

Behind the Same Mask: Understanding the Practice of Spontaneous Collective Anonymity on Chinese Social Platforms

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Anonymity plays a crucial role in social interactions online. Recently, a new phenomenon has emerged on Chinese social platforms where users collectively adopt a uniform avatar and nickname “momo”, thereby achieving anonymity. However, understanding such spontaneous collective anonymity within Chinese cultural and contextual factors remains limited since much of the anonymity research focuses on Western users. Yet, it is unclear how users perceive the usage of “momo”, their motivations, and how using this collective anonymity impacts their social interaction. To answer these questions, we conducted interviews with 20 “momo” users. We found that the shared identity “momo” provides an additional layer of anonymity on identity-constrained Chinese social platforms. Users adopted “momo” to engage in more inclusive discussions and to balance anonymity and self-presentation. Moreover, this collective anonymity fosters connections and forms a meaningful group identity in a loosely organized community. We also identified the benefits and risks associated with this unique collective anonymity. This work makes significant contributions to CSCW and HCI research by (1) extending the knowledge of anonymity practices and privacy concerns within non-Western and mainly Chinese contexts. (2) advancing the work on anonymity models by revealing the dual role of the Momo identity in facilitating collective anonymity and community bonds. (3) providing design implications to support future social technologies in identity design and anonymous communities.

CCS Concepts: • **Human-centered computing** → **Empirical studies in HCI**.

Additional Key Words and Phrases: Anonymity; Online identity; Online community; Privacy; Social media

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1 Introduction

Users often present and disclose themselves online, hoping for social validation [42], support [5], and even developing intimacy with others in return [84]. However, online self-disclosure can inadvertently lead to potential risks [43] like the leakage of personal information [86] or exposure to toxic behaviors, such as doxxing [80] and cyberbullying [7, 8, 51, 63]. In this context, anonymity is often viewed as an essential factor in designing social technologies that encourage open and honest self-expression and facilitate self-disclosure and seeking support [4, 42, 93]. But it also can associate negative outcomes like trolling [22, 50, 88] due to a lack of accountability [45, 59]. In practice, social platforms provide different degrees of anonymity [30], from 4chan's [46] complete anonymity to Facebook's real-life identities [86], which shape or impede users' online self-disclosure and interaction.

A unique phenomenon has emerged on China's social platforms: many users collectively adopted the same nickname "momo" along with an avatar of a small pink dinosaur (referred to as "momo" below) on Douban¹ and Xiaohongshu² [76], two of the China's largest social media platforms. By October 2023, more than 20,000 users were using "momo" on these two platforms [76]. The collective use of "momo" has created a sea of similar profiles, making it challenging to differentiate one user from another at a glance. More interestingly, within this uniformity of dinosaur avatars, some users have customized their profiles by adding elements like flowers or sunglasses to their avatars, allowing them to express personalizations while concealing themselves within the crowd (Figure 1).

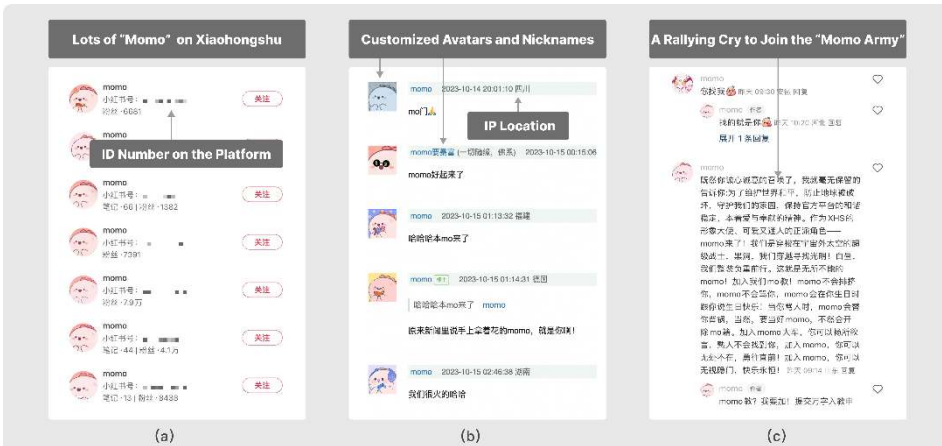


Fig. 1. The emergence of “momo” on Xiaohongshu and Douban: (a) Lots of “momo” accounts on Xiaohongshu; (b) Customized avatars and nicknames based on “momo”; (c) “Momo” users congregate in the comments columns, and their rallying cry to join the “Momo Army”.

Existing research has identified various forms and approaches of anonymity, such as complete anonymity applications Yik Yak and 4chan [46], selective anonymity provided by platform Ask.fm [30], and mixed anonymity via a mediator in Facebook Confession Boards [12, 77]. Additionally, collective anonymity movements such as the ‘Anonymous’ hacker collective [28, 32, 55], have been examined. However, prior research primarily focuses on Western contexts. Since the dynamics and affordances of online anonymity may differ between Western countries and the Chinese context, which can be largely attributed to the varying attitudes and behaviors regarding privacy shaped by sociocultural environments [36, 95], more comprehensive research into the

¹<https://www.douban.com>, a social networking service allows users share content related to film, books, etc.

²<https://www.xiaohongshu.com>, referred to as “Chinese Instagram”

local experiences of such spontaneous collective anonymity is critical. Yet, it is not clear: (1) What is the real point of such anonymity if, despite the same nickname and avatar, users can still be uniquely identified by their IDs and profiles? (2) How do we interpret the individual customizations within seemingly indistinguishable avatars and nicknames, which appear to defy the concept of deindividuation [74, 75] in anonymous contexts? (3) How do we understand the implications of this collective, spontaneous approach to anonymity? Given these facts, “momo” provides a different foundation for anonymity. Therefore, we posed the following research questions:

RQ1: *Why do users adopt “momo” collectively?*

RQ2: *What are the social interactions exhibited by “momo”?*

RQ3: *What are opportunities and challenges perceived by “momo” users?*

To answer the questions, we conducted an interview-based study with 20 “momo” users. Our findings indicate that people use “momo” collectively to seek an additional layer of anonymity on identity-constrained Chinese social platforms, thereby reducing recognizability by blending into the collective. We also found that this collective anonymity leads to more inclusive discussion, restrained self-presentation through slightly customized avatars, and fosters intra-community connections. With the common goal of advocating for privacy and social interactions within the group, the same mask “momo”, a shared identity for the original purpose of anonymity, has become a meaningful group identity that impacts the community dynamics and motivates individuals to actively and positively contribute to their community. The analysis also revealed that this anonymity brings unique opportunities and potential risks in terms of responsibility and privacy.

