



Ambient identity construction via massive anonymous *danmu* comments

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ABSTRACT

This article contributes to the scholarship on digital identity work by examining the linguistic mechanisms of ambient identity construction in fully anonymous online environments. It investigates how video viewers construct textual personae by leaving massive anonymous comments in *danmu*, a viewing-and-commenting system that synchronously posts comments onto a video screen as it plays. Drawing on the sociological concept of homophily and the linguistics-informed Appraisal framework, this study systematically tracks the patterns in the attitudinal orientations among massive anonymous comments left over a high-profile Chinese video featuring a teacher's home visit. The article argues that the technological affordances of *danmu* lead to the inherent collectiveness of anonymous digital identity construction. It reports two attitudinal meaning-making mechanisms through which massive anonymous comments converge into a homogeneous mass and describes the viewers' collective ambient identities revealed in their comments. This project brings clarity to the dynamics of ambient digital identity construction by deploying computational tools to linguistic analysis and has practical implications for marketing research, social media monitoring, and community building.

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1. Introduction

The construction of identity through online commenting has been a topic of considerable interest since the early days of social media. This pragmatic domain has been a driving force behind discourse analysis and identity studies. While it is widely acknowledged that computer-mediated communication has transformed how individuals construct and negotiate identities (Deumert, 2014; Tannen and Trester, 2013), insufficient attention has been paid to the linguistic mechanisms of collective identity construction in online commenting, particularly when viewers are entirely anonymous, and their social identities are unidentifiable.

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This article aims to explore how the collective identities of anonymous viewers of a video-sharing platform are constructed by leaving massive (i.e., extensive in quantity) comments. We draw on the sociological notion of homophily (Burke and Stets, 2009; Lazarsfeld and Merton, 1954) and the linguistics-informed Appraisal framework (Martin and White, 2005) to systematically track similarities and differences in attitudinal orientation among anonymous comments left over a video featuring a teacher's home visit. Our findings reveal that massive anonymous comments cluster into multiple identifiable groups, giving rise to various textual personae collectively enacted by these comments. By unpacking the attitudinal meaning-making of the comments, we identify two attitudinal meaning-making mechanisms underpinning anonymous digital identity construction. Besides the theoretical contributions, this article explores how computational tools for data mining might be deployed to identify patterns in evaluative meaning-making.

2. Background: online identity construction

The present study is informed by the existing literature on collective action in the digital public, particularly the two approaches towards understanding collective identity construction. The first approach emphasizes the 'we-ness' (Priante et al., 2018) in collective action – people's awareness of being part of a group. Scholars have paid much attention to the construction of a collective voice on the internet, either the voice of a digitally amplified existing social group identity (e.g., mother and mothering, veganism, veterans) (Bailey, 2022; Mackenzie, 2017; McDonald and Woodward-Kron, 2016) or the voice of an emergent form of social trend (e.g., #MeToo movement, pro-anorexia) (Dawson and Mäkelä, 2020; Stapleton et al., 2019). The other approach to collective identity construction is interested in the 'collective agency' (Priante et al., 2018) in digital identity work. Scholars scrutinize the strategies enhancing group solidarity, including massive 'retweeting' and 'culture jamming' tactics (Choi and Park, 2014), hashtagging and quotation (Zappavigna, 2018, 2022), storytelling (Vivienne, 2016), heteroglossia in text-messaging (Tagg, 2016), tolling or contrarianism (Ludemann, 2018; Milner, 2013), to name just a few.

While these two approaches offer valuable insights into the dynamic process of performing a 'self' that involves both the enactment of a digital individual and the construction of a sense of common social unity, little attention is given, however, to a new realization of identity. Specifically, when web users enter the digital public without any presupposed group identity or social trend, how do they construct textual personae which eventually formulate a collective identity that 'de-individualates' (Festinger et al., 1952) a group member and foregrounds a 'homogeneous mass' (Diener, 1979). Therefore, this study aims to explore 1) the linguistic mechanism through which massive anonymous web users align and converge and 2) the digital selves they have collectively constructed.

The present study contributes to the existing literature on online identity construction by focusing on identity work in 'full anonymity' (Hardaker and McGlashan, 2016; Zarsky, 2004), where no possible link can be formed between the individual in cyberspace and their actual identity or other patterns of behavior in the real world. The identity construction mechanism in fully anonymous online communication is arguably different from that in non-anonymous or 'pseudonymous' (Zarsky, 2004) digital environments, such as Twitter or Facebook posts, web comment threads, and online forum discussions. In a fully anonymous online environment, the individuals' identities are not immediately apparent. Meanwhile, in non-anonymous or 'pseudonymous' digital environments, the individuals engage in a certain degree of self-disclosure, albeit the identities 'disclosed' might not match the self in the real world.

While a few studies have investigated how web users mobilize the feature of online anonymity to their discursive advantage (e.g., Banks, 2010; Hardaker and McGlashan, 2016; Ludemann, 2018; Siegel et al., 1986), the subjects of these studies are semi-anonymous online groups, socially identifiable by their usernames, ID addresses or country flags, rather than fully anonymous individuals. Additionally, these studies tend to be interested in the web users' manipulation of the high degree of online anonymity in establishing and exercising certain ideologically loaded online discourses. They explore the emergence of fake information, online attacks or attitude polarization. In this study, we attend to the fully anonymous communication over an everyday topic – a teacher's home visit, which is arguably barely politically loaded. By analyzing how fully anonymous web users converge into a homogenous community, we aim to offer valuable insights into our understanding of online identity construction.

The present study also contributes to the existing literature on online communication by foregrounding the impact of technological affordances on digital identity construction. Specifically, we attend to the affordances of *danmu* (a.k.a. *danmaku* or *bullet comments*), an increasingly popular video-sharing commenting system in Japan, China, and East Asia in the recent decade. The *danmu* system is a text-over-screen technology that allows viewers to insert comments – without authorship or date of insertion – synchronized to the time of an uploaded video. The comments overlay the video by 'flying' across the screen from right to left like bullets (illustrated in Fig. 1). No viewer information is immediately accessible to the platform users (more in Section 4). This unique technological feature of *danmu* creates a distinctive communication environment, which may contribute to the formation of ambient identities in online commenting.



Fig. 1. Screenshot of *danmu* comments overlaid on a teaching video. The repeated comments include: 'Haha', 'You don't need to sit in an exam, teacher', and 'I really can't memorize all these'.

This study aims to explore the linguistic mechanisms of ambient identity construction in the context of *danmu* comments. Specifically, we investigate *how* web users perform the 'self' and *what* 'self' is performed when they are neither socially visible nor ideologically identifiable and communicate over a convivial issue. Our findings suggest that the massive anonymous *danmu* comments tend to cluster regarding their attitudinal arrangements. The clusters demonstrate that the viewers collectively and ambiently form a homogeneous mass, giving rise to the construction of their digital identity.

