

Emergence and Development of Bullet Comments in China

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Abstract

Danmu denotes user-generated dynamic and contextualised comments scrolling across the screen. Owing to its resemblance to a bullet curtain, such a text-over-screen technology is referred to as 'bullet comment/message' or 'barrage subtitling'. Since being adopted from Japan, *danmu* has expeditiously developed from a niche subcultural entity into a prominent property of Chinese online video culture. *Danmu* obtains popularity among young audiences, in that it establishes social media co-viewing, creates a sense of belonging, allows self-expression and facilitates social connectedness. Moreover, *danmu* enables creators to demonstrate a sense of existence, especially via informative, alerting and spoiler comments. The popularity of *danmu* in China is ascribed to diversified and concise literacy practice. More significantly, it is attributed to linguistic and cultural prerequisites: the Chinese written language is featured by a high information density and robust parafoveal preview effects; the Chinese culture is marked by a high level of polychronicity and collectivism, as well as conspicuous social and peer pressure.

Keywords: Bullet comments, Chinese online videos, information density, parafoveal preview effects, polychronicity, collectivism

INTRODUCTION

In China, one of the most illustrious and fast-growing online video-sharing entertainment platforms is Bilibili (<https://www.bilibili.com>) which was founded in 2009 and nicknamed 'B zhan' ('B site') (Li, 2019). According to statistics gathered in the first quarter of 2019, the streaming video operator Bilibili reported total revenue of 1.37 billion RMB, with monthly active users (MAU) exceeded 101 million and paying MAU amounted to over 4 million (China Internet Watch, 2019; Zhang & Cassany, 2019c). During the second quarter of 2020, its MAU became 172 million and the revenue reached 2.62 billion RMB, with a strong year-on-year growth of 70% (China Business, 2020; Liao, 2020). In comparison with YouTube that has approximately 2 billion logged-in users each month (YouTube, 2021), figures regarding Bilibili manifest its quintessential status and immense commercial success. As a result, in a transaction which valued Bilibili at US\$8 billion, it has attracted US\$400 million equity investment for a minority stake from Sony Corp America (Frater, 2020; Li, 2020; Sony.net, 2020).

In the domestic market, Bilibili has attained tremendous popularity among the Generation Z ('Gen Z' for short), or iGen, who are the digital-

native second wave Millennials born in 1990s and 2000s (Tulgan, 2016, pp. xii-xiii, Twenge, 2017; Walker, 2020). Data shows that Gen Z users account for over 80% of Bilibili's user base (Parklu 2019), and their indulgence in Bilibili can be epitomised by their average daily expenditure of 81 minutes on this website (China Internet Watch 2019), which substantially eclipses its competitors such as TikTok: An average user only spends around 45 minutes per day on the latter (Holmes 2019). A salient attribute of the Gen Z lies in their obsession with the Japanese ACG (anime, comics and games) subculture (Wang, 2014; Cai, 2016; Fung et al, 2019, Lu & Zhang, 2019). Led by a 42-year-old serial entrepreneur Chen Rui, who is a self-confessed anime fan, Bilibili is an ACG-based website that has constructed a formidable niche to compete with Internet giants such as Baidu, Alibaba and Tencent which dominate China's enormous online video market (Wang & Olsen, 2018; Perez, 2020; Zhang, 2020). Albeit being ACG-based, Bilibili positions itself as 'a full-spectrum online entertainment world', the operations of which range from mobile games to video clips and live broadcasting, and it has extended from its renowned user-generated short-format content to professionally-produced material and full-length

films and documentaries (Frater, 2020; Bilibili, 2021). The popularity of Bilibili can also be reflected by its stringent approach to issue membership: candidates have to sit a 100-question online examination in 120 minutes, which contains absurdly detailed niche questions even challenging to devoted ACG fans; such a requirement for in-depth knowledge of ACG subculture renders Bilibili the only online community in China that imposes a threshold for membership (Shen, 2018a; Borak, 2019; Law, 2019). Notwithstanding discernible assessment, 89 million netizens have passed the entrance screening by the second quarter of 2020 (Bilibili, 2021), which indicates the popularity of Bilibili among young audiences.