We thus make interlinked contributions to CSCW and HCI research as follows:

- First, we contribute to the existing literature on online anonymity and privacy by exploring spontaneous collective anonymity, a collective privacy strategy to respond to unique privacy challenges on Chinese social media. Notably, despite the superficial anonymity affordance, it reflects an increasing awareness of privacy issues in China. It extends the understanding of anonymity practices within non-Western contexts, emphasizing the need to consider contextual differences in privacy research.
- Second, we advance the work on anonymity models by revealing the dual role of the Momo identity: it serves not only as a means to achieve collective anonymity but also as a group identity that binds the community, which presents unique opportunities and challenges.
- Third, these insights inspire us to propose two design implications to support future social technologies in identity design and anonymous communities: to balance anonymity and accountability and to foster positive community interaction within anonymous collectives.

2 Background and Related Work

2.1 Real-Name Policies and the Emergence of “Momo” on Chinese Social Platforms

2.1.1 Policies of Real-Name on Chinese Internet. The Cyberspace Administration of China (CAC) has implemented several real-name policies to regulate user identity information and proposed the principle of “real name backstage, voluntary display front stage”: (1) Backstage (i.e., to the platforms): Real-name registration with mobile number. Since 2015, users have been required to register with a mobile phone number on Chinese social platforms, which is linked to an ID card. It aids censorship authorities in tracking users’ online activities to their real-name identity [69]. (2) Front stage (i.e., to other users): Although they are not required to reveal their real names, their locations are displayed. In 2022, CAC required users to show their IP location to the public [1], which increased the disclosure of identity information.

Although often framed as a fixed dichotomous state (anonymous or identified), the concept of anonymity is best understood as a spectrum involving how much and what identity information is

disclosed [4, 5, 30, 52]. Especially in China’s Internet environment, while all accounts are registered with real names backstage, there are varying degrees of anonymity in the front stage (i.e., how much identity information is disclosed to the public), as shown in Figure 2. Pseudonymous accounts are the most common practice on Chinese social platforms, where real names are not revealed, but persistent identity markers (profile, ID number, IP location, etc.) are traceable to other users.

Anonymity level of accounts in the front stage	Characteristics	Examples	Identifiable information to other users
Complete anonymity to other users. Note: It has now disappeared from Chinese social platforms.	Enables users to post anonymously, ensuring the identity information of their primary account remains untracked by other users.	Anonymous posting function on Zhihu, the largest Q&A community (the function offline in July 2023).	 1. Default avatars and nicknames of the “anonymous user” provided by the platform 2. A post published using the identity of “anonymous user”
Using pseudonyms: Provides a degree of anonymity by not revealing real names.	Enables users to engage under a pseudonym while the persistent identity marker of accounts (e.g., ID number, IP location) can be identified and tracked by other users.	The common account type on most Chinese social platforms, such as Xiaohongshu and Douban.	 1. Avatars and nicknames 2. Unique ID number on the platform 3. IP location 4. Account activity data, such as the number of followers and likes 5. A trackable profile page (contains all post content)
Real name to the public: No form of anonymity exists.	Make the legal name visible to the public on account profiles.	Chinese social platforms (Weibo, Douyin, Xiaohongshu) started asking accounts with over 1 million followers to disclose their real names on their profiles.	 1. Avatars and nicknames 2. Legal real-name 3. Unique ID number on the platform 4. IP location 5. Account activity data, such as the number of followers and likes 6. A trackable profile page (contains all post content)

Fig. 2. Different anonymity levels of accounts in the front stage on Chinese social platforms.

2.1.2 The Emergence of “Momo” on Chinese Social Platforms. The shared identity “momo” was originally the default username for new accounts, but more and more users chose to change their usernames and avatars to it later. According to Chinese social media analytics site NewRank, as of October 2023, Xiaohongshu has over 10,000 users named “momo”, while Douban has more than 11,000 “momo” users [76].

Compared to other pseudonymous accounts on platforms, while both have unique ID numbers, stable profiles and other information serving as persistent identity markers that can be identified and tracked, the collective use of uniform avatars and nicknames by “momo” users makes them so similar that it is challenging to distinguish them at a glance [67, 89], especially when they congregate in the comments columns, as shown in Figure 3. Furthermore, they have caused some group incidents on the Chinese Internet. In February 2023, a famous Chinese actor sued a Douban user called “momo” for violating his reputation rights. In response, numerous “momo” stood up and declared “We are all momo” as a rallying cry [76]. While concealing themselves by blending into the crowd, momo users widely customize their avatars and nicknames based on “momo”, such as “Milk Tea mo”, “God of Wealth mo”, etc.

2.2 Anonymity in Online Environments

Researchers have long been interested in social technologies for online anonymity. In this section, we introduce definitions of anonymity, their role in social interactions, and various anonymity models to provide a theoretical basis for understanding the “momo” phenomenon. Finally, we highlight how our work expands knowledge of anonymity practices in non-Western and mainly Chinese contexts.

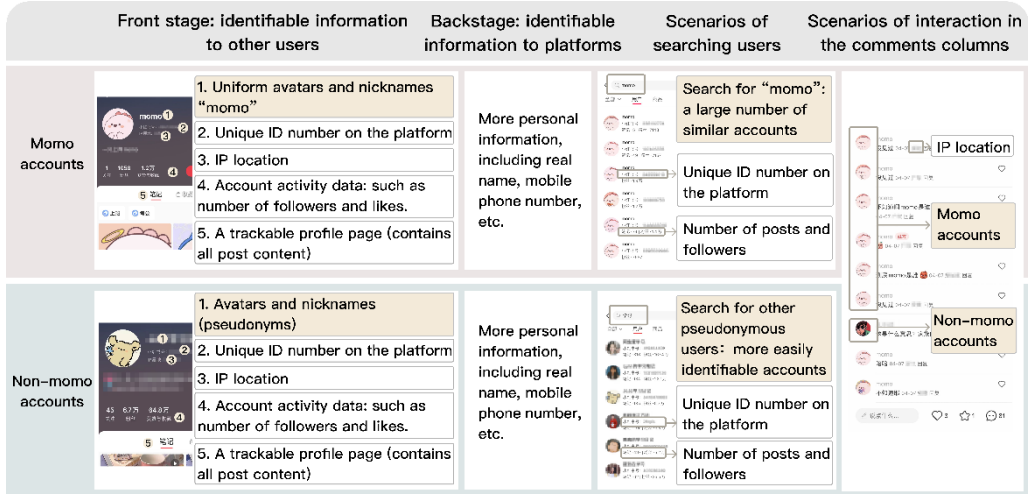


Fig. 3. Comparison of identifiable information and scenarios between Momo and Non-momo accounts.

