fragmentation positively affects the audience's attention.

Online news is mainly presented through eye-catching photos, videos, audio, or charts (Harcup and O'Neill 2016). News publishers manipulate rhythms, graphics, and shot selections during production to enhance video engagement and fun (Lang et al. 2003). News videos include but are not limited to elements such as graphs and audio, including vocals, which affect the audience's perception of the video information content (Beatty 2016). Based on the impact of the above-mentioned rich forms of expression on attracting the audience, we can assume the following:

H7: Diversity in the presentation positively impacts the audience's attention.

Harcup and O'Neill (2016) mentioned that sharing and commenting through Facebook, Twitter, and other social media is an attribute of news content on interactive platforms. Generally, the hashtag's main posted object is presented as a topic, marked with a "#" (Bernard 2019). The three dots of the triangle represent the focus of the video. The symbol "#" and dots are particular label types, collectively called hashtags. Tags provide an easy-to-personalise storytelling cue and a specific narrative focus to cue the video coverage (Clark 2016), whereas hashtags are even more critical. As the video label on video platforms has an impact on attracting the audience, we can make the following assumptions:

H8: The number of tags positively affects the audience's attention.

H9: The number of topics positively affects the audience's attention.

As credibility is a necessary qualification for survival in the news market in a free society, consumers will only turn to and rely on them for information if they perceive the media as trustworthy (Zhang et al. 2013). The primary source of news for audiences is primarily mainstream media. During the COVID-19 (coronavirus disease) pandemic, mainstream media and influential self-media played a vital role (Lian et al. 2022). However, some media reports of the epidemic triggered local panic. Social media's emergence has challenged traditional media's credibility (Zhang 2019) and even sparked domestic distrust of the government and mainstream news media (Evans 2021). However, people generally believe that news media are more trustworthy than social media, and media trust is an essential criterion for citizens to read the news (Zhang and Xu 2022). The mainstream state media remain the chief producers and publishers of news reports.

On the other hand, the creation mode of social media network video platforms is mainly the PUGV model. This mode integrates professional production and user creation, ensuring the professionalism and authenticity of news content and the timeliness of emergency reporting, which further expands the scope of news reports. Video platforms have lower thresholds for creation, and the audience has become active cultural producers (Bird 2011). As a result, social media users are involved in producing and disseminating content. This "democratisation" of journalistic practices strongly impacts news products (Lamont and Molnár 2002). Therefore, the publisher or creator of a news video can influence people's choice of information, which leads us to the following research hypotheses:

H10: The nature of the media affects the audience's attention.

H10a: Media authoritarianism can positively impact the audience's attention.

H10b: The massification of production will positively affect the audience's attention.

Audience attention influencing factor model construction in social media. Online videos must attract attention on social media to realise the commercial value of various video popularity indicators. News media rely on social media platforms to capture more attention in a way that generates higher video revenue. The higher the attention, the more popular the video, and the more broadcast the video, the higher the revenue. On the Bilibili platform, video revenue is directly related to the number of playbacks, likes, coins, collections, video shares, and bullet screen comments and comments. The higher the numbers of these indicators, the higher the heat of the video and the more value can be converted into economic income and social impact. Therefore, this research suggests that these video indicators can reflect the video's commercial value and measure the video's positive impact on attracting the audience's attention.

Some metrics must be defined to measure how these videos attract viewers' attention. From the continuous improvement of the online video industry chain, the label data of the video on the platform can be vividly shown to the publisher. The commercial value of videos in the market has become an essential embodiment of the competitiveness of the video market. The number of clicks and the amount of interaction are crucial factors in measuring the value of internet-content products. As the attention economy arises from the attention and contact of the recipient in the information dissemination process, we can reduce

it to two levels: the contact and behavioural expression of the media that affect the audience, corresponding to playbacks and interactions. Marwick (2017) argued that the social media-based media economy can be quantified and publicised. The high level of online attention media is a control capability that can be measured using click-through rates. Each click is more valuable to the person being followed. As an intuitive result of the click-through rate, the playback volume is the first step in the user's contact with the news.

Apart from that, attracting attention can lead to further interaction. Implementation of behaviour and expression represents the audience's engagement, including cognitive, emotional, purposeful behaviour, and other dynamic changes. These intentional changes can be translated into user actions such as watching, likes, coins, collections, sending bullet screen comments, normal comments, and sharing to other platforms, as shown in Fig. 2.

These figures reflect the audience's liking or love. The number of likes on social media can be considered an application indicator for assessing the public appeal of online posts (Porten-Cheé et al. 2018). Coins are similar to likes but have a higher giveaway value because they are more challenging to obtain. Owing to the limited number of coins each user can have, the primary way to get it is to check in to the platform daily or produce a video to get someone else's coin and draw it proportionally. However, a user can only throw 1 or 2 coins for a video, so the coin is precious for both the video maker and the beholder. Therefore, compared with coins, likes are easy to achieve and arguably the least demanding form of interaction on social platforms, as they only take one click (Hille and Bakker 2013). Apart from that, the direct beneficiary of the user giving coins as tips is almost just the video itself, which promotes the number of videos through recommendation and indirectly increases the revenue of publishers, further boosting the conversion between the user's attention and economic value. However, the coin cannot be used as a circulation means to trade and gift between users but only as a particular form of reward between the user and video publisher. Collections represent the possibility that users will watch the video multiple times.

Bullet screen comments require the output of a small amount of text, which will affect the viewing experience of other users in the future. Comments reflect the degree of discussion and recognition of video content, representing a specific emotional colour as a way for users to interact internally. Sharing means the possibility of multi-channel dissemination, which can be seen as a more demanding news usage way (Kalsnes and Larsson 2017) for secondary dissemination inside and outside the platform to reach more users.

Research has proven no positive correlation between the two mechanisms of online participation in clicks and comments. In contrast, video projects with significant clicks are not equivalent to projects highly commented on (Tenenboim and Cohen 2013). Accordingly, the metrics could be distinguished by dimensions. Arvidsson and Bonini (2014) pointed out that value is not just about eye-catching but is understood for influence and engagement. Le (2018) and Chan et al. (2018) defined social media engagement as the behavioural dimension of social media interactions, including clicks, shares, and comments. Link promotions, likes, preferences, votes, tags, bookmarks, and secondary postings and comments represent praise behaviour. These social signals demonstrate taste preferences, engage the audience, evaluate social media engagement, and create new value for publishers, platforms, and advertisers (Dwyer and Martin 2017).