Among all features that inspire a high degree of engagement and enjoyment, the most embraced function of Bilibili is that this platform permits users to post scrolling *danmu* ('bullet comments',

'bullet messages' or 'barrage subtitling') superimposed directly upon footages, which can be either synchronised to playback times or left by previous viewers pegged to specific time points of video clips (Global Times, 2018; Shen, 2018b; Cao, 2019; Liao, 2019). Both senders and viewers can personalise *danmu*'s text size, colour, transparency and movement speed, and there are options to filter or deactivate *danmu*, which is indispensable under circumstances when viewers find *danmu* swooping across the screen distracting or when they are bombarded with myriads of *danmu* (Chen et al., 2015; Li, 2016; Ye, 2018, Pérez-González, 2019; Zhang & Cassany, 2019c). For instance, the prodigious amount of *danmu* appertaining to hit videos, such as the BBC's *Sherlock*, can reach 8,000 (Li, 2014), rendering the screen pictures barely visible to viewers or totally invisible, as shown by the screenshots in (1) and (2) respectively.

(1)



(2)



History of *danmu* and '*danmu*' in history

Although Bilibili is frequently credited for popularising *danmu*, the pioneer of such a text-over-screen technology is the largest Japanese video-sharing website called Niconico (nicovideo.jp), which is inextricably intertwined with ACG fan culture, communities and practices formed around media mix projects (Qin 2014, Tarnoi et al 2019). Through transforming and producing content, Niconico users can establish subcultural and local networks that foster innovative formats of media mix. Moreover, Niconico encourages dynamic creativity and collaborative creations by means of integration of secondary materials, viz. 'N-level creation' (Li 2017, Steinberg 2017, Hernández 2018, Nakajima 2019). In 2006, Niconico introduced a feature called *danmaku* that projected dynamic, contextualised and quasi-bullet-curtain comments scrolling across the screen, thereby enabling 'polyphonic representation' and multitasking user participation (Johnson, 2013; Li, 2017).

Since *danmaku* was introduced into China in 2008, it has been referred to as *danmu* in Chinese and been denoting both the system and individual comments (Cao, 2019; Zhang & Cassany, 2019a).

The leading Chinese website that is modelled on Niconico and equipped with the *danmu* function is Acfun (nicknamed 'A site'), and it has inspired the founder of the 'B site' (Global Times, 2018; Wang, 2018; Ye, 2018; Nan, 2020). After being adopted into the Chinese video market, *danmu* went viral expeditiously: on Bilibili only, there are approximately 1 billion and 1.4 billion pieces of *danmu* in 2018 and 2019 respectively (Zu, 2018; Bilibili, 2019). Notwithstanding an imitation of Niconico, Bilibili has overwhelmingly outperformed it: Niconico possesses 13 million videos and 70 million accumulated playback times (Tarnoi et al., 2019), while Bilibili hosts approximately 4.9 million pieces of content per month, collectively submitted by 1.8 million monthly creators (Liao, 2020).

Spurred on by the rocketing visibility and prosperity of Bilibili, an array of mainstream online video services such as Tudou and Youku have also introduced this collaborative video annotation system, in that the conventional, *danmu*-free visualisation has been losing its capacity to entice and retain users. As a consequence, by 2014, virtually all video-streaming

platforms in China have been featured by the *danmu* function to engage users, which marks the prominent evolvement of *danmu* from a niche subcultural entity into a preponderant standard design for the online video culture in contemporary China (He & Zhang, 2014; Chen et al., 2015, 2017; He et al., 2017; Li, 2017; Zhang & Cassany, 2019a). In addition to user-produced *danmu*, these globalised platforms also begin to accommodate transnationally and cross-linguistically constructed media products that are generated by users, instead of website owners (Benson & Chik, 2011; Zhang & Cassany, 2019b).

Currently, watching *danmu*-enriched videos has become a well-established routine and a subculture for the Gen Z in China. Due to its correlation with entertainment, informativeness and sociability, *danmu* is sometimes more popular than the videos per se, and it even serves as an incentive for audiences to watch certain works (Hsiao, 2015; Zhang, 2016; Yuan, 2017; Cheng, 2019; Nan, 2020; Yang, 2020), as exemplified by a frequently-occurred *danmu* text 'I just came here to watch barrage subtitling' (Nakajima, 2019, p. 107).