3. Theoretical framework: homophily, ambient identity, and Appraisal

The present study draws on the sociological view of value homophily and identity theory (Burke and Stets, 2009; Lazarsfeld and Merton, 1954) to unpack how massive anonymous online comments evolve into a homogenous mass. Individuals form social ties based on similarities, particularly similarities concerning shared cultural orientations such as morals, worldviews, values, beliefs, and attitudes. Homophilous ties emerge when there is a perceived match between an individual's identity meanings (i.e., a set of meanings defining who the person is) and the meanings of others in a situation (Stets et al., 2021).

From a linguistic perspective, previous studies have demonstrated that communicators consistently employ the convergence of linguistic choices to facilitate alignment in computer-mediated interactions (Adams and Miles, 2023; Brinberg and Ram, 2021). This study holds that the meanings constituting homophily can be examined through a microanalysis of the individual's use of 'evaluative language' (Martin and White, 2005). Evaluative language establishes value-based positionings in communication (White, 2020, 2021) and fosters social connections with ambient audiences (Zappavigna, 2014; Zappavigna and Martin, 2018). The patterns of an individual's use of evaluative language 'construct particular authorial identities or personas' (Martin and White, 2005, p. 161). Moreover, the convergence or divergence between multiple individuals' use of evaluative language reveals the dis/alignment in their value orientations, which ultimately directs to their identity construction and interpretation of each other's identities. In short, evaluative language plays a pivotal interpersonal role in crafting an 'ambient identity'. It is the linguistic and discourse embodiment of the sociological conceptualization of homophily and identity meanings.

The present study labels the digital self-presentation via *danmu* comments as construing an 'ambient identity', an identity collectively constructed by anonymous video viewers via leaving massive *danmu* comments over a video screen. The term 'ambient' is informed by Zappavigna's proposal of 'ambient' fellowship, which refers to a prominent communicative phenomenon on social media where the communication 'does not necessarily presume direct interaction between participants' (2014, p. 211). The interaction among the *danmu* users bears features of an 'ambient' fellowship because there is little explicit social interaction between different *danmu* comments (Wang, 2021; Zhang and Cassany, 2020).

We follow the existing 'ambient affiliation' (Zappavigna, 2011) scholarship and use the Appraisal framework (Martin and White, 2005), particularly the ATTITUDE system, to investigate how the massive anonymous *danmu* comments cluster. The Appraisal framework classifies three different attitude types – Affect, Judgement, and Appreciation, which concern the evaluation of emotion, human behavior, and artefact, respectively. The framework also identifies two attitude polarities – positive versus negative. Moreover, the Appraisal framework distinguishes two ways to advance an attitude: overt articulation (inscribed) or ideational tokens (invoked).

By analyzing how values are construed through couplings of ideation and attitude, previous studies have suggested that interactants (either directly or ambiently) can be categorized into different types based on the shared couplings and discursively form a communal identity (e.g., Xu and White, 2021; Inwood and Zappavigna, 2021; Zappavigna, 2022). A growing body of work has also attended to the construction of a textual identity (also termed as 'persona', 'voice', or 'disposition') by tracking the tendencies in speakers' deployment of the resources for conveying evaluative meanings (Don, 2017; Hood, 2012; Xu and White, 2021; Zappavigna and Martin, 2018). However, any other interpersonal patterning underpinning ambient communication has been largely overlooked. This study aims to account for the linguistic mechanisms that congregate massive anonymous comments into homogenous clusters, which characterize how web users collectively enable a similar textual identity through their use of evaluative language.

By integrating these theoretical perspectives, this study aims to offer a comprehensive understanding of the linguistic mechanisms of ambient identity construction in *danmu* comments.

4. *Danmu* and its technological affordance for identity work

As aforementioned, *danmu* comments fly across the screen while videos are playing. While there might be nothing special about *danmu* to allow viewers to write comments while watching videos, the 'intensified text-on-screen modality' (Chen, 2020) affords *danmu* with two features, setting the *danmu* system apart from other 'traditional below the video comments' systems. *Danmu* enables an interactive viewing experience where viewers can become co-producers of a new semiotic artifact [Jing and Xu, 2023], hence affording viewers with new possibilities for digital identity construction.

Firstly, all *danmu* comments are overlaid onto the video screen (as shown in Fig. 1), affording a sense of collectiveness to the video viewers' identity work. The *danmu* system allows the comments about the same video section to appear together over that particular section, gradually accumulate and remain over the video so long as the video is publicly available on the *danmu*-enabled platform. The text-over-screen effect affords the viewers a pseudocommunal viewing experience of engaging in a digital conversation which transcends the boundary of time. All viewers are connected because they can converse virtually with someone who leaves a comment at the same video time. By posting a *danmu* comment, a viewer engages in an ongoing conversation established by previous viewers and will be responded to by future viewers. The *danmu* comments addressing the same video section nevertheless collectively create a textual persona that is reactive and responsive to the same raw material, a sociality created and maintained by all the anonymous commenters. The identity crafted is thus both individual and communal, revealing the viewers' responses that proliferate as the video unfolds.

Secondly, *danmu* comments are a visual and social mass, permitting users a unique opportunity to construct a textual persona via a collective agency in fully anonymous digital environments. We use the term 'mass' to refer to a significant quantity of densely packed objects. Our focus lies in the sheer abundance or density of the *danmu* comments under discussion. The conceptualization of *danmu* comments as a 'mass' can be understood from the following two aspects. For one thing, *danmu* comments fly over a video screen and scatter around (as illustrated in Fig. 1), creating a visual mass overlaying the video. For another, although the *danmu* system discourages coherence owing to features of anonymity, character limit, and short visibility (Wang, 2021; Zhang and Cassany, 2020), the seemingly visually disconnected comments are interrelated in a social sense. For example, certain impolite behaviors in *danmu* comments connect and reinforce ingroup alliances among viewers (Wang, 2021). In addition, viewers become excited when they see a cluster of comments echoing their thoughts or sentiments (Chen et al., 2015). Briefly, the *danmu* comments, as a visual and social mass, have the potential to de-alienate the individual and foster an ambient connection that transcends the physical and temporal boundaries among the viewers, transforming the mass into a homogeneous mass.

To sum up, the technological affordances of *danmu* allow online individuals to establish connections in a collective and communal manner. The linguistic mechanisms underpinning such connections deserve a thorough investigation.

5. Data and method

5.1. Data description

The present study utilizes a dataset of *danmu* comments from a video entitled 'I was sleeping at that time! Suddenly, the teacher came to check the homework.' streamed on [bilibili.com](https://www.bilibili.com/video/BV1hA411P7v2/?spm_id_from=333.999.0.0&vd_source=b22c842c8e83ae05987a9ac4a0f5199e),¹ a popular Chinese video streaming platform. The video uploader self-identifies as a math teacher at a village primary school in central China. The students in her school are mostly 'left-behind children' whose parent(s) migrate to urban areas for work, leaving the children behind in their hometown. With her videos, the uploader documents the lives of her left-behind students, including their class performance, after-school activities, ingroup chats and teacher-student communications.