Considering that these analysis metrics are generally highly controversial (Graves et al. 2010; Napoli 2011), based on previous research and practical indicators, this study broadly divided audience attention into four dimensions: breadth (Yang and Counts 2010), depth, engagement, and validity of attention. Among them, the media's breadth reflects the audience's size. For a video, the number of playbacks best reflects the breadth of video transmission within the platform because it is the first step in understanding the video content. Thus, this study used playback to measure media breadth. Second, media depth refers to the user's attitude and recognition, which can be measured by how well the media meets the audience's needs and content quality, including reputation and loyalty. This study uses likes, coins, and collections to measure media depth. Third, media engagement requires clear actions, such as expressing opinions measured by the volume of comments. Media engagement requires visible steps such as vocalising thoughts because of the impact of words and replies on online users (Ballantine et al. 2015; Houston et al. 2011), as measured by review volume. Moreover, while the sentences are short and straightforward, taking into account that the most profound participatory experiences occur at the content level (Epps 2009; Russell et al. 2004), both bullet screen comments and normal comments can complete the participatory process of emotional expression (Rao et al. 2016). Both were considered in this study. Finally, people disseminate information through shares, mainly when they know or feel it is newsworthy (Starbird and Palen 2010). Media validity can depend on the secondary communication power of the particular audience, measured by the number of re-tweets or shares.

Control variables. In addition to the entertainment tendency of social media platforms and the information itself, other variables also attract audience attention and impact the various video indicators. The number of followers is usually related to public popularity (Beck 2009). At the same time, social media celebrities strongly appeal to their followers and influence in terms of business value (De Veirman et al. 2017; Janssen et al. 2022). This study speculated that the number of fans positively attracts users' attention.

Considering the differences in video upload times and the influence of user characteristics, we inserted user behaviour-level control variables into the model. Social media pop dynamics are valuable for providing effective information services to content generators and online advertisers. Some studies link video characteristics, popularity metrics and video trends to predict the future of popularity (Figueiredo et al. 2014). Video popularity indicators accumulate over time, but the growth of video popularity will slow. Research has shown that video release time can impact users' attention. Media platforms are most popular 2 hours after their release, and users of different social media platforms have cycle changes by day and week. This is due to the daily and weekly behaviour patterns, location or time zones, and the amount of other information competing for attention, affecting the information response level and media usage (Spasojevic et al. 2015). The optimal time of release in a day varies among different types of information (Kanuri et al. 2018). Therefore, this study suggests that the audience's sleep hours and working patterns will have a certain impact on attention attraction, such as whether the use is measured during the peak hours of social media use (every day) and during holidays (rest time). In summary, the study of the impact of release time on attention was divided into three dimensions: the number of days of video release, the peak period of users' daily use, and the impact of holidays and breaks on users' social media use.

Model building. The attention value evaluation of news and information videos is divided into four dimensions: breadth, depth, engagement, and validity. The specific indicators

Fig. 2 Seven indicators on the Bilibili platform that can measure audience attention. This specific video page displays the audience's engagement performance.

correspond to the breadth of attention (number of playbacks), the depth of attention (number of likes, coins, and collections), the engagement of attention (the number of bullet screen comments and comments), and the validity of attention (the number of shares). The model hypothesis that the factors of online videos infotainment on social media platforms impact audience attention is shown in Fig. 3.

Empirical analysis

Data source. Social media is used to create and exchange user-generated content (Kaplan and Haenlein 2010). Social media provides an open environment for people to receive information (Bentz et al. 2021). It is easier for people to discuss and accept political information in news media and networks (Gil de Zúñiga et al. 2018).

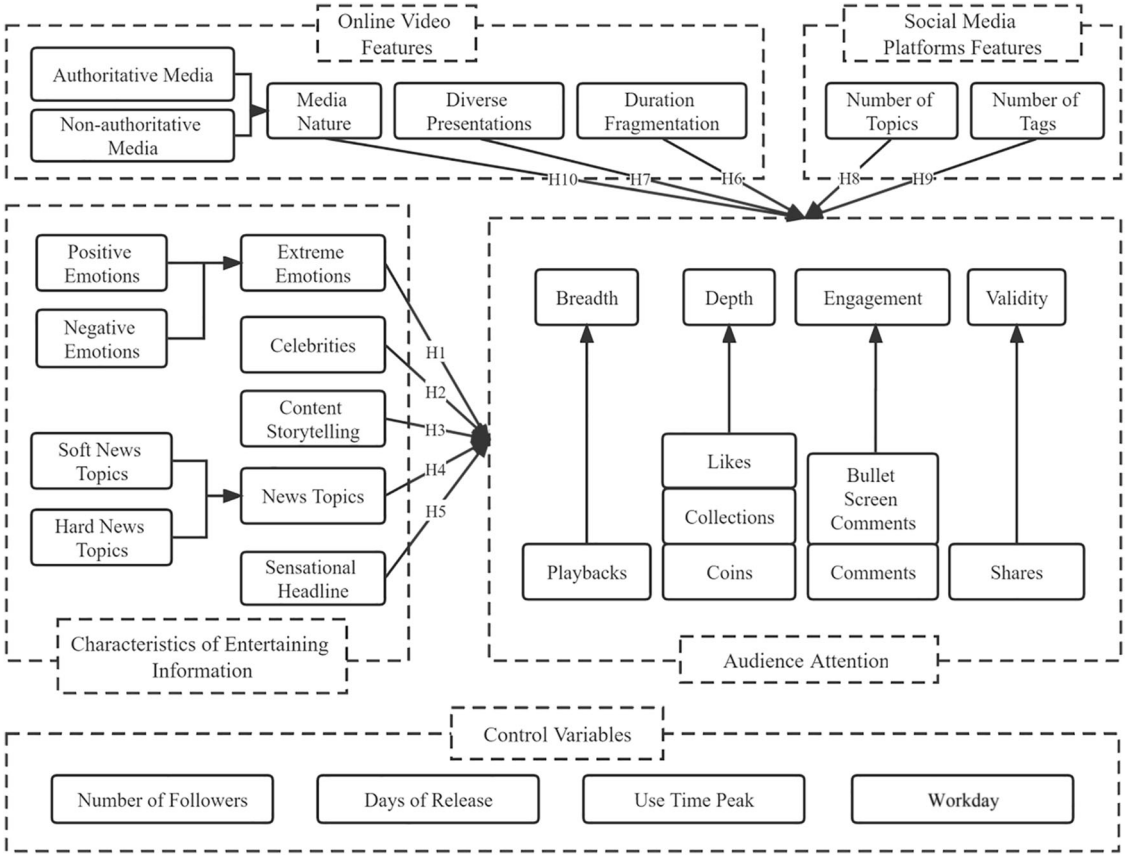

Fig. 3 Analysis model of the impact of online video infotainment on audience attention. The model evaluates infotainment by considering the entertainment attributes of the video, along with the features of online video and social media platforms, and investigates its influence on four dimensions of audience attention: breadth, depth, engagement, and validity.