Apart from the entire online video service, *danmu* has expeditiously dispersed to and penetrated other forms of media, including social media, television and cinema. In 2014, TCL Technology, a Chinese electronic corporation manufacturing smart products, launched an innovative TV with a *danmu* feature, which could be linked to China's largest social media platform WeChat and thus enabled users to interact with friends' comments on their TV screens (Fan, 2014; Li, 2014). In the same year, three Chinese feature films experimented with the *danmu* effect in theatrical screenings: cinema chains allowed audiences to input comments via smart phones during screenings and charged them to have their texts displayed on the big screen and overlay films in real time (Billington, 2014; Jiang, 2014; Qin, 2014; Li, 2017), thereby deploying the interactive potential of second screen participation (Blake, 2017) and satisfying the need for both cinema and mobile device of audiences (Ma, 2017, p.210). Nonetheless, such a novel attempt is unanimously castigated for jeopardising artistic value of films

and for only being suitable for non-cinematic films (Beijing News, 2014; China News, 2014; China Youth Daily, 2014; Li & Han, 2014; Su, 2014). *Danmu's* intertextuality property determines that the original video is reduced to the background, yet the multi-layered, heteroglossic discourse in the foreground acts as the fundamental element that attracts viewers' attention (Zhang & Cassany, 2019b). Additionally, there is incompatibility between a cinematic gaze and a cybernetic scan, namely, absorption required by cinema and distraction triggered by *danmu* (Li, 2017).

Despite the fact that the *danmu* culture did not enter China until 2008, an analogous genre has been existing in Chinese literature, exemplified by the margin comments on *Hong Lou Meng* (aka 'Dream of the Red Chamber' or 'Story of the Stone'), a chef d'oeuvre of Cao Xueqin (circa 1715-1763) chronicling the travails of an affluent and populous aristocratic clan as well as its miraculous prosperity and catastrophic perishment. Unanimously acknowledged as the milestone and pinnacle of Chinese fiction, this full-fledged polyphonic masterpiece has invited a multiplicity of perspectives of interpretation owing to its kaleidoscopic richness (Yu, 1989; Wang, 1992, p.6; Edwards, 2001, p.1-2, Zhou, 2001; 2013, pp. 2-3, Ferrara, 2009; Chan, 2020). Prior to the completion of the entire novel, the author circulated it in manuscript form among friends and relatives, who had left an enormous quantity of margin comments. Among all margin critics, the most influential commenter was the pseudonymous Zhiyanzhai ('Red Inkstone Studio') with an unknown identity, whose comments were illuminating, philosophical and analytical (Edwards, 2001, pp. 11-13; Ge, 2002; Li, 2004, p. 202, Wang, 2006; Zhou, 2013, pp. 238-242; Ferrara, 2015); Zhiyanzhai's comments also occurred in great volume, parallel to *danmu* comments. Apart from thought-provoking reappraisal and the impressive quantity, Zhiyanzhai's margin comment is also featured by an entertainment effect, analogous to *danmu* as its 'contemporary counterpart'. For instance, in Chapter 19, next to the line *fangpi* 'bullshit' said by the heroine Lin Daiyu, Zhiyanzhai's margin comment is *ruwen* which

means 'as if I heard it myself'. Similarly, *danmu* comments also demonstrate posters' multimodal humour (Yus, 2019), through non-aggressive, playful teasing, allusions and retorts, as well as multimodal resources such as colour, layout, symbols and pieces of JavaScript code that exhibit particular effects or applications (Chen et al., 2015; Zhang & Cassany, 2019c). Of course, Zhiyanzhai also added less informative comments such as *xiao* 'laughing' and *miao* 'wonderful', parallel to Internet neologisms '23333' ('lol') and '666' ('awesome') respectively. The existence of margin comments in classical Chinese literature accounts for the current embracement of *danmu* from a historical perspective.

There is no denying the fact that there are two contextual discrepancies between margin comments in *Hong Lou Meng* and *danmu* in the cyberspace.