The eight-minute video under discussion records the teacher's home visit to a Year 2 male student – nicknamed 'Manager Duan' by the channel fans – during the summer vacation. The teacher asked about the student's well-being and checked his homework.

¹ https://www.bilibili.com/video/BV1hA411P7v2/?spm_id_from=333.999.0.0&vd_source=b22c842c8e83ae05987a9ac4a0f5199e.

We chose this video for its popularity and representativeness in ambient identity construction via massive anonymous chats. The video received popularity after being uploaded in August 2021, accumulating 8 million views and 350,000 likes in 4 months. It ranked among the Top 50 most popular videos among approximately 80 billion on the platform. Additionally, the popularity of the video led to a massive amount of *danmu* comments left by the viewers, nearly 25,000 *danmu* comments at the time of writing. Fig. 2 is a screenshot of the video.



Fig. 2. Screenshot of the video in the case study. The three characters are: teacher (left), student (middle), and student's mother (right). The teacher checks the student's homework while the student stays silent and motionless.

The dataset provides a rich data source for investigating the linguistic mechanisms of ambient identity construction in *danmu* comments. The popularity and representativeness of the video make it an ideal case for exploring how viewers construct their identities in massive anonymous chats.

5.2. Data processing methods

The present study utilized a mixed methods approach to investigate the linguistic mechanisms of ambient identity construction in *danmu* comments.

Firstly, Python was used to extract the video's captions and *danmu* comments into a spreadsheet, with one caption line or *danmu* comment per row. The dataset comprises 213 caption lines and 24,148 comments, with 205,175 Asian and 2909 non-Asian characters (see more in Section 6.2.2.1).

Secondly, the Appraisal framework was deployed to annotate each caption line and comment manually. Fig. 3 is the system network based on Martin and White (2005) that acted as the schema for annotating the attitudinal working of each line/comment in the dataset. The *danmu* comments in the boxes are examples of the features in the network.

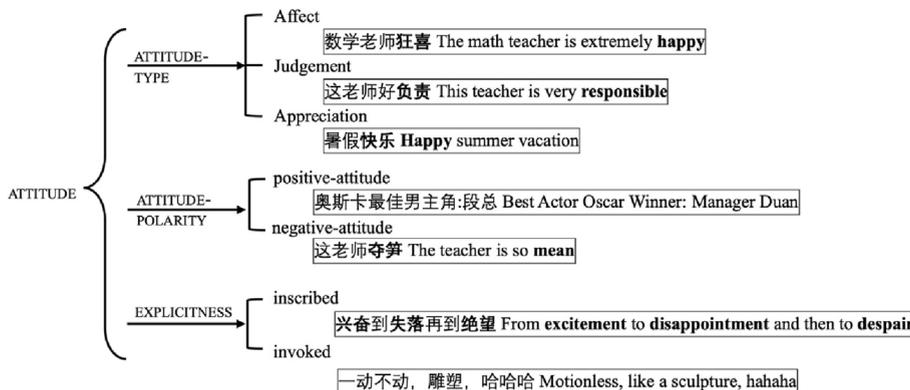


Fig. 3. System network for annotating attitudinal resources.

Specifically, different types of attitudes were systematically tracked (annotated as ‘Attitude type’). Based on the Appraisal framework, the Attitude type includes positive/negative Affect (expressing emotions), Judgement (assessing behavior), or Appreciation (evaluating aesthetic qualities). The targets of attitudinal assessment were also recorded (annotated as ‘Immediate target’) and organized into a taxonomy to identify more general tendencies in the text’s attitudinal focus. After that, the linguistic explicitness of the evaluation was recorded and annotated as ‘Explicitness’ - inscribed or invoked. Finally, the source of the evaluation was further tracked (annotated as ‘Appraiser’), which revealed the perspectives or voices involved in the text. It was found that not all *danmu* comments directly reported the viewers’ voices. In some comments, the viewers spoke through the characters – ‘ventriloquations’ in Bakhtin’s (1981) term. Table 1 presents annotation examples, with positive/negative marked by ‘+/-’.

Table 1
Annotation examples.

Time (mm:ss.sss)	Text source	Chinese text	English translation	Appraiser	Attitude type	Explicitness	Immediate target
01:54.2	Caption	你这还是这个毛病啊	You still have this problem	Teacher	Judgement-	Inscribed	Student
02:22.0	Caption	不过他字写的好多了	Nevertheless his handwriting is much better now	Teacher	Appreciation+	Inscribed	Student's handwriting
00:33.2	<i>Danmu</i> comment	段总:忘记锁门了!	Manager Duan: I forgot to lock the door!	Manager Duan (student)	Judgement-	Invoke	Student
01:27.1	<i>Danmu</i> comment	绝望	Desperate	Viewer	Affect-	Inscribed	Student's emotion

It is important to acknowledge that the aforementioned annotation scheme was devised to effectively address the research objectives of the present study, which aim to explore how large volumes of anonymous *danmu* comments linguistically congregate, consequently forming certain ambiently formulated voices. Thus, the annotation process focused on capturing the broader level of attitudinal resources categorized in the original Appraisal framework (such as Affect, Judgement, and Appreciation as attitude types), rather than the more delicate and finer-grained categories (e.g., ‘happiness’, ‘satisfaction’, and ‘security’ for Affects). Adopting this annotation scheme facilitated the identification of simpler and more consistent patterns, while minimizing the risk of increased complexity and potential compromise to the stability and replicability that could arise from employing a more intricate annotation scheme.

After data annotation, the annotations were processed in the programming language *R* to identify the evaluation clustering patterns. The caption lines and *danmu* comments were analyzed separately, and then the patterns were discussed in relation to one another. By contrasting the evaluation patterns in the two text sets, the unique identities that emerged from the comments were explored.

6. Ambient identity construction mechanisms

This section reports findings based on the methods developed above. Our findings demonstrate that the *danmu* comments cluster into identifiable groups with the same attitudinal orientations. Two clustering patterns emerge, interpreted as two attitudinal meaning-making mechanisms by which the viewers craft their ambient identities collectively. These mechanisms provide insight into how viewers construct their identities in massive anonymous chats. The following section will report the two ambient identity construction mechanisms and describe the ambient identities constructed by each mechanism.

6.1. Mechanism one: advancing attitudinal assessments from the same Appraiser

One of the clustering patterns that emerged from our analysis concerns the perspective from which *danmu* commenters advance their attitudes. Our findings reveal that not all viewers posted comments from the first-person perspective and claimed subjectivity over their comments. Instead, some viewers chose to speak from another person’s or even an entity’s perspective. In Appraisal terms, what counts in this mechanism is *who the Appraiser is*.