Combining Zhu and Chen's (2015) definitions of social media, the BiliBili platform is a user-based social media, and its publishing content is mainly video production, similar to YouTube in terms of social media definition. At the same time, the Bilibili platform builds a virtual community through its unique and interactive form of bullet screens (Jia et al. 2018). As a cultural community and video website with a high concentration of social media users in China, Bilibili has had a significant increase in users and a strong growth momentum in recent years. At the same time, it has an essential position in social media, becoming the leader of China's young generation in the online video market. Therefore, this study selected online videos on the Bilibili website as a sample for analysis.

On Bilibili, particular news posting partitions are divided into hot spots, society, global, and comprehensive. According to previous ranking-related sample selection (Ge and Gretzel 2018; Mourelatos and Mourelatos 2022; Yang et al. 2016), we selected the top 600 videos in each sub-partition from 1 May 2022 to 1 August 2022 in order of popularity, with a total of 2400 videos. The videos were sorted by hot degree (recommendation rate) based on the weighted average number of playbacks, likes, coins, collections, shares, and bullet screen comments and comments on the Bilibili platform. The specific formula used was as follows (Yiao 2022):

$$\begin{aligned} \text{hot} = {} & 0.25\times \text{playbacks} \\ & + 0.4\times \text{likes} + 0.3\times \text{collections} + 0.4\times \text{coins} \\ & + 0.4\times \text{bullet\_screen\_comments} + 0.4\times \text{comments} \\ & + 0.6\times \text{shares} \end{aligned} \quad (1)$$

Therefore, as mentioned earlier, the numbers of these indicators positively correlated with the video's popularity and commercial value potential. After removing live broadcast video links whose link was no longer available, we crawled 2395 videos.

Methods. We performed a regression analysis of the relationship between extreme emotions (positive and negative), celebrities, content storytelling, (soft) news topics, sensational headline, time fragmentation (time duration), diverse presentations, number of topics, number of tags, authoritative media (media nature), and other control variables with transmission breadth, depth, engagement, and validity of the video communication. We analysed the influence of the information entertainment characteristics of online news videos on different dimensions of audience attention.

Variable metrics

Independent variable measures. According to previous research, independent variables such as extreme emotions (positive and negative), celebrity characters, content storytelling, soft news themes, sensational headlines, diversity of presentation methods, authoritative media, and several control variables were measured, as shown in Table 1.

This study simplified the coding index of independent variables and focused on several prominent positions and indicators. The coding method of independent and control variables is shown in Table 2.

Table 1 Methods of measuring independent and control variables.

Variable	Measurement methods
Extreme emotions	Whether the reporting attitude or emotion is sharp is a characteristic and indicator of the news. Messages like recovery, breakthrough, healing, victory, and celebration fall under the category of good news, evoking positive emotions. In contrast, events such as death, injury, failure, and loss are considered bad news, associated with negative emotions.
Celebrities	The presentation and attraction of celebrities can be reflected in multiple dimensions and positions of the Bilibili platform, such as labels, titles, and video content. Based on the identified dimensions, we determined whether well-known celebrities, politicians, and other public figures, such as "personal names", should be employed to attract the audience to "click (title)" operations. Moreover, we considered whether the video content (label) identifies the celebrity characters.
Content storytelling	The level of content storytelling shows a positive correlation with the following factors: (1) conflict, such as disputes between countries or regions; (2) surprise, involving exceptionally rare occurrences; (3) drama, characterized by intricate progress and even multiple reversals. The greater the incorporation of these elements, the higher the degree of storytelling in the video content.
News topics	This study mainly divided news topics by distinguishing between soft and hard news. Based on the studies of Bastos (2014) and Hendrickx (2021), soft news (easy news) includes culture/art/fashion, lifestyle/travel, media/communication/entertainment, entertainment stars, health, personal work/study, and sports. Hard news (serious news) includes world/international/national/local news and news on opinion/politics/religion, diplomacy/social affairs, law enforcement/crime, economy/finance, wars/disasters/accidents, COVID-19 (epidemic), science/technology/education, mobile/infrastructure, and the environment/energy.
Sensational headline	The study on American journalism (Mindich 2000) emphasised that the "ethics of objectivity" is a defining characteristic of modern journalism: "only facts" and "neutrality" are critical components of journalism. The abstract terminology and simplified events mentioned by Thomson et al. (2008), such as people, numbers, places, and actions, must be fully articulated in previous news story headlines. These terms are generally used to explain events rather than to record them. This study argued that eye-catching and exaggerated headlines have some features, including (1) symbols, tone, question marks (rhetorical questions, enhanced tone, asking questions, and creating suspense), ellipses (creating tension), and exclamation points (punctuation of emotional colours); (2) colloquial and online language (e.g. over-exaggeration and playing with "stems"); (3) sexually suggestive, violent, and pornographic language (the Bilibili platform is strictly reviewed and does not allow such to appear; therefore, it is not included in the coding standard); (4) eye-catching keywords (e.g. "Handsome!," "Suddenly!," and "First-time public!"); (5) compared with traditional news report headlines, the elements of the narrative object are highlighted, but the completeness is insufficient (triggering curiosity) and even taken out of context; (6) colons (emphasis) and commentating text (citations) appear multiple times; (7) the headlines may even ignore the possibility of events occurring and force the discussion of causality (extreme exaggeration and inconsistencies in the news content). We believe headings containing the two or more characteristics mentioned earlier are sensational. This study relied on these characteristics to judge the degree of entertainment of the title. The more requirements are met, the higher the degree of entertainment of the title.
Diverse presentations	Combined with the video data that the Bilibili platform provided, we summarised different objects such as pictures and sounds: photographs, videos, background music, special sound effects or pictures (such as emoji), simultaneous or concurrent sounds (vocals and other recordings), sound subtitles, emphasising fonts, and explanatory or descriptive background text. The more captivating videos encompass a greater number of the aforementioned elements.
Media nature	The coding of the media settled on the Bilibili platform was divided into two types: authoritative and non-authoritative news media (self-media produced by the masses). The official media stationed in the consultation area of the Bilibili was roughly divided into the following categories: CCTV, various newspapers, regional media or other media officials, various university official accounts, and so on. The Bilibili platform's media identification label can help differentiate the nature of the media. The official certification of the platform is divided into personal (UP, identity, and domain authentication) and institutional authentications (government certification, enterprise authentication, media authentication, and organisation certification). Only the following media belong to the official and authoritative news media: (1) central and national administrative organs at all levels, social organisations, mass organisations, and central enterprises in the certification of institutions or their subordinate accounts, and (2) websites, newspapers, television stations, radio stations, and other media with formal news gathering and editing qualifications or their accounts. Other non-news-related official accounts and self-media, such as personal studios, belong to mass production media.
Use time peak	Studies have examined the daily schedule of appropriate information releases on social media (Kanuri et al. 2018) and the peak response period of the audience (Spasojevic et al. 2015). Concerning the daily work and rest time of normal people and the data released by YouTube Studio Analysis Information Center, a video media platform, this article defines the time of high user activity on the Bilibili platform from 4:00 p.m. to 11:00 p.m.. We believe that using social media during this period is the peak time of attention competition, also leisure time, when most users can focus on using social media.