For one thing, the critic of *Hong Lou Meng* encapsulates the highly exclusive educated elite in pre-modern China, yet *danmu* is the embodiment of an inclusive subculture of the grassroots. To be more specific, Zhiyanzhai, who was arguably surmised to be female (see Deng, 2012; Wang, 2016, among many others), belonged to the intellectual class (Yu, 1997, p. 5; Edwards, 2001, p. 2-4, 12; Ge, 2002), which can be reflected by the fact that during the imperial Qing (1644-1912) era when *Hong Lou Meng* was composed, the literacy rate of women was only 2%-10% (Rawski, 1979, p. 23, Jin & Liu, 2010, p.155); even if Zhiyanzhai was male, men who were privileged to receive education in Qing China only occupied 30% to 45% of the entire population (Rawski, 1979, p.23, Jin & Liu, 2010, p.155), not to mention becoming a renowned literary critic as intelligent as Zhiyanzhai. Therefore, it is reasonable to propound that the margin comments in *Hong Lou Meng* are ascribed to a member of the educated elite. Online *danmu* producers in contemporary China, however, are not limited to literati: according to the latest data released by the China Internet Network Information Centre, there are approximately 989 million netizens in China in December 2020, whereas only 9.3% of them have received higher education or above (China Internet Network

Information Centre 2021). Therefore, it is reasonable to presume that a considerable proportion of *danmu* is not ascribed to the educated elite.

For another, *Hong Lou Meng*, as one of the four great masterpieces of Chinese literature acclaimed by both the literary and academic fields (Yu, 1997, p. 3; Wong, 2014, pp. vi-vii; Ferrara, 2018), has been profoundly advocated by state-level, mainstream cultural institutions in a quasi-political sense (Zhang, 2018). For instance, during an official visit to South Korea, the then premier of China discussed *Hong Lou Meng* with local fans of this novel (China News, 2010); five extracts of *Hong Lou Meng* have been included in textbooks of China's secondary education (Bai, 2005; Wang, 2011). By contrast, the production and permeation of *danmu* by ordinary netizens are voluntary and unofficial, and as an inclusive manner of online communication adopted by the grassroots, *danmu* heavily relies on netizens' access to the Internet as well as a range of portable and transportable electrical equipment.

Social functions of *danmu*

Since *danmu* is produced by users, it is categorised as user-generated content which involves voluntary creative effort and is publicly available on online platforms (Leung, 2009; Shneiderman et al., 2011; McNally et al., 2012; Naem & Okafor, 2019). As propounded by the uses and gratifications theory, gratifications obtained from user-generated media are comprised of: 1) consuming the content, for information seeking and entertainment; 2) participating, for social interaction and community development; and 3) producing new content, for self-expression and self-actualisation (Shao, 2009). In this section, I analyse the social functions of *danmu* and the motivations of its producers and consumers in these three aspects, focusing on the latter two.

First, *danmu* accommodates audiences' need for information and entertainment. To be more specific, *danmu* satisfies a utilitarian need for information and a hedonic need for entertainment, relaxation, arousal and escaping from the reality (Han & Lee, 2014). A preponderant subcategory of

interactive *danmu* is information-seeking, and restricted by time and space, Chinese *danmu* users have coined a list of well-established fixed phrases for this purpose, which are concise yet still courteous. It is notable that this type of bullet questions generally receives answers, and there are viewers who offer information voluntarily and proactively even if nobody asks, thereby exhibiting their knowledge, meticulousness and deductiveness, as well as their sense of humour if their texts are amusing. More significantly, *danmu* has constructed and nurtured a multifaceted and dynamic participatory culture in China (Zheng 2016, Chen 2018), and has established a social arena for free speech and potential democratic participation (Yin & Fung, 2017; Zhang & Cassany, 2019c).

Second, *danmu* enables social interaction and communication between producers and consumers, so as to facilitate community development. *Danmu* satisfies users' social needs by means of establishing social media co-viewing, thereby creating a sense of belonging.

Danmu establishes social media co-viewing via a prominent property, viz. 'pseudo-synchronicity', which meets users' desire for company and to overcome loneliness (Perse & Courtright, 1993). Messages launched during distinct viewings follow the playback time of videos, thereby gathering all audiences from all viewings as one cohort. The movement and synchronisation of *danmu* enable audiences to derive excitement triggered by the synchronicity of texts and screens, as well as experience of co-viewing with peers, in spite of divergent times and locations (Cohen & Lancaster, 2014; Chen et al., 2015). That is to say, as long as the broadcast is not live, the text-over-screen effect can preserve crowd dynamics in terms of opinions and/or sentiments, without the physical presence of crowds (Johnson, 2013; Chen et al., 2015; Li, 2017; Cao, 2019), in that online communities, as ideological figures, exist more in a mental arena than in empirical reality (Zwick & Bradshaw, 2016). Additionally, the synchronic attribute of *danmu* offers special gratifications concerning sympathy and social connectedness among peers, which are discrepant

from those obtained from traditional post-viewing commenting videos (Chen et al., 2015, 2017; Hao, 2020). In this way, *danmu* generates a sense of belonging to communities among the young generation, which might be triggered by peer pressure (Cheng et al., 2014; Wirtz & Göttel, 2016).