Our analysis reveals two broad perspectives of the *danmu* comments. One is the viewers’ own perspective, where the viewer is the Appraiser, and we label this perspective as formulating an ambient identity of being a ‘Spectator’. In contrast, there is a second perspective where the viewers manipulate the persona of someone/something, using the latter’s voice to ventriloquize the viewers’ response to the video. Consequently, the Appraiser is the one being ventriloquized rather than the viewer. We label this perspective as constructing a ‘Player’ identity because the viewers collectively play the role of an ‘other’.

Examples in Table 2 illustrate the ambient identity of a ‘Spectator’. Although the assessments in these examples involve various attitude types, different degrees of explicitness, and multiple immediate targets, they cluster by having the same Appraiser – the *danmu* commenters. They convey the commenters’ authorial assessments of the video material, constructing a ‘Spectator’ identity.

Table 2

Example: a 'Spectator' identity.

Time (mm:ss.sss)	Chinese <i>danmu</i>	English translation	Appraiser	Attitude type	Explicitness	Immediate target
00:09.6	《恶梦开始的地方》	'Nightmare starts here'	Viewer	Appreciation-	Inscribed	Situation (teacher's home visit)
00:12.8	看给孩子吓得哈哈哈哈哈	Look how scared the child is hahahahaha	Viewer	Affect-	Inscribed	Student
00:55.8	狗都被吓怕了	Even the dog is scared	Viewer	Affect-	Inscribed	Dog

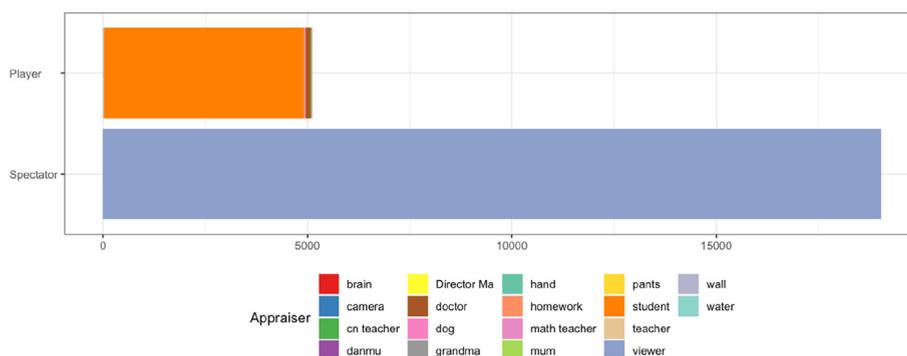
The *danmu* comments, which we labelled 'Player' (examples in Table 3), overtly attribute the attitudinal assessments to some entity other than the viewers themselves. In other words, the comments explicitly identify the Appraiser. In our dataset, the Appraiser can be anyone (including the student, a doctor, and a language arts teacher) or anything (e.g., a dog and the student's pants). Significantly, while the math teacher and the mother are the two human characters talking in the video, no attitudinal assessment is attributed to either the teacher or the mother in the *danmu* comments. They are silenced in the *danmu*. In contrast, the humans, creatures, or objects that advance an attitudinal assessment in the *danmu* are the ones that never speak in the video (e.g., the student and the dog), are innately unable to speak (e.g., the student's pants), or do not appear in the video at all (e.g., a doctor and a language arts teacher). Our findings echo Chen's soft-eye observation that when constructing a 'fan' identity, *danmu* comments 'accumulate around a certain character, plot, or character voice, as a comment, annotation and fan-created voiceover (*neixinxi*, implied inner drama/performance)' (2020, p. 321). By playing the role of an 'other', the viewers collectively attach meanings to these roles, which 'define oneself in each of these roles. These are one's identities' (Stets et al., 2021, p. 286). These comments can be regarded as construing a 'Player' identity.

Table 3

Example: a 'Player' identity.

Time (mm:ss.sss)	Chinese <i>danmu</i>	English translation	Appraiser	Attitude type	Explicitness	Immediate target
1 00:05.8	段总:危	Manager Duan: Danger	Student	Appreciation-	Inscribed	Situation (teacher's home visit)
2 00:34.9	小孩:这不是真的不是真的!!!	Child: This is not real not real!!	Student	Appreciation-	Inscribed	Situation (teacher's home visit)
3 01:28.9	学生:危, 一个字写	Student: Danger, one word	Student	Appreciation-	Inscribed	Situation (teacher's checking homework)
4 01:18.3	狗子:有杀气	Dog: (The room) has a murderous atmosphere	Dog	Appreciation-	Inscribed	Situation (teacher's home visit)
5 02:37.2	医生:又被冒犯到	Doctor: I am offended again	Doctor	Judgement-	Inscribed	The teacher compares the student's handwriting with a doctor's handwriting
6 07:38.0	裤子:段总不要再扣了	Pants: Manager Duan please stop rubbing me	The student's pants	Judgement-	Invoked	The student continuously rubs his pants during the teacher and his mother's casual talk
7 07:49.9	摄影师:这镜头绝对受欢迎	Camera: This shot will definitely be popular	Camera	Appreciation+	Inscribed	Shot (the student standing motionlessly for almost eight minutes)

The distribution of the 'Spectator' and 'Player' identities within the dataset is presented in Fig. 4. Briefly speaking, approximately three-quarters of the *danmu* comments convey attitudinal stances from the perspective of the viewer, thereby constructing a 'Spectator' identity. While it is commonplace for video viewers to leave authorial comments online, it might be

**Fig. 4.** Distribution of the 'Spectator' and 'Player' identities in the dataset.

unexpected to find that a quarter of the comments are advanced with a 'Player' perspective, giving silenced or off-camera characters/entities a voice, particularly one that is imbued with attitudes. This finding highlights the potential to construct novel digital identities within a fully anonymous online environment.

6.2. Mechanism two: advancing assessments with the same ultimate attitudinal orientation

6.2.1. Identifying ultimate attitudinal orientation

While the first mechanism focuses on the 'Appraiser', the second mechanism takes a holistic view of attitude, exploring any possible clusters with comments advancing a similar attitude. Our initial Appraisal analysis identified multiple attitudinal arrangements, which comprise combinations of attitude type, polarity, target, and explicitness, revealing the diversity and creativity in the self-expression of web users. However, a closer examination of the data indicated that some comments, despite having different attitudinal wording, ultimately express a similar evaluation. Therefore, we propose the notion of 'ultimate attitudinal orientation' to refer to the attitudinal meaning-making phenomenon where different attitudinal arrangements eventually convey the same attitude.