Marx et al. [64] suggested that anonymity is not a binary construct. The concept of anonymity online is best understood as a spectrum involving varying degrees of identifiability [4, 5, 30, 52]. For example, pseudonyms are considered anonymous to some extent while they are associated with reputation and responsibility [4, 46]. “Throwaway accounts” [4, 5, 52], which are provided by platforms such as Reddit [5], Whisper [68] and 4chan [46], are considered to be practical and complete anonymity because they are temporary and without any identifying trace [4].

People often use anonymity to mitigate various social risks [42, 57, 92] and also to manage overlapping and complex social boundaries in their lives [42]. Previous research has highlighted the benefits of anonymity in that it encourages more open and honest self-expression and facilitates self-disclosure and social support [4, 42, 93], especially in taboo and sensitive topics like socio-economic, poverty-related challenges [77], and sexual abuse disclosures. Andalibi et al. [3, 4] argue that anonymity is an essential factor in designing social technologies that facilitate support seeking and provision in socially stigmatized contexts. On the other hand, it also leads to hurtful negative interactions [88], such as trolling [50] and cyberbullying [7, 8, 51]. Additionally, researchers suggested that anonymity can make it difficult for people to establish trust or get credit for one’s contributions in groups and thus hinder online community building [41, 48].

Previous research has discussed a variety of anonymity models, including ad-hoc discussion threads [4, 5], completely anonymous applications [46, 59, 68] and some mixed anonymity models such as selective anonymity in Ask.fm [30], enables users to maintain stable profile pages but may also selectively send anonymous messages to other users. In Facebook Confession Boards [12, 77], people can anonymously contribute posts to and receive moderators’ replies from identifiable Facebook users. More relevant to our work is research on collective anonymity, such as the ‘Anonymous’ hacker collective [28, 32, 55], which first emerged from an entirely anonymous and extremely ephemeral community in 4chan [9]. Adopting the shared identity ‘Anonymous’ was perceived as a means to mitigate individual risk. This form of collective anonymity highlights a double-edged nature—it can empower collective action and protect individuals but also lead to challenges in accountability and disinhibition like criminal activities. Recently, Li et al. [56] offered a perspective on how the collective anonymity of “momo” combats algorithm-inducing threats and

alleviates algorithmic identification on algorithm-driven social media. We argue it is also essential to gain a comprehensive understanding of this practice within the Chinese privacy environment.

Most studies on online anonymity situate themselves around Western contexts, creating a gap in understanding the dynamics and affordances of such spontaneous collective anonymity in the Chinese landscape, especially the real point and implications of seeking anonymity through uniform appearance. These differences may largely be attributed to the attitudes and behaviors regarding privacy shaped by socio-cultural environments. [36, 95]. For instance, Chinese platforms often face prevalent privacy concerns [102], and the Chinese public generally lacks privacy awareness [78, 95, 102]. Therefore, the specificity needs to be further elaborated when the research is done in non-Western environments. This paper thus contributes to the existing literature through a study of the Momo phenomenon, which offers a pivotal opportunity to analyze how socio-cultural and regulatory contexts in China shape spontaneous collective anonymity, a novel collective privacy strategy, along with the unique opportunities and challenges it presents. It expands the understanding of anonymity practices in China and globally, echoing Wang et al.'s call for future research should examine how privacy concerns differ in non-Western countries [94].

In addition, we advance the work on anonymity models and identity practices by revealing the dual role of the Momo identity: it serves not only collective anonymity but also as a group identity that binds the community. The following section then delves into what is known about online identity formation, especially group identity.

2.3 The Formation of Online Identity and Group Identity

Previous CSCW and HCI research has long focused on identity formation and expression of online identity [11, 27, 31, 54]. People tend to manage their identity in different groups, and their self-presentation is tailored to specific social contexts [34]. According to social identity theory [2, 83], group contexts can trigger a shift in an individual's level of identity, away from uniquely defining characteristics of one's personal identity and toward the shared, prototypical characteristics that define one's social identities [83].

In particular, group identity plays an important role in online communities, which explains how people organize themselves into and within groups and how they treat both members within and outside their communities [83]. It leads to community dynamics, such as social support [71] and cohesion [71, 73], motivates individuals to build reputation and uphold a positive image for the community [73] and even seek possibilities of social change through collective action [54, 58, 85].

It is worth noting that recent CSCW studies have found that group identity also contributes to the building of some communities, even though they are loosely organized. For example, ARMY-the fandom of the music group BTS, while being spontaneous, boundaryless, self-governing, and without any leader, still achieves organizational cohesion and success in collaboration for arguably unrelated social goals through a group identity [73]. Similarly, in some social movements like #BlackLivesMatter [85] and #ILookLikeAnEngineer [58], although members may only be loosely connected (typically through the use of hashtags), their group identity is strong [85].

Our work thus strives to build upon these foundational studies and advance existing literature by identifying the unique identity practices of "momo". It shows that group identity could positively contribute to their anonymous community. We also examine how diverse individuals negotiate their group identity in this fluid and loosely organized community.

3 Methodology

To understand motivations, social interactions, and perceptions of Chinese social media users who adopted "momo" collectively. We conducted an interview-based study with 20 "momo" users.

3.1 Ethical Considerations

The study protocol was approved by the Institutional Review Board (IRB), which included obtaining written informed consent from participants and the minimal collection, encrypted storage, and strict publishing procedures of data. In addition, recognizing that most “momo” accounts serve as users’ private online spaces, we took extra precautionary steps. For instance, we did not collect personally identifiable information on their accounts, such as the platform’s digital ID numbers and IP locations. Their accounts may contain some private or sensitive posts, so we do not proactively ask participants about these contents. Instead, we encouraged them to freely share their experiences using “momo” accounts as they felt comfortable. For example, P8 and P18 proactively shared and consented to publish their customized nicknames and post content (Figure 5). We express our gratitude for the data all participants shared and pledge to actively minimize potential risks to users.