Dependent variable measure. As one variable corresponds to multiple indicators, this study used a principal component analysis (maximum variance method) to determine the metric weights. The number of dimensions is the number of all indicators invested in a dimension. Considering the massive gap between the values of the dependent and independent variables, the dependent variable is logarithmic. We used the logarithm because of the influence of missing values (the corresponding indicator maybe 0) and the larger fundamental data values. We processed the initially collected data by incrementing each value by one, which does not affect the analysis results. The correlation between the dependent variable metric and the dimension is shown in Table 3.

Results

Descriptive analysis

Number of followers. As shown in Fig. 4, compared with other variables that follow a normal distribution, the distribution of the number of fans among publishers is not apparent. It does not conform to the normal distribution. A relatively large number of followers was concentrated between 100,000 and 500,000 as well as between 5 and 10 million. On the Bilibili platform, most publishers in the information zones have many fans.

Video release time. According to the video release time of the crawled Bilibili platform, this study analysed different dimensions

Table 2 Independent variable measures and control variables.

Variable	Encoding
Extreme emotions: positive emotions	The good news is recorded as 1, and other messages as 0.
Extreme emotions: negative emotions	The bad news is recorded as 1, and other messages as 0.
Celebrities	If the person's name is present in both the label and title, it receives a score of 2. If the person's name appears in only one of the locations, it is assigned a score of 1. If the person's name is absent from both places, it is given a score of 0.
Content storytelling	Whether the video content has narrative features such as conflict, surprise, and drama. We calculate values in the form of cumulative scoring. If the video contains one of the aforementioned elements, the score will be added by one.
News topics	The soft news theme is 1, and the hard news theme is 0.
Sensational headline	Whether the video contains the seven indicators in Table 1. We calculate values in the form of cumulative scoring. If the video contains one of the seven indicators, the score will be added by one.
Duration	The duration of the video is measured in seconds.
Diverse presentations	Whether videos contain pictures, videos, background music, special sound effects, simultaneous sounds (e.g. vocals), sound subtitles, emphasising fonts, explanatory background text, and so on, the item is shown as 1, otherwise as 0, and any of the above items are recorded as corresponding values.
Number of topics	The number of hashtags whose symbol is "#" or three dots positioned at the apex of a triangle.
Number of tags	The number of labels.
Media nature	Authoritative news media releases are recorded as 1, and non-authoritative news media releases as 0.
Number of followers	For the number of fans (the number of subscriptions) of the video publisher, as the channel unit of fans on the platform is 10,000.
Days of release	As the crawl of the video was from 21 August 2022 to 23 August 2022, it lasted about 3 days. This code is unified for 22 August 2022 and thus calculated the days between the data crawl time and the video release time.
Use time peak	If the video posting time corresponds to peak hours or periods of high user activity, we assigned a value of 1. Otherwise, it was marked as 0.
Workday	The video posted on a workday is coded as 1, otherwise is marked as 0.

Table 3 Dependent variable encoding.

Variable name	Dimension name (symbol)	Indicator name (symbol)	Calculation methods
Attention	Breadth (y_1)	Playbacks (z_1)	$y_1 = \mathrm{LOG}(z_1 + 1)$
	Depth (y_2)	Likes (z_2) Coins (z_3) Collections (z_4)	$y_2 = \mathrm{LOG}(0.289 \times z_2 + 0.422 \times z_3 + 0.289 \times z_4 + 1)$
	Engagement (y_3)	Bullet screen comments (z_5) Comments (z_6)	$y_3 = \mathrm{LOG}(0.688 \times z_5 + 0.312 \times z_6 + 1)$
	Validity (y_4)	Shares (z_7)	$y_4 = \mathrm{LOG}(z_7 + 1)$

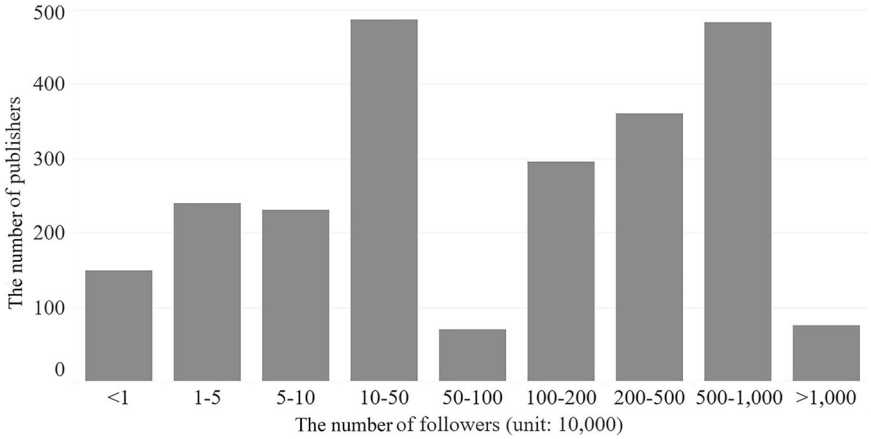

Fig. 4 The number of followers of the publisher. There is a degree of variability in the number of followers among video publishers. A significant portion of video publishers have millions of followers.