Take the examples in Table 4 as an illustration. The seven *danmu* comments all occur in the first minute of the video when the teacher makes a sudden home visit. The comments deploy six different attitudinal arrangements, including an inscribed negative Appreciation of the situation (examples 1 & 2), an inscribed negative assessment of the student's feeling (example 3), an invoked negative Judgement of the teacher (example 4), an invoked negative Judgement of the self (example 5), an inscribed negative assessment of the authorial emotional status (example 6), and an inscribed negative assessment of a dog's emotional status (example 7). In addition, four *danmu* comments (examples 1, 4–6) explicitly identify the Appraiser as 'Manager Duan' – the student being home visited in the video, whereas the other three comments (examples 2, 6, and 7) have the *danmu* commenters as the Appraiser. Notably, a close examination brings to light an observable similarity in the attitudinal working of these comments. Although the seven *danmu* comments have different attitudinal arrangements superficially, they ultimately convey the same attitudinal evaluation – a negative assessment of the student's emotional status, an emotion of fear. Therefore, the seven *danmu* comments ultimately convey the same attitude: appraising the student as being scared, thus forming a cohesive cluster with the same 'ultimate attitudinal orientation'.

Table 4

Example: *danmu* comments with the same ultimate attitudinal orientation.

	Time (mm:ss.sss)	Chinese <i>danmu</i>	English translation	Appraiser	Attitude type	Explicitness	Immediate target	Ultimate attitudinal orientation
1	00:05.8	段总:危	Manager Duan: Danger	Student	Appreciation-	Inscribed	Situation (teacher's home visit)	The student is scared.
2	00:09.6	《恶魔开始的地方》	'Nightmare Starts here'	Viewer	Appreciation-	Inscribed	Situation (teacher's home visit)	
3	00:12.8	看给孩子吓得哈哈哈哈哈	Look at how scared the child is hahahahaha	Viewer	Affect-	Inscribed	Student	
4	00:30.6	段总:你不要过来啊!!!	Manager Duan: You don't come near!!!	Student	Judgement-	Invoked	You (teacher)	
5	00:33.2	段总:忘记锁门了!	Manager Duan: (I) forgot to lock the door!	Student	Judgement-	Invoked	Self	
6	00:46.5	段总:我人直接傻了	Manager Duan: I am stunned	Student	Affect-	Inscribed	Self	
7	00:55.8	狗都被吓怕了	Even the dog is scared	Viewer	Affect-	Inscribed	Dog	

By categorizing comments with the same attitude as sharing the 'ultimate attitudinal orientation', we condense the evaluative meaning-making in the dataset and identify underlying semantic patterns among the *danmu* comments. Initially, we manually identified 28 ultimate attitudinal orientations in the dataset, which led to the formation of 28 comment clusters. We then use the 'treemap' package in R to visualize these comment clusters (Fig. 5). The 'treemap' organizes comments with the same ultimate attitudinal orientation into rectangular tiles, while ultimate attitudinal orientations with the same target are represented by larger rectangle tiles in varying shades of color. The size of the rectangle tile corresponds to the number of comments with that ultimate attitudinal orientation found in the dataset. Fig. 5 demonstrates that approximately 70% of the clusters are directed towards the student. The top two attitudinal orientations assess the student as being 'lost-in-mind' and 'hopeless'. Around 20% of the attitudinal orientations are labeled as 'unspecified', referring to comments that are characterized by linguistic and paralinguistic humor support

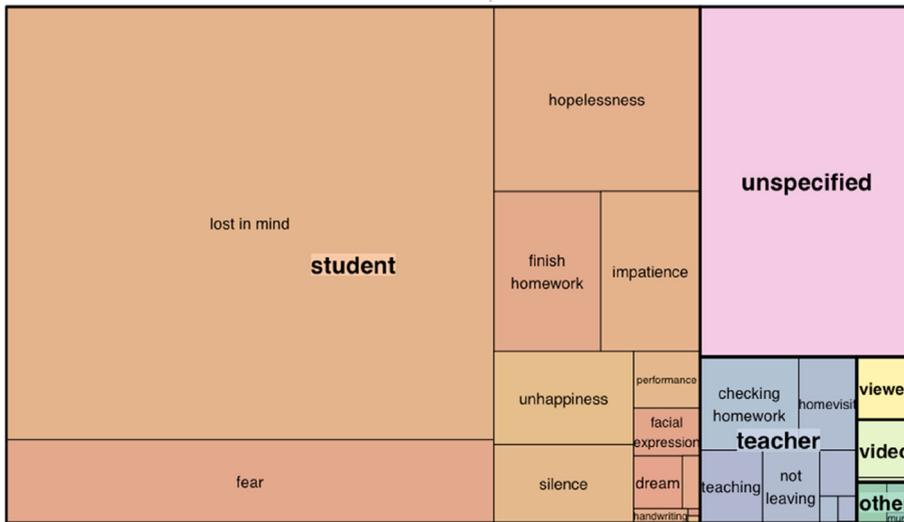


Fig. 5. Attitudinal orientation clusters in the dataset.

indicators (details in Section 6.2.2.1), such as 'hahaha' and 'heihei'. Although these comments do not specify any attitudinal targets, they indicate certain attitudes from the commenters.

The mechanism of advancing assessments with the same ultimate attitudinal orientation is pivotal in *danmu* communication because it reveals the convergence in the viewers' values and beliefs. Even though the commenters have their idiosyncratic ways of posting a comment, they can affiliate with others by ultimately assessing the same attitudinal target in the same way, hence establishing an ambient community collectively. Consequently, massive comments can cluster into multiple homogeneous groups. The sameness across different *danmu* comments proliferates the particular ultimate attitudinal orientation at stake. The more *danmu* comments contribute to the orientation, the more prominent the particular attitudinal orientation in the dataset.

The identification of 'ultimate attitudinal orientation' is theoretically significant in the growing body of literature that explores how language users create dis/alignments via evaluations. Scholars have used the notion of 'couplings' to track evaluations, focusing on co-occurrences between an ideational entity or process (annotated by discourse semantic systems) and evaluative meanings (classified using the Appraisal framework) (e.g., Inwood and Zappavigna, 2023; Zappavigna et al., 2008). This study proposes identifying two layers of evaluation: an immediate literary understanding of the text, and an ultimate layer resulting from contextual reading. Identifying the 'ultimate attitudinal orientation' is especially crucial in analyzing social media texts, which frequently encompass intricate intertextual references and multiple contexts for constructing evaluative meanings.

6.2.2. Ambient identities constructed via mechanism two

Once the ultimate attitudinal orientations were identified, we discovered a more delicate mechanism for the *danmu* comments to congregate – advancing the same ultimate attitudinal orientation from the same Appraiser. Section 6.1 has reported two primary perspectives/Appraisers identified in the dataset – the video viewer and video character – resulting in two overarching ambient identities, namely 'Spectator' and 'Player'. These perspectives can be combined with multiple ultimate attitudinal orientations, thereby creating more specific ambient identities.

6.2.2.1. 'Spectator' identity. In the case of the 'Spectator' comments (i.e., comments made from the viewer's perspective), the assessments may concern a specified attitudinal stance towards the video artifact, hence construing a textual persona as a 'Commentator'. Table 5 provides illustrations of such an identity.