As a consequence, *danmu* promotes communication between producers and consumers. Spontaneous interactions, defined as 'sociability' (Simmel & Hughes, 1949), occur among *danmu* posters and viewers, and the purposes of interaction are to convey meaning and to proliferate communication and expand networks (Nakajima, 2019). In particular, the *danmu* system enables users to communicate in a more direct fashion, deriving a real-time sharing experience (He et al., 2017).

There is no denying the fact that according to Cao (2019), a *danmu* text should not be regarded as a message, in that it does not intentionally target a specific addressee; besides, it does not call for a response, though it may receive responses and resonances. The nature of a *danmu* text is actually an 'idiolect', viz. an individual's distinctive manner to express thoughts without an intention to converse with an addressee (Jakobson 1987: 104). In other words, bullet texts entail semiotic idiolects that are not always discursive.

Nevertheless, I argue that a considerable proportion of *danmu* texts are indeed intended for communication, exemplified by three categories: information-seeking, gratitude-expressing and discussion-provoking *danmu*. First, as mentioned previously, when viewers are in seek of information regarding videos and related background, they may turn to co-viewers for help, which does not address any specific individual but expects an answer. Second, *danmu* may be employed to express thankfulness to specific individuals, especially uploaders and voluntary, unofficial subtitlers. Third, viewers may post comments in a hope to provoke discussions on plots, scenes, props and acting skills or to seek resonances, via questions like 'Am I the only one who finds the costume an eyesore' and 'Am I the only one who finds my IQ has been insulted'. Under most circumstances, posters receive

responses like ‘The person in front of me, you’re not alone’.

Third, *danmu* facilitates self-expression and constructs a sense of existence.

The most archetypal paradigm concerning the self-expression function of *danmu* is spoilers. From the perspective of reception and consumption of this paratext, spoilers can diminish suspense and annihilate viewers’ enjoyment (Johnson & Rosenbaum, 2015; Levine et al., 2016; Rosenbaum & Johnson, 2016), but they generally have a modest and positive impact (Leavitt & Christenfeld, 2011, 2013; Daniel & Katz, 2018; Ellithorpe & Brookes, 2018; Johnson & Rosenbaum, 2018; Johnson et al., 2020). Spoilers can be categorised into non-toxic ones that are accidental, formative, sociable or politically correct, as well as toxic ones that are intentional, driven by pleasure or vengeance. As for the act of spoiling, which is constituted of both production and circulation of spoilers, it functions as an interpersonal communication practice based on knowledge exchange and a source of sociability and empowerment, whereas it may trigger social and cultural disputes (Meimaridis & Oliveira, 2018). In terms of *danmu* spoilers, they are embedded and overlaid on videos, so they are ineluctable, disparate from traditional comment sections that can reduce spoiler exposure through spoiler alerts for those who wish to avoid prematurely discovering plots or endings. Therefore, if *danmu* producers are fully aware of the unwantedness of spoilers yet still intentionally reveal essential plot details, they might be motivated by pleasure and/or vengeance. Moreover, since all *danmu* comments are sent anonymously, even without the display of pseudonyms (Zhang & Cassany, 2019b), spoiler posters are immune to fear of revenge. Nevertheless, the degree of toxicity of *danmu* spoilers might not always be high, in that spoiler creators can be perceived as craving attention and a sense of existence, possibly triggered by their social inferiority in real life contexts.

Another highly frequent *danmu* for self-expression purposes is *qianfang gaoneng* ‘high energy warning ahead’, which ranked among top ten *danmu* buzzwords on Bilibili in 2018 (Zu, 2018).

According to Chen et al. (2015, p. 155), *qianfang gaoneng* is to forewarn co-viewers of upcoming ‘surprising, frightening or shocking’ content, thereby building a feeling of companion. I postulate that in addition to this purpose, posters of alert comments also aim to show their experience from previous viewing(s) and even a sense of achievement as veterans. To some extent, alert *danmu* functions as an alleviated subtype of spoilers.