3.2 Interviewee Recruitment

Since a large number of “momo” accounts appear mainly on the Chinese social media platforms Douban and Xiaohongshu [76], potential participants were approached through the comment area under posts of these two platforms. We contacted “momo” users who are more active in posting and commenting through direct messages. We also posted recruitment advertisements on Douban and Xiaohongshu, inviting those who are interested in participating to contact the research team through WeChat. Purposive sampling [79] was adopted, and the selection was attempted to be as diverse in platforms, genders, and other aspects such as “momo” users who use the customized avatars or spontaneously remind other “momo” not to speak maliciously, etc. However, the recruited interviewees were mostly young females. This aligns with the evidence that we obtained from a report [100]. Before the formal interviews, participants were asked basic questions about their demographics (i.e., age, gender, education, occupation), the platforms they used, and usage duration. Given the limitations of the 20 samples, we supplemented gender demographics with other methods. Specifically, we observed the gender displayed by momo accounts, and P18 indicated that most of the “momo” users she came into contact with in a large “momo” group chat were female.

In all, we have interviewed 20 participants with more than 3 months of experience using “momo” accounts. Table 1 shows details of them (16 female, 4 male, ages 18-30, $M=23$, $SD=3.6$). Among these participants, 40% were from Douban ($N=8$), 55% were from Xiaohongshu ($N=11$), and 5% had “momo” accounts on both platforms ($N=1$). We were interested in the differences between the two platforms in our data. Additionally, we asked P6 (Xiaohongshu and Douban) about the platform differences in adopting “momo” accounts. Our results presented major similarities between the two platforms. For example, P6 mentioned that both platforms differ from other acquaintance social networking platforms like WeChat, where she does not want to connect her offline identity. However, there were a few subtle differences in user motivations and social interactions due to the distinct functionalities and positioning of platforms (e.g., Xiaohongshu’s algorithmic recommendations and Douban groups have more showbiz topics). Therefore, we incorporate these nuanced differences in the detailed description of the findings.

3.3 Interview Procedure

Semi-structured interviews were conducted remotely through online meeting software (Tencent) from December 2023 to January 2024. Each interview lasted between 45 and 75 minutes, and participants received 50 CNY as payment. The main focus of the interview questions were the motivations, the social interactions, and the perceived opportunities and challenges of using “momo”. A set of interview questions can be found in Appendix A. Additionally, some interview questions were dependent on their interview answers. For example, if the participant has used other anonymity

Table 1. Summary of participants interviewed in our study.

ID	Age	Sex	Education	Experience (months)	Platforms	Customized Avatar or Nickname
P1	22	Female	Bachelor's in process	21	Douban	No
P2	30	Female	Bachelor's	>12	Douban	Avatar
P3	22	Female	Bachelor's in process	24	Douban	Avatar
P4	19	Female	Bachelor's in process	>24	Douban	Avatar
P5	25	Female	Master in process	4	Xiaohongshu	No
P6	18	Female	Bachelor's in process	>12	Douban and Xiaohongshu	No
P7	23	Female	Bachelor's	>24	Douban	No
P8	26	Female	Bachelor's	6	Xiaohongshu	Avatar and Nickname
P9	23	Female	Master in process	3	Xiaohongshu	No
P10	24	Male	Associate's	18	Douban	No
P11	19	Female	Bachelor's in process	>12	Xiaohongshu	No
P12	21	Female	Bachelor's in process	9	Xiaohongshu	No
P13	21	Female	Bachelor's in process	24	Xiaohongshu	No
P14	23	Female	Bachelor's	3	Xiaohongshu	Avatar
P15	29	Female	Bachelor's	12	Xiaohongshu	Avatar and Nickname
P16	30	Female	Associate's	3	Xiaohongshu	No
P17	29	Male	Bachelor's	>12	Douban	No
P18	23	Female	Bachelor's	5	Xiaohongshu	Avatar and Nickname
P19	24	Male	Bachelor's	6	Douban	Avatar
P20	22	Male	Bachelor's	>12	Xiaohongshu	Avatar and Nickname

methods, we asked follow-up questions about their differences. In addition, before the interview, the researchers browsed and were familiar with the interviewees' accounts, such as their posts, profiles, and avatars, to ask specific and appropriate questions (such as "Why do you customize your 'momo' avatar?", "Why do you volunteer to become a 'Momo Police Officer' "). Interviews were conducted in Mandarin using audio calls. The audio is recorded and later transcribed by the transcription service of Tencent.cn after removing identifiable information.

3.4 Data Analysis

We used thematic analysis [14, 16, 17, 21] to analyze the interview transcripts in the following steps: (1) The two native Mandarin-speaking authors first independently ran the coding using an inductive approach for each transcript and then translated codes into English when writing them on memos. (2) Then, the pair reviewed and combined the generated codes and eliminated redundant codes. To resolve conflicts, the third author was asked to serve as an unbiased arbiter when the two authors disagreed over the coding. When we realized that existing codes did not well describe the data, we performed an iterative and recursive process of coding [15, 17], either merging, splitting, altering, or generating new codes to better explain the data. [24, 53, 96]. (3) All the codes were discussed by the research team using affinity diagramming to generate emerging themes related to our research questions. (4) In addition, we conduct a recursive review of the candidate themes and re-visit codes and data to confirm whether the candidate themes meaningfully interpret the data

and provide information that addresses the research questions [15, 17, 21]. (5) Finally, we organized codes into a hierarchy of themes and reached a consensus about motivations, social interactions, and perceptions of “momo” users. The code system for our analysis is provided in Appendix B.

4 Motivations to Collectively Use “Momo”: Seeking an Additional Layer of Anonymity in Constraints

We divide our findings into three sections (sections 4-6). First, we investigate the motivations of users to use “momo” collectively (RQ1). Second, we identify the social interactions and community dynamics they presented (RQ2). Finally, we report the benefits and risks perceived by participants in terms of responsibility and privacy associated with such unique collective anonymity (RQ3). Figure 4 summarizes our main findings.