Table 5

Example: a 'Commentator' identity.

	Time (mm:ss.sss)	Chinese <i>danmu</i>	English translation	Appraiser	Attitude type	Explicitness	Immediate target	Ultimate attitudinal orientation
1	01:38.7	这个表情保持到了视频结束	This facial expression is maintained until the video ends	Viewer	Appreciation+	Invoked	The student's facial expression	The student's control of his facial expression during the home visit is extraordinary. (labeled as [student: performance] in Fig. 5)
2	05:04.8	他怎么能保持这么久啊	How come he maintains (the facial expression) for so long	Viewer	Judgement+	Invoked	The student maintains the same facial expression	
3	07:26.7	度日如年哈哈	One day feels like years hahaha	Viewer	Affect-	Inscribed	The student's motionless facial expression	

Sometimes the comments from the viewer's perspective may not specify a particular attitude towards the video artifact. These comments are usually realized by linguistic and paralinguistic 'humor support indicators' (HSI) (Messerli and Locher, 2021) without an explicit reference, which can be broadly classified into four types: laugh particles, punctuations/symbols, number strings, and acronyms. Table 6 presents the four types and their distribution in the *danmu* dataset.

Table 6Humor support indicators found in *danmu* comments.

	Paralinguistic attitude indicator type	Example	n	% (n = 24,148)
1	Laugh particles in Chinese or English characters	'哈哈' ('hahaha'); '呵呵哈哈' ('hehehaha'); '嘿嘿嘿' ('heiheihei'); 'hhhhh'; 'haha'	2136	8.84
2	Punctuations or symbols	'!!!'; '??'; '... ..'; '。 。 。' ^a	72	0.30
3	Arabic number strings	'0.0.'; '2333' ^b ; '666' ^c	36	0.15
4	Acronyms	'wcyd' ^d ; 'xswl' ^e ; 'wkwk' ^f	19	0.08

^a The Chinese period '。' is used as internet slang by Chinese netizens, meaning 'speechless'.

^b In the Chinese internet culture, the Arabic number string '233' stands for laughing. It originates from the 233rd emoji of a Chinese networking platform mop.com, meaning 'laugh out loud'.

^c The number 666 is popular among Chinese netizens as an expression of 'well done' or 'fabulous'. It originates from the Chinese set phrase '六六大顺' ('*liu liu da shun*'), meaning 'everything goes smoothly'.

^d Internet acronym for 'what can you do'.

^e 'xswl' is an internet slang standing for '笑死我了' ('*xiao si wo le*'), meaning 'I'm laughing to death'.

^f 'wkwk' is an internet slang commonly used in Indonesia to express laughter, equivalent to 'LOL' in English.

Table 6 depicts that laugh particles are particularly frequent encodings of attitudes in *danmu* comments, although they serve multiple functions in online discourse (Petitjean and Morel, 2017). Based on Messerli and Locher's (2021) research on timed comments, we consider laugh particles to represent viewers' emotive stance towards the video or previous comments.

While these laugh particles do not explicate specific emotions, we investigated whether their appearance aligns with certain video contents and identified a pattern where the *danmu* laugh particles co-occur with specific attitudinal orientations in the video.

Fig. 6 illustrates the distribution of laugh particles in *danmu* comments (top) and corresponding ultimate attitudinal targets in the video (bottom). The figure reveals that most *danmu* laugh particles coincide with the teacher and the mother commenting on the student's body shape and on-the-spot behavior. For example, they criticize the student for 'gaining weight during summer vacation' and suggest that the student 'should eat less'. They also remark that the student appears 'dumb when in front of the teacher' and remains 'silent during the home visit' (Fig. 2 depicts the student's facial expression). Some viewers may find these comments amusing.

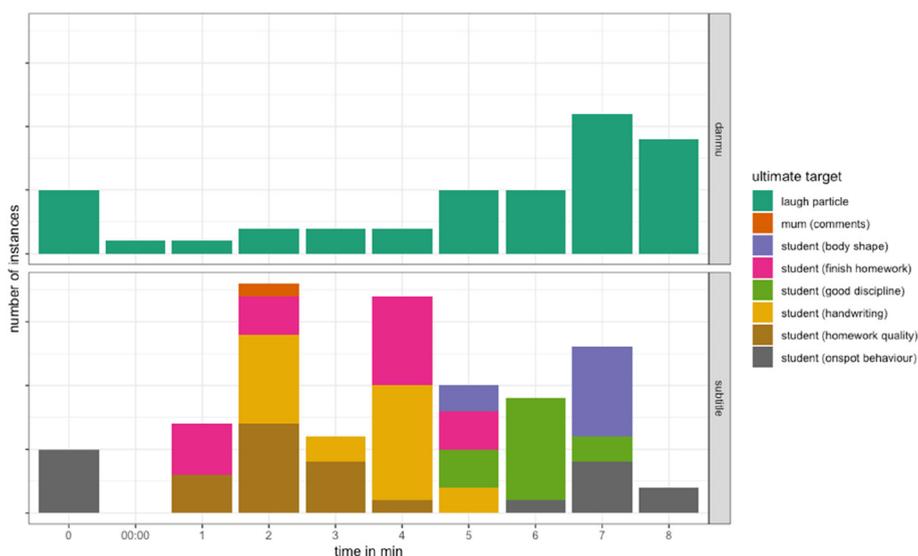


Fig. 6. Distribution of laugh particles in *danmu* and attitudinal targets in the video.

In addition, we found that the linguistic form of *danmu* comments also reflects the commenters' humorous response to the student's body shape and on-the-spot behavior. Therefore, we argue that the observable connection between the *danmu* laugh particles and the video materials demonstrates a pseudo-communality in *danmu* commenters' identity construction. They show similar responses to similar video sections, even though the specific attitudinal meaning of the laugh particles is ambiguous.

Apart from laugh particles, three other HSI types are found in the *danmu* dataset: punctuation/symbol, number string, and acronym (examples in Table 6). These four types represent various attitudes, such as happiness, surprise, and puzzlement. Although these HSI indicators imply the attitudes of the *danmu* commenter, we cannot establish with certainty the specific type or the immediate target of the attitudes. Such indicators 'show' – rather than 'describe'² – the commenters' attitudinal orientation. Nevertheless, the recurrence of such attitudinal indicators proliferates and ambiently formulates a unique digital identity of the commenters, which we label as a 'Shouter' identity.

Briefly, the 'Spectator' identity is collectively formulated by comments from the viewer's perspective. It can be further divided into 'Commentator' and 'Shouter' identities depending on whether the comments explicate the specific attitudinal stance.

6.2.2.2. 'Player' identity. In the case of the comments with the 'Player' perspective (i.e., comments made from a video character's perspective), a specified attitudinal stance can be advanced towards the attitudinal target at stake. Fig. 7 summarizes the distribution of different ambient identities found in the dataset.