Expression-oriented *danmu* comments can also be deployed to convey viewers’ opinions on videos, and to joke around about content of videos (Billington, 2014) or other related topics such as casts, subtitle translation, image quality, other *danmu* texts, etc. Furthermore, celebrities’ fanbases treat the bullet screen as a showcase or even a battlefield to hype or adulate their idols, and they typically employ fandom neologisms that demonstrate an upward transmission direction as well as a potential to enter the mainstream lexicon by means of being cited by traditional media (Author, 2020). It is worth mentioning that as a cyberspace subculture, *danmu* comments tend to contain Internet buzzwords that not only construct communicative activity and subjectivity in China (Meng, 2011), but also surge in English dictionaries as the embodiment of the internationalisation of the Chinese language (He, 2015). By means of employing neologisms exclusive to specific groups of fandom and on the Internet, *danmu* users can further strengthen online community development.

In terms of *danmu*’s function to boost a sense of existence, it creates contributing experience for individuals who feel constrained by social roles in daily life, so as to promote a sense of personal efficacy (Shao, 2009). As posited by Cao (2019, p. 15), ‘[t]he spectacle of bullet screen stands in for other life activities and diverts attention from actual social gaps, assimilating the income discrepancies and the differences in capacity to participate on the screen’s flattened surface. This is how the text-screen coordination of bullet screen aestheticizes social inequality and anesthetizes people’s relation to it’. I further hypothesise that online video viewers employ such a discursive interface to convey their sense of existence, which

serves as an outlet for a sense of powerlessness for social inequality and as a strategy to boost visibility in the cyberspace.

It is noteworthy that on phenomenal Chinese interactive streaming platforms providing live streaming entertainment services, apart from posting cost-free bullet texts, users can also purchase and send virtual gifts to reward pleasing performances and/or promote rapport with hosts, because their preferred hosts can convert the virtual gifts into real income (Cao, 2019; Chen & Xiong, 2019). The power imbalance between hosts and donors induced by costly gifts intensifies their interaction. Furthermore, spurred on by the gift-giving model and/or financial incentive, hosts customise their performances and ingratiate themselves with audiences, which bestows donors a sense of control that they tend to lack in their real-life environment (Fan & Zhang, 2018). Such audience psychology is particularly conspicuous among young, low-income urban netizens, who are void of superiority in social life (Song, 2017).

As for *danmu*, although it is not monetary, it enables creators to demonstrate a sense of existence. Given the fact that 75% of Bilibili's users are under the age of 24 (Liu, 2015), it is almost unrealistic for this user base to have a strong sense of control or to address social inequality at the current stage. Consequently, they resort to *danmu* for self-expression and visibility in a virtual world.

To summarise, apart from provision of information and entertainment, the social functions of *danmu* lie in its capability to enable young Chinese netizens to interact with peers within the same social groups, thereby establishing individuals' group identity and facilitating social connectedness. By means of social media co-viewing, *danmu* has generated a sense of belonging for the Gen Z; by means of establishing channels of self-expression and communication, *danmu* has created a sense of existence and visibility in a virtual environment.

Prerequisites for the popularity of *danmu*

Constrained by the amount of characters suitable for the screen, Chinese netizens invent and integrate a wide range of writing scripts and

semiotic resources in the nonstandard, multilingual literacy practice and discourses, including standard Mandarin and various dialects, traditional characters and Romanised Chinese, foreign languages and their transliterations, emoticons and Arabic numbers, etc (Zhang, 2017; Zhang & Cassany, 2019b). *Danmu* users' plurilingual repertoire can also be manifested by their adoption of the writing of *kaomoji*, a Japanese emoticon style representing facial expressions and/or actions by means of incorporating Japanese characters, punctuation marks and Latin letters (Zhang & Cassany, 2019c).

I propound that apart from diversified and concise literacy practice, the popularity of *danmu* in contemporary China is also attributed to both linguistic and cultural prerequisites. To be more specific, the Chinese written language is characterised by a high information density and parafoveal preview effects. As for the Chinese culture, it is featured by polychronicity, as well as conspicuous social influence and peer pressure induced by collectivistic orientation.