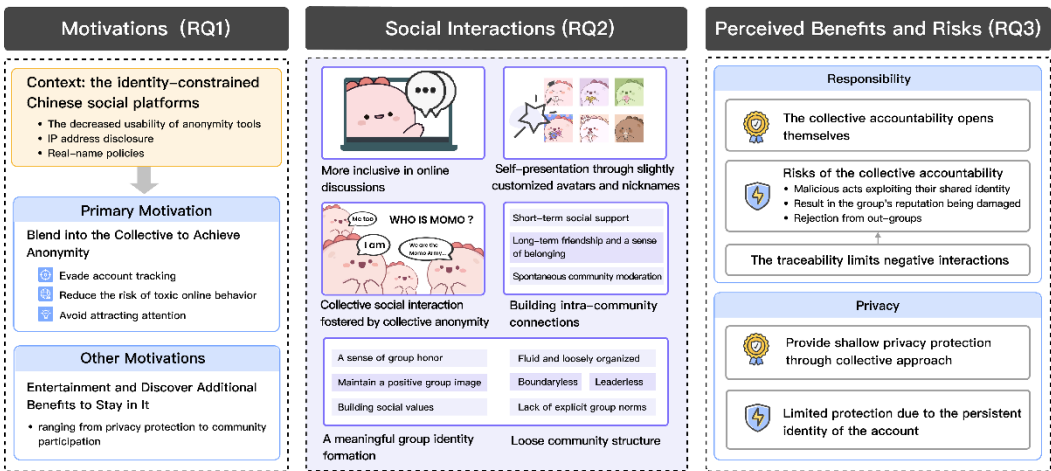


Fig. 4. Summary of main findings

In response to **RQ1**, while previous studies have reported various motivations for anonymity, such as reducing social risks of self-disclosure [4, 70] or managing social boundaries [41, 42], the following report focuses on angles and findings specific to why users collectively and spontaneously seek anonymity on Chinese social platforms where certain constraints on identity information exist.

4.1 Reducing Recognizability in Social Interaction by Blending into the Collective

In this section, we first generally introduce participants' primary motivations for adopting “momo” in an identity-constrained context. Specifically, we further present three sub-themes that illustrate the types of social interactions they seek to reduce recognizability.

According to our participants, a primary motivation for joining “momo” collectively was to seek an additional layer of anonymity beyond primary pseudonyms on the platform, thereby reducing recognizability in social interactions by blending into the collective. While using pseudonyms is currently the only way to provide users with relative anonymity on Chinese social platforms, it is still somewhat constrained due to containing some identifiable information. This concern has become more serious after Chinese social platforms adopted the policy requiring the display of users' IP locations. Our participants regard it as “*Running naked on the Internet*”(P7). Thus, blending into the collective of the “momo” was seen as a way to achieve further anonymity and reduce recognizability, as P7 mentioned, “*It's a feeling of being submerged in 'momo' in which the group is*

like the sea and I am a drop of water within it". Participants also explained that, despite the little personalization that many "momo" users adopt with customized avatars and nicknames, it is still considered group members with the primary recognition as part of the group. Furthermore, the following reports from our interviews with people attaining this anonymity approach explained what kind of social interactions they expect to be reduced in recognizability.

4.1.1 Accounts Tracking. Our interviews revealed a nuanced description of their attempts to evade account tracking, often by algorithm recommendation, searching and cross-platform. Such motivations may appear to be associated with their prior negative experiences on social platforms.

(1) By Algorithm Recommendation. Our participants from Xiaohongshu highlight that the platform's algorithmic recommendations may violate their social boundaries, as people sometimes prefer to keep their online interactions separate from certain friends or acquaintances [41]. Given its access to user information such as mobile phone numbers, Xiaohongshu employs an algorithm that recommends "people you may know" and "address book friends" (while Douban does not have this function). Some participants expressed concerns about this feature as a violation of their privacy.

In this context, using "momo" effectively obscures individual characteristics, thereby reducing users' *"curiosity for further exploration"* (P17), especially during rapid browsing scenes on social media platforms. Thus, the adoption of "momo" was seen as a defence against the specific platform algorithms by blending into the collective with a large number of similar profiles. As P2 explained:

"There are lots of 'momo', if I merge with the crowd, even if the platform recommends my account to someone else, they wouldn't know it's me."

(2) By Searching. Participants regarded that the collective use of "momo" shields their accounts from being searched in the context that every account can be linked from the stable profile pages and has a unique ID number on platforms, which allows other users to search for certain pseudonymous accounts. Our participants pointed out that the large number of "momo" users on the platforms make it difficult to search for their accounts, e.g., *"If you search for 'momo', you'll be met with endless pages"* (P13). P5 further elucidated that it is quite difficult for someone to recall a specific digital ID number or follower count among such a massive cluster of similar profiles. This sentiment was also shared by P13 that although other users can visit her profile page, if it's not marked (e.g. Like or add to favorites), they won't be able to find her account again following an exit from the page.

(3) By Cross-Platform. The persistent use of a consistent username across multiple platforms increases potential risks for facilitating tracking and stalking [81]. Additionally, users tend to perform different online identities across different social media platforms, with separate social groups [34].

P5, for instance, deliberately avoids using the same nickname or avatar on other social platforms, such as WeChat, her primary network of acquaintances. Nevertheless, she expressed concern about being tracked even with a different pseudonym. Therefore, she changed her nickname to "momo":

"Even if my WeChat friends visit and remember my Xiaohongshu post content, they will find numerous accounts when they search for the nickname 'momo' again."

These quotes highlighted "momo", a collectively used identity, offers a more effective strategy against cross-platform tracking than a unique pseudonym. Some others also adopted it to reduce the risks of personal information leakage across different platforms. As P10 emphasizes:

"If my username is the same on Douban and Weibo, then my entire life and status could be easily exposed due to cross-platform links."

4.1.2 Reducing the Risk of Toxic Behaviors: Cyberbullying, Doxxing, Harassment. Our participants noted that using "momo" enables them to engage in social interaction without being exposed to toxic behaviors [63], such as cyberbullying, doxxing, or harassment. Many mentioned the potential risks and negative experiences associated with cyberbullying, particularly when expressing opinions

in online discussions. For example, participants from Douban, the Chinese platform known for its focus on showbiz topics, highlighted that the platform's nature often leads to heated debates among fans, making cyber-attacks a common occurrence. Therefore, those who use "momo" are perceived to blend into the crowd, complicating the task of identifying targets for aggressors (P7).