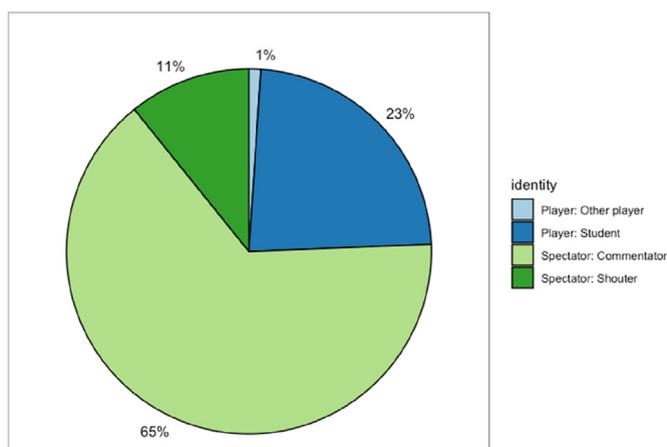


Fig. 7. Ambient identities found in the dataset.

² Locher and Jucker (2021) propose that online emotive comments can be broadly classified into three categories: 'showing', 'describing', and 'showing and describing'.

The most frequently ventriloquized character is the student, who is constructed with four personae in our data – ‘Rebellious’, ‘Performative’, ‘Victimized’, and ‘Lost-in-thought’. These personae constitute distinctive clusters of attitudinal stances (illustrated in Fig. 8). For instance, the ‘Lost-in-thought’ persona assesses the student’s state of complete absorption in his thoughts, oblivious to the surroundings. In contrast, the ‘Performative’ persona appraises the student’s self-presentation as a deliberate and successful stage performance, exemplified by self-proclaiming as an ‘Oscar Best Actor’. Notably, these personae were not verbally presented in the original video because the student was silent and nearly motionless throughout the video. However, when the relevant *danmu* comments fly over the video screen as the video unfolds, it is as if the student is speaking for himself. Accordingly, the massive *danmu* comments advanced from the student’s perspective construct a verbalized intersubjective identity for the student and the viewers.

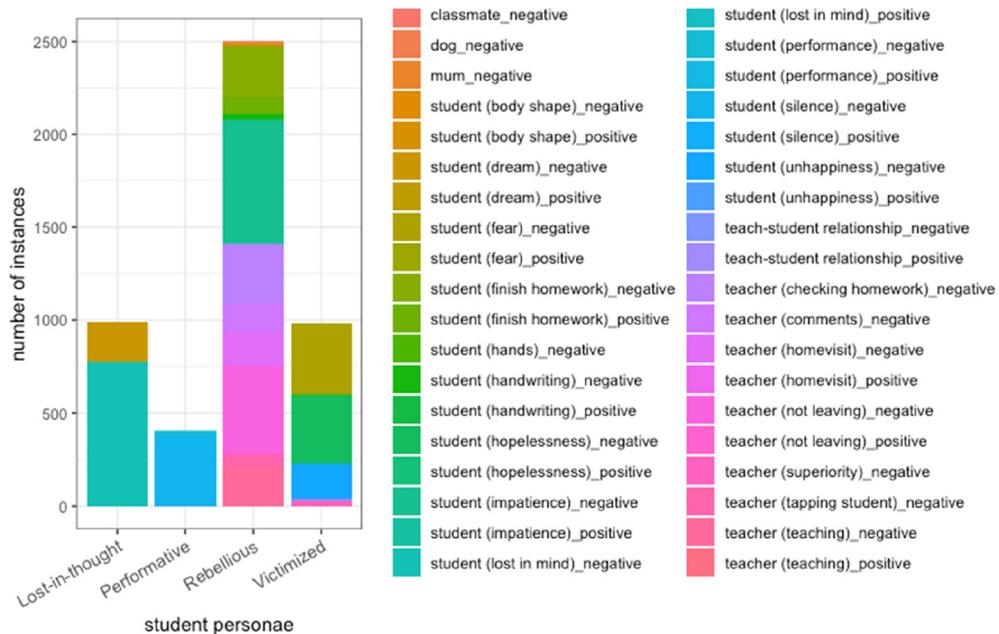


Fig. 8. Student personae and their matching attitudes.

Space limitations necessitate a selective and simplified discussion. We take two personae – ‘Victimized’ and ‘Rebellious’ – to illustrate how the same ‘Player’ identity is crafted through the second mechanism. The identity of being a ‘Victimized’ student is formed by a cluster of *danmu* comments which speak from the student’s perspective and evaluate the teacher’s home visit as unpleasant, scary, and even suffocating. The viewers deploy a wide range of Appraisal resources to convey these evaluations (examples in Table 7), including explicit outbursts of negative feelings, direct and indirect assessments of the teacher’s behavior as something undesirable for causing the student’s extreme fear, and overt negative description of the student’s situation. Because all these negative assessments were targeted at the trigger of the student’s miserable mental status – the teacher and her home visit, the comments collectively portray the student as an emotional victim of the teacher’s home visit.

Table 7

Example: a 'Victimized' student.

Time (mm:ss.sss)	Chinese <i>danmu</i>	English translation	Appraiser	Attitude type	Explicitness	Immediate target	Ultimate attitudinal orientation
1 03:19.1	段总：这恐怖时刻有点长啊	Manager Duan: This horrible episode is a bit too long	Student	Appreciation-	Inscribed	The situation of having a home visit	The teacher's home visit causes great emotional pain in the student. (labeled as [teacher: home visit] in Fig. 5)
2 03:24.2	段总：好想吃老鼠药自尽	Manager Duan: How I wish to eat mice poison and then die	Student	Affect-	Invoked	The student's suffocated feeling during the home visit	
3 05:51.0	段总：我被包围了 我好难	Manager Duan: I am besieged. It is so difficult for me	Student	Judgement-	Invoked	The student is held in the home visit by the teacher and his mother	
4 06:10.4	就像是失去神经，我感到无法呼吸	It seems that I have lost my neurons. I feel like I have lost my breath	Student	Affect-	Inscribed	The student's suffocated feeling during the home visit	
5 06:59.2	段总：这相当于对我凌迟	Manager Duan: This equals cutting off my flesh piece by piece	Student	Judgement-	Inscribed	The teacher's home visit tortures the student	

In contrast, the comments crafting a 'Rebellious' student constitute a completely different set of attitudinal arrangements (examples in Table 8). The attitudinal arrangements include negative Judgement of the teacher's behaviors, such as checking homework, commenting on the student's handwriting, and tapping the student's shoulder. The viewers' negative assessment

Table 8

Example: a 'Rebellious' student.