First, the Chinese language is marked by a high information density, rendering it more efficient to read. 90% of Chinese words are constituted of one or two characters/syllables, and single-character (mono-syllabic) words are particularly frequent in casual discourse, accounting for two-thirds of the entire volume of words (Wu & Liu, 1988; Xing, 2006, Basciano & Ceccagno, 2009; Taylor & Taylor, 2014, pp. 25-26). The basic structural unit of the Chinese language is character-based, rather than word-based (Xu 2001), and using Chinese characters as the basic semantic units is more efficient (Zhao et al., 2011a, 2011b). Additionally, Chinese readers display a wide perceptual span (McConkie & Rayner, 1975) of one character to the left and three to four characters to the right of fixation, which is consistent with the fact that Chinese characters exhibit a high information density (Inhoff & Liu, 1998; Scotter et al., 2012; Yan & Minnhagen, 2015; Yan et al., 2015). Therefore, information is more densely packed in Chinese than its counterparts in alphabetic writing systems (Yan et al., 2009; Li et al., 2015), which renders *danmu* possible and popular in China, but

not in countries adopting alphabetic writing systems.

Second, Chinese readers demonstrate robust parafoveal preview effects, disparate from their counterparts reading alphabetic scripts. Preview benefit is defined as an effect that readers can benefit from previewing the upcoming word in parafoveal vision: when moving their eyes, the visual information delivered to readers' brains is derived not only from the currently fixated word in the fovea, but also from nonfixated words in the parafovea (Rayner, 1998; 2009; Drieghe et al., 2017, Vasilev & Angele, 2017). There is a palpable effect of parafoveal semantic information in reading Chinese, and there is more preponderance of parafoveal processing in Chinese than in alphabetic scripts (Bai et al., 2009; 2011; Sommer et al., 2014; Li et al., 2015; Liu et al., 2016; Zhang et al., 2019). Although parafoveal processing efficiency reduces in oral reading than silent reading (Ashby et al., 2012; Inhoff & Radach 2014; Pan et al., 2017), I assume that when reading *danmu* comments, viewers tend to read without articulating the texts, due to presence of the sound of videos, so the preview benefit is less likely to be impaired. That is to say, Chinese *danmu* can be processed more expeditiously than alphabetic scripts, and thus its unique success in China.

In terms of Chinese culture, it is widely acknowledged as a typical polychronic time system, and this characteristic contributes to the embracement of *danmu*. As illuminated by previous research, Chinese people exhibit loose attention to schedules, punctuality and deadlines, as well as a propensity to combine activities, which falls into the category of polychronic time orientation. Equipped with polychronic-oriented values, Chinese people incline towards preoccupation with people and social experience. In sharp contrast to their monochronic counterparts, Chinese people place more emphasis on relationships and leisure events, even at the cost of interruption or distraction (Hall, 1976; Benabou, 1999; Adams & van Eerde, 2010; Xu-Priour et al., 2014). Previous research also unravels that viewers who prefer *danmu*-enriched videos tend to seek more information and manifest a

higher level of polychronicity, viz. the preference for simultaneous involvement in two or multiple events (Hall, 1973), in that the synchronicity of text and video requires viewers to 'multitask'. Therefore, high polychronicity in China may function as a driving force behind *danmu* watching (Chen et al., 2015; Cao, 2019), as *danmu* requires multitasking, enables interpersonal interaction and enhances social rapport. This hypothesis is consistent with the fact that *danmu* is not widespread among audiences from monochronic cultures.

Furthermore, China's collectivistic culture is more conspicuously featured by social and peer pressure, which accelerates the proliferation of *danmu*.

Owing to collectivistic orientation, Asian people tend to be more susceptible to social influence than their individualistic equivalents (Markus & Kitayama, 1991; Sun et al., 2004), because in collectivistic cultures, there is a higher frequency of meeting others and a larger amount of interpersonal communication (Goodrich & de Mooij, 2014), and groups are perceived to be able to bind and mutually obligate individuals (Du et al., 2015). As a consequence, in cultures emphasising a collectivistic self-concept, individuals regard themselves from the aspect of relations with other people, rather than personal traits or self-achievement (Brand 2007), which means individuals in collective societies are more intertwined with groups (Bochner 1994). Significantly, in relationship-oriented collectivistic cultures (Hofstede, 1980), collectivists rely on social media to a greater extent as opposed to individualists (Goodrich & de Mooij, 2014). As a form of social media co-viewing, *danmu* satisfies Chinese people's need for interaction with co-viewers. Additionally, impinged upon by such as relationship-oriented collectivistic culture as well as Confucian ethos of social harmony (Fang, 1999; Dong & Lee, 2007), Chinese people place a high value on face than their counterparts from an individualistic cultural background (Ting-Toomey, 1988; Ting-Toomey et al., 1991; Ting-Toomey & Kurogi, 1998; Wong & Ahuvia, 1998; Ting-Toomey, 2005; 2009). The Chinese conception of face is