Moreover, using "momo" effectively reduces recognizability and conceals personal information, thereby reducing the probability of doxxing. The malicious phenomenon known as "hang people out" [90], prevalent on the Chinese Internet, involves publicly exposing a user's speech and detailed personal information under the guise of supervision or criticism, leading to widespread online attacks that can even extend offline. Therefore, participants emphasized that using "momo" avoids such risks by obscuring personal characteristics. According to P15, the collective nature of "momo", especially its ability to make individuals inconspicuous in a crowd, somewhat protects her personal information from being continuously 'dug up' on the Internet. P19 also explained, *"There are so many 'momo'. Even if someone exposes me, other users won't know who has actually been exposed"*.

Certain members of society, such as women, due to their identity, are more likely to be targets of online harassment [37, 81]. P15 (female), who has adopted "momo" as a strategic response to sexual harassment, recalled how her previous use of a pseudonym account inadvertently increased her visibility and made her more easily identifiable to potential harassers by providing some gender identity information. Her experience illustrates that the avoidance of harassment in digital spaces serves as a motivational factor for some users in adopting "momo".

4.1.3 Avoiding Attention on Social Media. According to participants, their "momo" accounts differ in that they do not seek to attract attention or accumulate many followers compared to some other pseudonymous accounts. As P10 explained: *"I don't want to put myself under the scrutiny of others. I prefer to minimize my existence"*. This sentiment is echoed by P3, who adopted her "momo" account as a secondary account. Compared to her primary account, where she aims to get more likes and comments, she prefers her 'momo' account to remain under the radar. She further described that she would block any new followers on her "momo" account to maintain its anonymity. P1 also shared her experience of transitioning from operating an influential account on Douban to adopting a "momo" identity and clarified her motive:

"I didn't want to continue operating my influential account on Douban, so I changed my nickname and avatar to "momo", and then some people have been asking where I've disappeared to."

4.2 Join the "Momo" Out of Curiosity or to Follow a Trend, and then Discovered Additional Benefits

This collective phenomenon of "momo" also involves other motivations that are not initially for anonymity. Some interviewees noted their curiosity about the popular collective phenomenon and following a trend as their initial motivation to join the "momo", e.g., "herd mentality", "joining in the fun". Other initial motivations included being attracted to the cute little pink dinosaur avatars and having difficulty finding an appropriate nickname on the platform. However, some participants subsequently mentioned that they realized additional benefits that enabled them to remain in it, ranging from privacy protection to community participation.

P12 initially just followed the trend but later discovered the benefits of collective anonymity:

"Avoiding leaking my personal privacy has now become a big part of my reason for using it. So I've kept the avatar and the nickname unchanged."

For some others, community participation was also an important factor. For example, P18 acknowledge that the sense of community drove them to join or remain in this group:

“After coming into contact with other ‘momo’ users, I discovered that everyone was very kind and interesting so I completely changed to ‘momo’ and felt a sense of belonging.”

5 Social Interaction and Community Dynamics Exhibited by “Momo”

Our objective is to find out what kind of social interaction and community dynamics “momo” exhibited (RQ2), especially the unique content that differs from prior research. In this section, we report on how “momo” users engage in inclusive discussions and how they balance anonymity and self-presentation. Then, we investigate collective social interaction, intra-community connections, and finally, the meaningful group identity formation in a loosely organized community.

5.1 More Inclusive in Online Discussions

Speaking behind the shared identity of “momo” ensures an overall inclusive environment and is expected to reduce hostility or harassment. In particular, it offers a friendly community that is predominantly female, especially in sensitive or stigmatized contexts.

5.1.1 Inclusive Interactions. For our participants, “momo”, the shared identity, empowers them to participate in inclusive interactions, especially for some sensitive or controversial topics. While previous research on anonymity has highlighted the benefits of encouraging open and honest self-expression [4, 42, 93], our participants extend beyond these works by emphasizing how this collective nature and community culture foster an inclusive atmosphere. It was not only within the group but also in out-groups. Some mentioned that the group behind this identity enables other users to be more tolerant. As P5 mentioned:

“You are already a symbol of a group. When you discuss or argue with another person about some topic such as gender or political opinions or issues, he will not discriminate against you based on your avatar or nickname.”

On the other hand, the avatars, nicknames, and speech acts associated with the “momo” group are perceived as representations of “cuteness”. It not only brings a sense of pleasure but also leads “momo” users to internalize and exhibit behaviors that align with this image, thereby fostering a positive community culture. This, in turn, elicits goodwill and tolerance from out-groups towards the “cute” group. According to P8, in contrast to previous anonymity approaches, “momo” reduces hostility from other users due to its endearing group image and friendly community atmosphere.

“Momo users are friendly, so passers-by show a lot of kindness and positive responses towards us [...] Unlike previous anonymous accounts that often faced negative judgments, people seem to have a filter to perceive it as the lovely ‘momo’ coming along.” (P8)

5.1.2 Predominantly Female. The nature of predominantly female within the “momo” community offers a lens for understanding how women engage in inclusive discussions amidst challenges they face in digital spaces like prevalent harassment and societal pressures. Participants reported that “momo” users were predominantly female, and many attributed it to the gender distribution of the platform Xiaohongshu and Douban [99]. For these female participants, it fosters inclusive and supportive interactions, mitigating the impact of harassment, prejudice, and other discriminatory practices, particularly in online spaces where women frequently encounter such challenges [13, 37, 81]. Cultural traditions and societal expectations in China further exacerbate public opinions and stereotypes against women [26, 98]. Under the “momo” identity, participants have more courage to engage in topics related to women, ranging from disclosure of women’s health issues to feminist discussions.

For instance, P16 expressed that she derives satisfaction from offering experience and emotional support to female “momo” users who seek help with women’s health issues in stigmatized contexts. Some mentioned that feminist advocacy was a frequent part of their discussions:

"I would support the comments about feminism from momo users. My personal voice is weak, but there are so many people behind momo." (P9)

It highlights the usage of "momo" allows female users to interact more inclusively and empowers them to advocate for gender equality and mutual support within the community.

5.2 Self-presentation with Restraint

While seeking to maintain anonymity, the desire for self-presentation among "momo" users is still demonstrated through slightly customized avatars and nicknames based on "momo". However, this kind of self-presentation is restrained due to the concerns about being identified. In particular, some participants were reluctant to use customized avatars or nicknames and also reduced disclosure even when they were using the "momo" account.