of the number of video releases monthly, daily, and hourly, as shown in Figs. 5 and 6. Figure 5 shows the number of hot videos posted daily in the platform information section for 3 months. According to the data, the numbers of videos released on different dates in the list were equal, with roughly 10 to 35 videos floating around. Of these videos, the video on 4 July 2022 was the most frequently watched, reaching 74 views, approximately three times the average (25). Overall, the duration of the video release and the

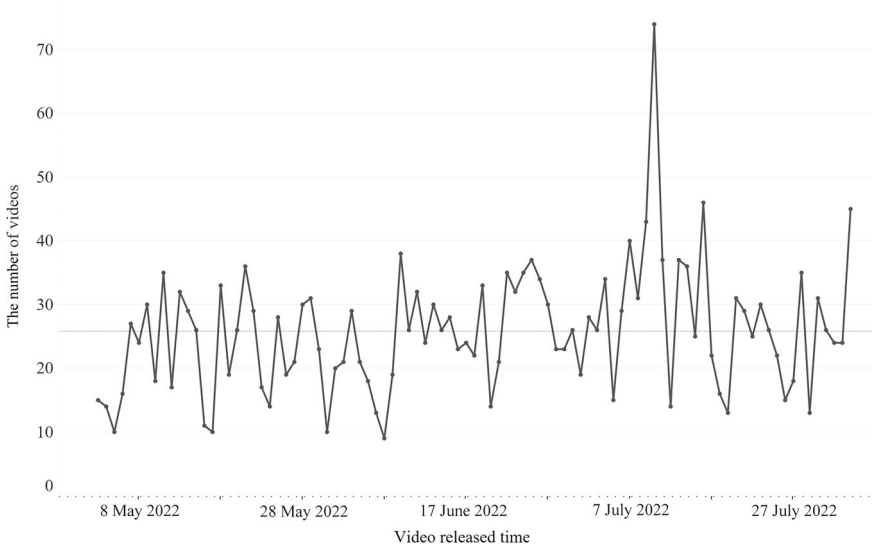

Fig. 5 The number of videos posted daily in three months. Throughout the three-month duration, the average daily video uploads by video publishers exhibited fluctuations, with counts ranging from 9 to 74 videos per day.

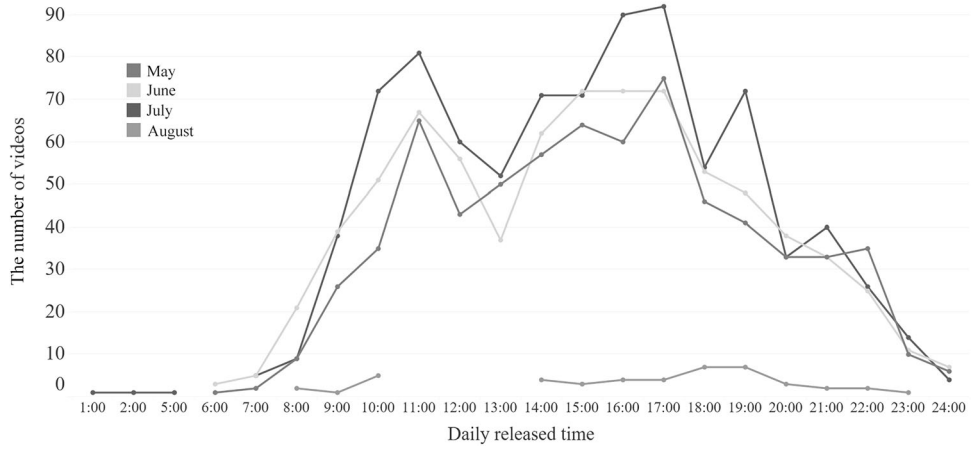

Fig. 6 The number of videos published every hour per day. The release of videos is concentrated primarily during daytime hours.

popularity of the video were not closely related because the time of the video release directly reflects the number of days after the video release. As shown in Fig. 6, the daily release time of popular videos is mainly from 10:00 a.m. to 8:00 p.m., which is inconsistent but still coincides with the hypothesis mentioned above.

Online video duration. We conducted a statistical analysis of the segmentation duration (see Fig. 7), and the online video format was mainly short videos. Short videos of less than 2 minutes (0–120 seconds) in length account for about 72.9% of the total videos. Among these videos, most (37.7%) were within half a minute (0–30 seconds) long, followed by those that were 2–5 minutes (120–300 seconds) long (19.5%). Videos more than 5 minutes in length were considered long videos and accounted for 10.8% of the total number of videos. A small proportion of videos of more than 6 minutes (more than 360 seconds) long were found, which accounted for about 10% (9.6%) of the total number of videos, indicating that online news videos can be this long.

On the Bilibili platform, the duration of an online video can be calculated in sec, and the video length varies from tens of sec to several minutes, effectively reducing the time the audience spends to obtain information. The fragmented time caters to the needs of today's audience. Accordingly, the video content is consumed, disseminated, and shared over a fragmented time, which makes up for the audience's reading needs for news information in a short time. A shorter duration is conducive to narrating and transmitting news topics in the most temporary space. It also improves the efficiency of communication. Medium- and long-term videos still account for nearly 25% of social platforms, which shows that the trend of increasingly fragmented audience time is becoming increasingly apparent. The audience's choice of information is not mindlessly based on the shortest video. However, they tend to watch videos from which they can get more details quickly or favour medium-length videos on current political analyses.

Descriptive analysis of the independent variables. The independent variable indicators and their corresponding frequencies, coding values, and proportions are shown in Table 4. As shown in Table 4, among the online news videos released on the Bilibili platform, 44.0% had obvious emotional tendencies (including positive and negative emotions), and 56.0% had no obvious emotional tendencies. Of the videos, 27.0% were narrated by one

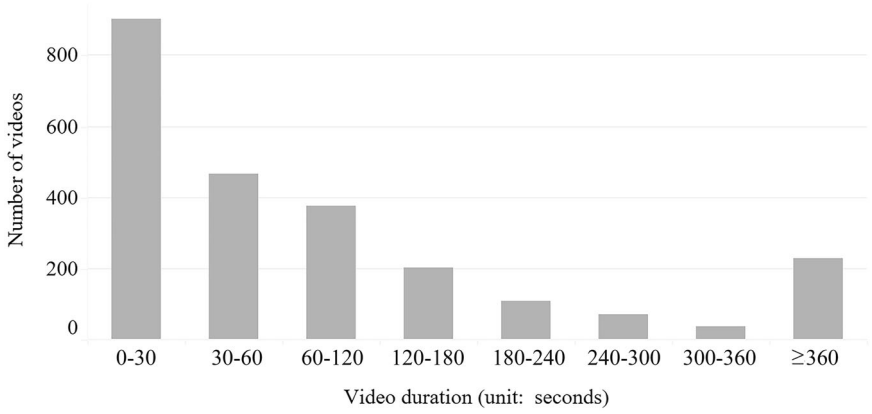

Fig. 7 Online video duration distribution. Videos tend to be fragmented.