Time (mm:ss.sss)	Chinese <i>danmu</i>	English translation	Appraiser	Attitude type	Explicitness	Immediate target	Ultimate attitudinal orientation
1 02:54.2	段总：还要写好看？你别得寸进尺啊	Manager Duan: You want me to improve my handwriting? Don't push your luck	Student	Judgement-	Inscribed	The teacher comments on the student's handwriting	The student challenges the teacher's checking homework (labeled as [teacher: checking homework] in Fig. 5)
2 04:28.8	段总：你故意找碴是不是	Manager Duan: You are splitting hair, aren't you	Student	Judgement-	Inscribed	The teacher checks the student's homework	
3 05:48.4	段总：你走不走，不走我走	Manager Duan: You leave or not? If you don't leave, I will leave	Student	Judgement-	Invoked	The teacher stays at the student's home for more than 4 minutes	The student is impatient with the teacher. (labeled as [student: impatience] in Fig. 5)
4 06:11.6	段总：老师，你说完没有，我很痛苦	Manager Duan: Teacher, can't you finish? I feel utterly miserable	Student	Affect-	Inscribed	The teacher stays at the student's home for several minutes	
5 06:14.3	段：别念了别念了别念了	Duan: Stop reading, stop reading, stop reading	Student	Judgement-	Invoked	The teacher reads the student's answers	
6 08:10.7	段总：你一走 我就去楼顶放烟花	Manager Duan: When you leave, I will play fireworks to celebrate	Student	Judgement-	Invoked	The teacher stays at the student's home for several minutes	
7 06:58.9	段总：别摸我	Manager Duan: Don't touch me	Student	Judgement-	Invoked	The teacher pats the student	The student interprets the teacher's friendly tapping gesture as offensive.
8 07:01.0	段总：请别侵犯我	Manager Duan: Please don't harass me	Student	Judgement-	Inscribed	The teacher pats the student	The student negatively assesses the teacher.
9 00:26.1	段总：这个女人好可恶，把我拿捏住了	Manager Duan: This woman is so terrible in that she controls me completely	Student	Judgement-	Inscribed	The teacher knows the student's whereabouts during the summer vacation	
10 03:52.6	段总：你找茬是吧	Manager Duan: You are picking holes (in my homework), right	Student	Judgement-	Inscribed	The teacher checks the student's homework	

of the teacher's behavior (through the voice of the 'student') crafts a rebellious student persona that challenges the teacher's authority.

The mechanism where the same ultimate attitudinal orientation is advanced from the same perspective/Appraiser is pivotal in ambient identity construction. It highly consolidates the ambient connection among anonymous web users. The mechanism thus allows the massive anonymous comments to become remarkably homogeneous in their social and value-based composition.

7. Conclusion

In this study, we have investigated digital identity construction in a fully anonymous online environment. Our focus has been on an online discourse genre that is not ideologically loaded, to explore how web users construct textual personae through massive anonymous comments. By focusing on an entirely anonymous video viewing-and-commenting system – *danmu*, we have argued that the technological affordance of the system provides unique opportunities for video viewers to craft an ambient identity that is both individual and communal.

To unpack how such ambient identity is constructed, we conducted a case study on one popular video featuring a teacher's home visit – a convivial topic rarely touched in the existing literature. Using the Appraisal framework, we systematically tracked the attitudinal orientation in each *danmu* comment left over the video. Our findings demonstrate how web users in a fully anonymous online environment craft and perform the 'self' in a homophilous way.

We identified two attitudinal meaning-making mechanisms by which the video viewers' identities are collectively and ambiently constructed. The first mechanism involves advancing attitudinal assessments from the same Appraiser. The second mechanism involves advancing assessments with the same ultimate attitudinal orientation from the same Appraiser. We argue that while anonymous comments may seem like a mass when examined individually, a collection of comments bearing the same attitudinal orientation unambiguously reveals convergence in the viewers' values and beliefs. The proliferation of such convergence suggests constructing a collective ambient digital identity.

The broader significance of this research lies in identifying the linguistic mechanisms through which anonymous web users collectively and ambiently construct their digital identities. By attending to online individuals who do not digitally declare their affiliation to any existing social group or trend, this research contributes to the 'we-ness' approach. Moreover, by focusing on the attitudinal aspect of the discursive online self-presentation, this research adds to the 'collective agency' approach. Our analysis demonstrates how a nuanced Appraisal analysis deepens our understanding of collective identity construction in fully anonymous online environments, and how computational tools facilitate the identification of attitudinal meaning-making patterns.

The patterns of attitudinal meaning-making among massive, seemingly unrelated comments reveal how the anonymous commenters establish a 'feeling of being in company and sense of belonging' (Chen et al., 2015, p. 157) to an ambient community with whom they watch the same video and share the same sentiments. Such sentiments matter to people in a fully anonymous digital public. The collective outpouring of shared experiences triggered by one video connects the anonymous online viewers on a personal and communal level, a connection that transcends the boundaries of time and space.

Understanding the linguistic mechanisms behind anonymous online identity construction has practical implications for various industries, including marketing research, social media monitoring, and community building. By analyzing the attitudinal aspect of online self-presentation, marketers can gain insight into sentiments and attitudes prevalent within specific online communities. This knowledge can aid in tailoring messaging and products, addressing concerns, maintaining a positive brand reputation, and fostering a sense of belonging for anonymous users. Additionally, monitoring online discussions and identifying anonymous users' sentiments can assist organizations in proactively addressing potential issues and adapting communication strategies. Online platforms can also utilize this knowledge to create a sense of community among anonymous users, enhancing user engagement and establishing a vibrant online community.

This study does not claim that the proposed linguistic mechanisms represent all identity construction mechanisms afforded by the *danmu* system. One limitation of the study is that the comments in the dataset indicate that some commenters are familiar with the channel and the featured student (e.g., by using the same nickname to address the student), which allows for affiliation through shared prior knowledge. A more comprehensive dataset of commenters with no 'prior base' would help substantiate the claims made here and broaden our understanding of anonymous online identity construction.

Future research could explore the evolution of identity construction for *danmu* commenters. Since *danmu* comments were left over a video at different times and gradually accumulated so long as the video is publicly available on the *danmu*-enabled platform, the identity construction is a dynamic and ongoing process. By using web scraping and data mining tools to map comments over time, researchers could visualize the proliferation of attitudinal meaning-making patterns and explore how anonymous viewers ambiently and accumulatively contribute to the construction of specific identities. This could provide insights into the 'phylogenesis' (Halliday and Matthiessen, 1999) of anonymous collective online self-presentation.

Overall, this study shows how the full anonymity and collectiveness afforded by text-over-screen technology allow online individuals to establish connections discursively. The linguistic mechanisms reported here shed light on the construction of homophilous connections within the context of anonymous online video consumption and contributes to our understanding of identity construction in online environments.

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Declaration of competing interest

None.

CRediT authorship contribution statement

Qingxin Xu: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft, Writing – review & editing. **Yi Jing:** Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Validation, Writing – review & editing.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used Grammarly in order to improve language and readability. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Data availability

Data will be made available on request.

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