5.2.1 Slightly Customized Avatars and Nicknames for Self-presentation. According to participants, diverse customized avatars based on the original avatar of the pink dinosaur were spontaneously created and shared within the community. For example, P18 has collected about 600 customized "momo" avatars. She also noted her contribution by drawing lots of avatars based on the pink dinosaur, enabling other "momo" users to express their personalization and distinctiveness somewhat.

Some also emphasized their desire to self-present on the platform, even if they seek to maintain anonymity by blending into the collective. Indeed, when they feel hyper-assimilated or indistinguishable within the group, this triggers the drive to distinctiveness, as explained by optimal distinctiveness theory [18–20]. P3 described her need for self-presentation rather than hyper-assimilation:

"I chose to be part of 'momo' on the premise that I didn't want my real-life friends to know something about me. However, I don't want to be a nameless person, so I chose this customized avatar as a way of presenting myself on social media platforms."

This negotiation of identity between the level of individual and collective highlights that restrained self-expression is merely a compromise for users in a privacy-limited context. Therefore, customized avatars with a little personalization have become a widespread practice among them. For example, P6 adopted a customized "momo" holding a little koi fish to wish her good luck in her exams. A few participants noted that they also used some customized nicknames based on "momo". P20 mentioned that his "momo" avatar has a suffix added to show his status, like "momo (depressed version)".

In particular, some noted that the little personalization activates and innovates group members' roles within the group and builds connections. According to P18, the personalized "momo" could play different roles within the community, such as "Momo Police Officer" and "Momo Captain", which promotes more active and engaged participation among group members.

"At first, 'momo' was just a way for me to hide my real identity, but gradually, I felt that I had expressed my personality within the group. I also noticed that many 'momo' actually have their own characteristics, hobbies, and its own uniqueness. For example, 'momo captain' is very warm and often cares for and inspires others."

5.2.2 The Balance of Anonymity and Self-presentation. Although some suggested that slight personalization is still primarily recognized as part of the "momo" group by other users and has facilitated self-presentation within the community, some others expressed diverse perspectives of concerns about the conflict between self-presentation and maintaining anonymity. P6, who once used a customized avatar but later switched back to the original "momo" avatar because it was not concealable enough and may lead to being recognized by others. After balancing, for some, the purpose of anonymity online is considered more important than self-presentation. As P13 noted:

"It seems contradictory to me that self-presentation while protecting oneself, so I prefer not to self-present on this platform to maintain my privacy."

Similar to such concerns, some interviewees also took measures to reduce disclosure on the platform even though they used “momo” accounts. For example, P5 mentioned that she would clean up the content of her published posts from time to time. P9 also noted that her posts did not disclose too much information like her face or the apparent signs of the school.

Therefore, in this context, the use of “momo” accounts essentially serves as a reminder for users to exercise self-restraint in their self-presentation, guiding them to carefully balance anonymity with self-expression.

5.3 Collective Social Interaction Fostered by Collective Anonymity

Our participants pointed out that collective anonymity fosters unique collective social interaction within the community. Notably, their collective speech acts serve as identity claims [28], enhancing connections and a sense of belonging within the fluid organization.

According to participants, collective similarity often causes visual confusion and makes them difficult to distinguish during social interactions. For instance, P5 shared her experience of being mistaken for other “momo” users due to their similar appearances. Participant 11 added the visual confusion that arises, particularly in the scenes where “momo” users gather together:

“There are many ‘momo’ who look the same in the comment section as if they are talking to themselves, but in fact they are different people.” (P11)

For participants, the inability to easily distinguish each other has fostered a distinctive form of collective speech acts that respond to their identities again and again, thereby helping group members continuously activate and confirm their group identity. It’s common to see lots of “momo” with a variety of avatars gathering in the comment section (As shown in Figure 1) and commenting following the previous “momo” to play a chain game, such as repeating their rallying cry one by one, *“We are the Momo Army, the mysterious, lovely, and righteous role of Xiaohongshu...”* (P13). P17 also recalled a similar experience in which “momo” users repeatedly respond to their identity, indicating how group members dispersed across fluid platforms could come together to engage in ritualized group interactions.

“Once a user asked another ‘momo’ in the comment section ‘Why can I meet you anywhere?’ and I replied to him, ‘And me?’, and then many ‘momo’ came out and followed me, ‘And me’ ‘And me’ ‘And me’...” (P17)

These quotes illustrate the collective speech acts of reiterating their group identity, mission statements, and underlying group norms, which serve as identity claims [28], strengthening the group identity among “momo” users. These ritualized collective social interactions enable their fluid collectives to temporarily re-engage in organizational action, fostering a sense of belonging and cohesion. This aligns with and extends prior research on the performative role of identity claims in the communicative construction of organizational phenomena [25, 28, 35].

5.4 Building Intra-Community Connections

The prior literature suggests that anonymity may lead to self-disclosure and content intimacy with the outcome of social support communication [4, 60]. Our interviews echoed this but found additional factors: With social interaction, intra-community connections evolve from short-term (social support) to long-term (friendship), and a sense of belonging within the community was created. Then, spontaneous community moderation performed by the community members was also developed in the absence of authoritative leadership or hierarchical systems.

5.4.1 Short-term Social Support to Long-term Friendship. The connections within the “momo” community highlight the opportunities for short-term interactions to develop into long-term friendships.

Participants reported short-term social support, which is similar to what is emphasized in other communities. According to participants, sharing experiences and information, as well as emotional support, is a common practice among them.

Importantly, the intra-community connections have evolved from short-term to long-term relationships. During our interviews, building and maintaining close personal relationships between group members was found. Some “momo” users also spontaneously created additional group chats on platforms, which facilitated more frequent and further contact with each other. P18 described her experience in a “momo” group chat, where she developed stronger emotional bonds through interaction. For instance, when she shared the hardship of her work, other “momo” users offered encouragement, support, and empathy. She expressed this sentiment:

“I think it’s love and warmth that brings us together. After this interaction, we may gradually become more and more familiar with each other and form friendships!”

Inspired by these long-term friendships within the group, P18 created illustrations and stories about “The Warm World of Momo”, as shown in Figure 5 (a) (b). She explained these creative works:

“The spaceship in the illustration features my familiar ‘momo’ friends. I imagine us journeying to the ‘Momo Planet’ [...] In the next chapter, we landed in ‘Momo Town’, where the ‘Momo King’ and his troops were welcoming the new members. Each ‘momo’ has its own house with personalization. I wish for this story to continue, as I believe it’s a warm and wonderful world!”