Table 4 Descriptive statistics of the independent variables.

Independent variable	Values	Frequency	Percent
Extreme emotions: positive emotions	0	1854	77.4
	1	541	22.6
Extreme emotions: negative emotions	0	1883	78.6
	1	512	21.4
Celebrities	0	1749	73
	1	371	15.5
	2	275	11.5
Content storytelling	0	1017	42.5
	1	989	41.3
	2	367	15.3
	3	22	0.9
News topics	0	1816	75.8
	1	579	24.2
Sensational headline	0	439	18.3
	1	747	31.2
	2	711	29.7
	3	386	16.1
	4	102	4.3
	5	10	0.4
Diverse presentations	1	6	0.3
	2	92	3.8
	3	653	27.3
	4	841	35.1
	5	515	21.5
	6	231	9.6
	7	54	2.3
	8	3	0.1
Number of topics	0	785	32.8
	1	895	37.4
	2	458	19.1
	3	196	8.2
	4	39	1.6
	5	17	0.7
	6	5	0.2
Number of tags	(0,3]	807	33.6
	(3,6]	926	38.7
	(6,9]	430	18
	(9,12]	232	9.6
Media nature	0	561	23.4
	1	1834	76.6

or more well-known characters, highlighting the presence of the characters themselves, but relatively speaking, the use of character stars is not extensive. Furthermore, 57.5% of the videos had conflicts, rare surprises, and dramatic events or highlighted the drama and story to enhance the video's visual and emotional appeal. The study found that soft topics such as health and livelihood accounted for only 24.2% of the videos, which shows that soft news is not the main description object of news videos.

The reporting of news and information videos is still mainly based on hard news topics such as international affairs and crime. Sensational headlines (scores of 2 and above) are more prominent, accounting for 50.5%, exceeding half of the total video volume. Considering that some notification videos have only pictures, this study suggests that eight judging characteristics should be selected for the presentation form characteristics of videos. More than half of the features of the total number of videos were as follows: dynamic video form (87.3%), background music (71.9%), simultaneous vocal dubbing or video soundtrack (70.9%), text description of related events (58.6%), and corresponding audio subtitles (54.3%). Among these judging characteristics, the main number of combinations is 3 to 5 (83.9%), and videos with a label of 4 accounts for the highest proportion (35.1%).

Of the videos collected, 67.2% had hashtags, a few had many hashtags, and most had a hashtag (37.4%) with the most specific topic. The number of tags was enormous, including the number of tags, small partitions, and partitions below the video, and the number reached 12. We counted in groups of 3, and the number of tags was mainly concentrated in 1 to 6 (72.3%). The research objects of this study were news and information videos, and the publishers of authoritative mainstream media accounted for a relatively high proportion compared with other regions. Similar to news topics, individuals gain some ability and channels to produce news videos. Still, the number of videos produced by the masses was relatively small (23.4%), and the number of videos produced by authoritative media was much larger than those produced by self-media.

Regression analysis results. In this study, the data were analysed using the linear regression method, and the regression results are shown in Table 5. The empirical results show that the collinearity of the independent variables and the variance inflation factor (VIF) values of the model fit are lower than 2. The results indicate no multicollinearity relationship between the respective variables in the model and that the regression model can be entered. Specifically, the use of time peak and workday in the control variables were insignificant for any dimension of audience attention, so both were removed from the model.

The data presented in Table 5 show that emotional positivity had significant negative effects on the breadth ($\beta = -0.06$, $p < 0.01$), depth ($\beta = -0.169$, $p < 0.001$), engagement ($\beta = -0.076$, $p < 0.001$), and validity ($\beta = -0.104$, $p < 0.001$) of media influence, so H1a is not supported. Emotional negativity had significant positive effects on the breadth ($\beta = 0.058$, $p < 0.01$), engagement ($\beta = 0.125$, $p < 0.001$), and validity ($\beta = 0.16$, $p < 0.001$) of media influence, and had a significant negative impact on depth ($\beta = -0.075$, $p < 0.001$), so H1b is partially supported.

Celebrities had a significant positive effect on the breadth of media influence ($\beta = 0.05$, $p < 0.05$) and validity ($\beta = 0.064$, $p < 0.01$), so H2 is supported. Content storytelling has a significant positive impact on the breadth ($\beta = 0.1$, $p < 0.001$), depth ($\beta = 0.129$, $p < 0.001$), and engagement ($\beta = 0.065$, $p < 0.01$) of media influence, so H3 is supported. Soft news topics significantly impact the breadth of media impact ($\beta = 0.047$, $p < 0.05$), so H4a is not supported, but H4b is supported. Sensationalised headlines positively impacted media influence engagement ($\beta = 0.044$, $p < 0.05$), so H5 is supported.

Fragmentation of video duration had a significant negative impact on the depth of media impact ($\beta = -0.515$, $p < 0.001$) but had significant positive effects on engagement ($\beta = 0.317$, $p < 0.001$) and validity ($\beta = 0.078$, $p < 0.01$), so H6 is partially supported. Diverse presentations had a significant positive impact on the breadth ($\beta = 0.114$, $p < 0.001$), depth ($\beta = 0.114$, $p < 0.001$) and engagement ($\beta = 0.047$, $p < 0.05$) of media influence, so H7 is supported.

The number of tags had significant positive impacts on the depths of the effects on media ($\beta = 0.089$, $p < 0.001$), engagement ($\beta = 0.047$, $p < 0.05$), and validity ($\beta = 0.078$, $p < 0.001$), so H8 is supported. The number of topics had a significant negative effect on the breadth ($\beta = -0.094$, $p < 0.001$), depth ($\beta = -0.102$, $p < 0.001$), engagement ($\beta = -0.058$, $p < 0.01$), and validity ($\beta = -0.127$, $p < 0.001$) of media influence, so H9 is not supported.

Media authoritarianisation had a significant positive impact on the breadth ($\beta = 0.065$, $p < 0.01$) and validity ($\beta = 0.134$, $p < 0.001$) of media influence but had a significant negative impact on depth ($\beta = -0.053$, $p < 0.01$), so both H10a and H10b are partially supported. The hypothesis test results are summarised in Table 6.