multifaceted, entailing individual, relational and group layers (Haugh, 2005; Gao, 2009, He & Zhang, 2011, p. 2369, Chang & Haugh, 2013; Li, 2017). In terms of *danmu* use, it is perceived as an embodiment of group face or identity, so failing to do so might be deemed as loss of face and rapport with peers within the same social communities.

Moreover, young Chinese people are particularly prone to peer pressure even compared with their equivalents from other Asian countries with analogous collectivistic orientation, as the one-child policy determines that growing up without siblings strengthens the correlation between young Chinese and their peers (Zhang & Huang, 2010; Liu, 2017) and hence their susceptibility to peer influence (Falbo & Poston, 1993; McLoughlin, 2005; DeMotta et al., 2012). In terms of *danmu* use, an overwhelming majority of Bilibili's users are aged between 18 and 35, amounting to 78% of the entire group (Bilibili, 2021), and this cohort coincides with the 35-year-long one-child policy that ended in January 2016 (Gu et al., 2007; Wang et al., 2016). These individuals endeavour to attain a social identity derived from membership of a social group along with values and emotional significance attached to the membership (Tajfel, 1978, p. 63), as well as a collective identity, viz. the self in relation to others (Briggs & Cheek, 1986; Luhtanen & Crocker, 1992). In this way, this cohort of young people ensure that they can construe themselves as members of particular groups and differentiate themselves from out-group members (Brewer, 1991; Deaux, 1993; Li et al., 2020). Therefore, it is justifiable to posit that young Chinese people are more subject to influence from peers, so they are willing to embrace *danmu* that has penetrated their social communities.

CONCLUSION

Upon first entering the Chinese market, *danmu* was marginalised as a niche subculture, yet its rapid transformation renders it dispensable for online video platforms, especially those targeting specifically at the Gen Z.

The popularity of *danmu* among young Chinese audiences is attributed to a range of

reasons: 1) the experience of co-viewing, which alleviates loneliness by means of pseudo-synchronicity; 2) a sense of belonging, which might be correlated with peer pressure; and 3) self-expression, which may promote a sense of personal efficacy. Additionally, viewers can express a sense of existence, predominantly via comments that contain information, alerts or spoilers. Furthermore, although *danmu* was not introduced into China until 2008, an analogous genre, viz. margin comments, has been existing in Chinese literature, which accounts for the embracement of *danmu* from a historical perspective. The popularity of *danmu* is also attributed to its functions of establishing individuals' group identity and facilitating social connectedness and communication.

Despite the fact that *danmu* has attained phenomenal success in China's online video culture, its prosperity would not be possible without linguistic and cultural prerequisites.

The Chinese language per se is efficient and concise, which is ideal for the limited length of *danmu* text on screens. To be more specific, Chinese is characterised by a high information density, as information is more densely packed in characters than in alphabetic expressions. Additionally, discrepant from their counterparts reading alphabetic scripts, Chinese readers display a wide perceptual span and noticeable parafoveal preview effects, which permits them to read characters more expeditiously.

The Chinese culture, as a typical collectivistic culture, also accelerates the proliferation of *danmu* among young netizens. Chinese people demonstrate a high level of polychronicity, which means they incline towards multitasking, preoccupation with people and social experience. Since *danmu*'s synchronicity of text and video requires multitasking and enhances interpersonal interaction and social rapport, the polychronic time orientation of the Chinese culture serves as an indispensable prerequisite for *danmu*'s embracement. The other salient property of the Chinese culture is its conspicuous social and peer pressure. In stark contrast to their counterparts from an individualistic background, Chinese

people place more emphasis on face, and they are more impinged upon by their peers from the same social communities. Such a phenomenon is further intensified by the one-child policy that renders young people more susceptible to influence from peers, due to lack of siblings. Driven by social and peer pressure, *danmu* becomes accepted norms among video viewers of the Gen Z.

Of course, *danmu*'s popularity also benefits from Chinese netizens' invention of innovative multilingual literacy practice that incorporates various writing scripts and semiotic resources.

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