Research conclusions and discussions

Based on the influencing factors of psychological concern, we theoretically unified many variables with infotainment, classified how news characteristics attract attention. This paper also systematically elaborated and quantified infotainment characteristics, including information content, information carrier, and

Table 5 Online video audience attention influencing factor regression results.

Dimension	Variable	Breadth		Depth		Engagement		Validity	
		Beta	VIF	Beta	VIF	Beta	VIF	Beta	VIF
Dependent variables									
Characteristics of entertaining information	Positive emotions	−0.06**	1.184	−0.169***	1.184	−0.076***	1.184	−0.104***	1.184
	Negative emotions	0.058**	1.164	−0.075***	1.164	0.125***	1.164	0.16***	1.164
	Celebrities	0.05*	1.111	−0.033	1.111	0.03	1.111	0.064**	1.111
	Content storytelling	0.1***	1.175	0.129***	1.175	0.065**	1.175	0.011	1.175
	Soft news topics	0.047*	1.096	−0.029	1.096	−0.033	1.096	0.019	1.096
	Sensational headline	−0.002	1.057	0.015	1.057	0.044*	1.057	−0.023	1.057
Online video features	Duration fragmentation	−0.035	1.224	−0.515***	1.224	0.317***	1.224	0.078**	1.224
	Diverse presentations	0.114***	1.13	0.114***	1.13	0.047*	1.13	0.019	1.13
	Authoritative media	0.065**	1.206	−0.053**	1.206	0.019	1.206	0.134***	1.206
Social media platforms features	Number of tags	0.089***	1.448	0.015	1.448	0.047*	1.448	0.078***	1.448
	Number of topics	−0.094***	1.402	−0.102***	1.402	−0.058**	1.402	−0.127***	1.402
Control variable	Number of followers	0.135***	1.182	0.051**	1.182	0.166***	1.182	0.175***	1.182
	Days of release	−0.065**	1.038	0.115***	1.038	0.004	1.038	−0.063**	1.038

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 6 Hypothesis test results.

Hypothesis		Support
H1	H1a	Not supported
	H1b	Partially supported
H2		Supported
H3		Supported
H4	H4a	Not supported
	H4b	Supported
H5		Supported
H6		Partially supported
H7		Supported
H8		Supported
H9		Not supported
H10	H10a	Partially supported
	H10b	Partially supported

publishing platform. Meanwhile, this study introduced the evaluation index of media influence and measured the different dimensions of audience attention from the communication science perspective. Finally, this study used an empirical study method to analyse the effect of infotainment on audience attention.

The infotainment of online videos has a specific influence on attention, but different entertainment characteristics have different effects on various dimensions of attention. In extreme emotions, only negative emotions have a positive impact on attention. Studies have shown that negative emotions promote mass participation, discussion behaviour, and secondary dissemination of news information. Berger and Milkman (2010) demonstrated a strong correlation between the viral spread of emotions and online content in social communication, which is consistent with the conclusions of this study.

A character's stardom positively affects the breadth and validity of communication, consistent with Khamis's (2016) findings. Research has proven that celebrities on social media increase user attention and expand communication influence, promoting self-branding marketing. These renowned personalities exert a substantial influence on both the primary (breadth) and secondary (validity) communication of online videos. This observation indicates that celebrities significantly captivate the attention of viewers.

Content storytelling positively affects the communication's breadth, depth, and engagement, and the impact on the depth is even more significant. The audience prefers to focus on dramatic contingencies that are easier to recognise, understand, and discuss. News themes only affect the breadth of the economic influence of attention. A relaxed soft news topic is more conducive to the wide spread of the video. Compared with hard news, news on topics such as health and livelihood can attract users to click. The audience not only chooses to browse hard news but also has a specific reading demand for soft news, indicating that the Bilibili platform is similar to Facebook and that the theme and style of video news are relatively more inclined to soft news (Lamot 2021). Sensational headlines have a significant positive impact on attracting user participation. Previous studies have shown that using direct speech, emotional expression, problem form, puns, and allusions in titles strengthens the appeal of mainstream media to the general audience (Molek-Kozakowska 2013, 2017), which was confirmed in the present study.

The characteristics and lengths of online videos, the diversity of presentation methods, and the nature of the media significantly impact attention attraction. Short videos mainly adapt to users' fragmented, mobile reading needs in the best online space to complete the narration and transmission of the news topic. They can effectively increase video information's dissemination engagement and validity; thus, online videos' transmission efficiency is higher than traditional long videos. Users prefer to express behaviours such as liking shorter videos.

Diversity of presentation has a positive and significant impact on attention-grabbing breadth, depth, and engagement, consistent with Beatty's (2016) findings. Fusion communication generally has an infectious audiovisual effect, which stimulates the audience's senses in an all-around manner, expands the information capacity, and produces a more visual and substitution information effect. Rich sound, picture combinations, and diverse forms of expression increase the transmission traffic of the video and improve the user's recognition of the video simultaneously.

Regarding the nature of media, authoritative media and mass production positively impact different dimensions of attention. More authoritative media are conducive to attracting users' attention. They are more trusted, significantly affecting users' cross-platform behaviours such as sharing videos and promoting primary and secondary dissemination. Videos produced by self-media are more likely to be recognised and loved by the audience. We infer that because user-created content has a stronger subjective colour tendency to a certain extent, it can attract viewers who share such views more effectively to make identification behaviours. Hence, they receive more positive behavioural feedback.

We will mainly look at the social aspects of the platform's social media capabilities. The number of tags has a significant positive impact on a video's breadth, engagement and validity. The more tags a video contains, the more conducive it is to its direct and secondary transmissions. According to Ames and Naaman (2007), owing to the label-based push function of the Bilibili platform itself: the more labels there are, the more likely the audience is to receive relevant video pushes. The socialisation and interactivity of tags promote the browsing behaviour of the audience, which significantly positively impacts audience identity. Bernard's (2019) findings on the positive impacts of labels in marketing and socio-political activism are somewhat consistent with the conclusions of this study.

Surprisingly, negative and positive emotions, rich central themes, and shorter video time all had negative effects on engaging user attention. By contrast, the audience does not like stories that contain positive emotions, which hinder attention. Our findings show that negative emotions are more likely to promote video dissemination than positive emotions, indicating that negative news still dominates readers' emotional responses to news reports (Al-Rawi 2019). At the same time, negative emotions negatively affect the depth of attention. In general, the spread of positive and negative emotions hinders users' expression of positive emotions, and emotional extremes are not conducive to practising users' positive behaviours. We believe liking, coining, and collecting are the audience's feedback on the video content identity behaviour. The emotions in the video are relatively positive, which is inconsistent with the content tendency of the video itself. It curbs the implementation of the audience's positive behaviour to a certain extent. Thus, reports that convey neutral emotions are more likely to gain recognition from the audience than those that convey extreme emotions.

In previous experiments, we confirmed that short videos are more eye-catching, but this is limited to the engagement and validity of audience attention. Longer videos can present richer content, more diverse views and priorities, and a stronger audience experience. The length of video viewing positively correlated with the number of likes (Park et al. 2021). More material and

knowledge contained in the video will also increase its overall content. The longer time viewers spend with media video, the more deeply they will think about your understanding of the video content.

The number of topics has a negative impact on the depth, engagement, and validity of video dissemination. We infer that when the video narrative contains too many topics, the main content of the video narrative is not prominent enough. Through the audience's limited attention span, the audience's attention is disturbed by the network of relationships between too many focuses and priorities, distracted by multiple points or other non-focused things, which may lead to reduce the concentration to the single focus of the video.

In society, people's media consumption has gradually changed into user-generated and on-demand online video in the infotainment style. Excluding some indicators that are selective of news content (e.g. soft and hard news themes, celebrities, and emotions), most research indicators presented in this paper are the ornament or packaging of original news and information. User-generated content with infotainment narratives helps increase the public understanding of science (Davis et al. 2020). The findings of this study are consistent with those of Davis et al. (2020) and show that social media as a communication channel for mass science has significant advantages in information dissemination over traditional illustrative narratives. News infotainment attracts users' attention to real-time events and positively impacts global news and information dissemination. Infotainment not only expands the communication coverage or degree of contact (breadth) of online news information but also drives the recognition or understanding of the news itself (depth), the discussion and communication of political events between audiences (engagement), and the re-dissemination of news information in the interpersonal relationship network (validity). A large amount of video information shared online by audiences, especially when it contains negative emotions, can affect emotions and cohesion at the group level in the real-world environment (Dhall 2019). Social networks have significantly increased online and offline activities (Althoff et al. 2017). On social media, users who share a common attitude towards an event or person will form groups and social networks during communication within and between groups. We speculate that information entertainment will promote the audience's emotional cohesion, enabling users to transition from the contact and online behaviour level to online political participation behaviour and participation in offline political activities. Therefore, the importance of infotainment from a global perspective to information dissemination and political participation is self-evident.

The findings of this study suggest that infotainment has a significant impact on audience attention. However, different measures may affect attracting attention and expand influence differently. Therefore, the infotainment method is supposed to be appropriate, and the degree of infotainment should be moderate:

(1) Positive impact: the stardom of characters, the storytelling of content, the diversification of presentation methods, the choice of soft news topics, and the sensationalisation of titles have significant positive effects on different dimensions of attention, and publishers should carry forward such entertainment information to expand the economic impact of attention.
(2) Negative impact: positive emotions in video content are not favoured by the audience, too many central topics distract the audience, and publishers should try to avoid presenting such information.
(3) Two-sided influence: some entertainment characteristics, such as video duration, negative emotional polarisation, and media nature, have a multifaceted impact on different dimensions of attention. They have both positive and negative effects on different dimensions of audience attention. Therefore, media publishers must selectively write and express video content at these levels. They can also select appropriate content for different attention dimensions for the news release to prevent excessive infotainment from hindering the audience's attention.

The ranking and recommendations of videos published by social media platforms are generally based on algorithms within the platform. An online video's metrics (e.g. the number of comments, likes, and dislikes) can also affect its popularity on a ranked list (Chang et al. 2019). Bilibili can also emulate YouTube-led social media platforms and develop relevant user plans and projects to attract users' attention (Burgess et al. 2020).

Although an increasing number of self-media users are flooding into the news production market, traditional online media still has an absolute advantage and a right to speak, and people are willing to obtain more authoritative and credible information from these mature media (Tsfati et al. 2020). However, our results show that news content tends to adapt the infotainment content tendency and presentation form to gain public recognition. Suppose the mainstream media does not control the degree of adaptation of news content, resulting in the distortion of news content. In that case, fake news will become and even create panic among a wide range of audiences (Collins et al. 2021). The mainstream news media plays an essential role in disseminating fake news (Tsfati et al. 2020). The fake news also attracts more attention from media users (Allcott and Gentzkow 2017). The content of false news information is often counterintuitive, negative, and emotional (Bakir and McStay 2018), which corresponds to the abnormal (surprising) and extremely negative emotional experiences of the infotainment characteristics, which our conclusions concur with. Just as Peer and Ksiazek (2011) studied traditional media and social networking sites at the rise of YouTube, the increasing popularity of online news videos led to the collapse of the established standards of traditional media. Until now, they are facing the challenge of objectively presenting news information in video form.

This research hopes to clarify that the moderate entertainment of news and information can replace fake news to attract more audience attention. Still, the objectivity of the content of news reports remains to be guaranteed. Infotainment is only a process of processing news content, which must ensure the authenticity of the information, just like the traditional reporting mode. The manufacture and release of fake news and tampering news content will negatively impact users and the communication environment, which information publishers must avoid.

Especially in the internet era, to create a good Internet information environment, correctly handling infotainment based on social platforms has become a challenge for whether traditional news can be objectively presented (Peer and Ksiazek 2011). As the leading public opinion guide and news information publisher on social media, mainstream media has a specific influence on the national and regional neutralisation of news and public opinion, knowledge production, and cultural inheritance. Mainstream media should play a responsible role as an example and leader. Therefore, it should stick to hard news as the primary reporting theme, supplemented by appropriate entertainment processing. Using the above entertainment means without distorting the original intention of the information, ensuring the quality of information exchange (Mythen 2010), and reasonably attracting

the audience have become the foci of careful consideration and operation of mainstream media.

This study was based on an empirical analysis of popular videos, excluding relatively few. In addition, the research data were from the Bilibili platform. The scope of future research should include non-popular videos and other media.

Data availability

The datasets analysed during the current study are available in the Dataverse repository: https://doi.org/10.7910/DVN/6LTC3I.

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Ethical approval

This article does not contain any studies with human participants performed by any of the authors.

Informed consent

This article does not contain any studies with human participants performed by any of the authors.

Additional information

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