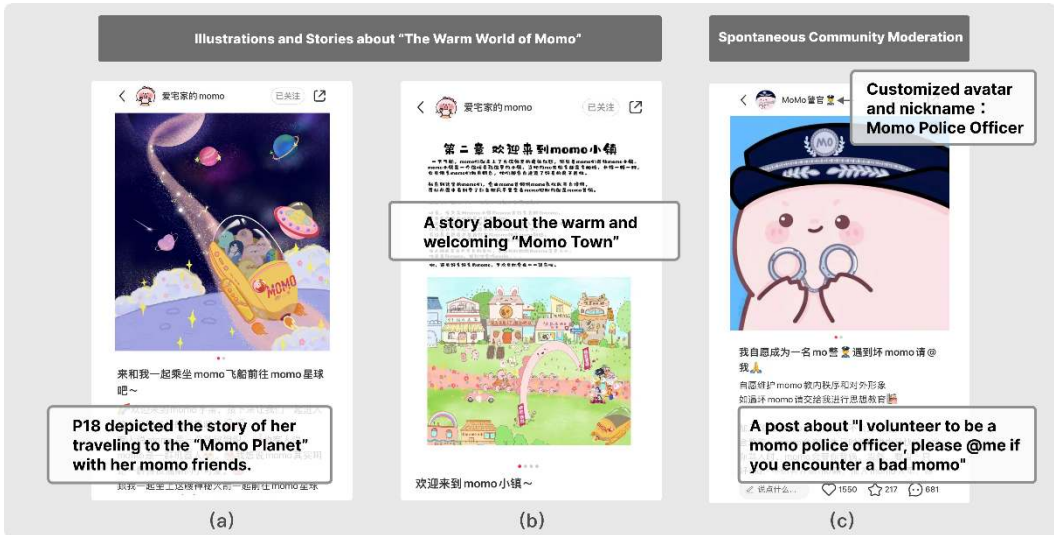


Fig. 5. Friendship and spontaneous community moderation within the community: (a) (b) Illustrations and stories about “The Warm World of Momo” created by P18; (c) P8 posted to voluntarily be a “Momo Police Officer” to perform community moderation (Figures shared by P8 and P18 with permission to republish).

We found P18’s story insightful in further connections within the community. With the social interactions with each other, participants highlighted a sense of belonging, social intimacy and described their group as “a big family” and “a warm collective”. P1 added that she felt a growing sense of belonging after joining “momo” for a while. In particular, some describe the sense of closeness with in-group members compared to someone outside the group:

“Interact with ‘momo’ seems like an acquaintance, and it can instantly bridge the gap between us, which is different from meeting ‘non-momo’.”(P18)

While some participants described a deep sense of community and belonging, a few participants held different views due to the lack of social interaction and the loose organization. For example, P11 just perceived “momo” as a tool for anonymity but *“lacks the substance of a group”*. This indicates that the sense of belonging in this fluid community is not uniform, which is based on each individual’s subjective experiences and social interactions within the group.

5.4.2 Spontaneous Community Moderation. To control disruptive behavior, many online communities designed their system of governance with authority roles [62, 65, 72], like moderators. However, recent studies have reported that non-hierarchical community moderation has emerged to allow participants to make equitable contributions [47, 47, 54]. This was similarly found in our results.

As described in Section 5.5.1, the community structure is loosely organized, spontaneous, and leaderless so that no one obtains higher power or status that is formally acknowledged by the governance system. However, our participants reported spontaneous community moderation by community members for their “shared identity” was a widespread practice in “Momo Army”, which mitigates the negative impact of anonymity.

P8, a participant who adopted the customized nickname “Momo Police Officer” on Xiaohongshu, posted, “Please @ me if you encounter a bad momo”, as shown in Figure 5 (c). She explained her motivation to perform community moderation spontaneously:

“I’ve noticed some destructive phenomena in the community, including the malicious remarks to others from an avatar and nickname of ‘momo’. I want to stand up voluntarily to keep order [...] Many other members are also working hard to maintain our shared identity.”

Communicating, reminding, and dissuading through comment replies are the main ways they deal with inappropriate behavior within the community and report violations to the systems if necessary. Additionally, actively seeking to connect with other members to work together empowered this spontaneous community moderation, which also facilitated socializing opportunities. P8 recalled:

“Sometimes when I dealt with malicious comments from ‘bad momo’ and didn’t know how to speak out to accuse them, I would ask other active ‘momo’ to help me dissuade them. It also adds to our interaction with each other.”

5.5 A Meaningful Group Identity Despite Loosely Organized Community

In this section, we further reported that while the “momo” community was perceived as loosely organized by most participants, it was also seen as a meaningful identity-based group with the common goal of advocating for privacy and fostering social interactions within the group. Furthermore, their group identity plays an important role in community dynamics and motivates individuals to actively contribute to their community.

5.5.1 Loosely Organized Community Structure. Most participants viewed the community structure as fluid and loosely organized, with the features of spontaneous, boundaryless, and leaderless. Some attributed the perception to an absence of a formal organizing entity. And some others noted collectively that there are low barriers to entry, as P20 noted *“You can come whenever you want”*. Despite the existence of spontaneous community moderation by community members, as we noted in Section 5.4.2, the freedom within the community, which lacks explicit group norms and authoritative leaders, was collectively pointed out by participants. For example, P13 said:

“In fact, there are no explicit norms. It is more like a tacit understanding among everyone and a kind of consciousness that falls into daily behavior.”

5.5.2 *“Safeguard Our Name”: Group Honor, Image, and Values.* Although members are loosely organized and connected, some participants emphasized meaningful group identity formation in that they share the common goal of advocating for their privacy through their shared identity as a strategy in online spaces. As P13 said: *“We choose one path together for the same goal. I think we categorize ourselves as part of the same group.”*

Additionally, social interactions within the community further strengthen this group identity. P18 noted that although her initial goal in joining the group was anonymity, it was the emotional bonds formed through these interactions that deepened her commitment to maintaining this group identity.

Furthermore, this group identity plays a vital role in community dynamics and motivates people to contribute to online communities in order to build a reputation. Some participants felt a sense of group honor. For example, P1 noted that the existence of *“bad momo”* ruined her reputation because *“we all belong to one group”*. Similarly, P3 shared feelings of group honor when outsiders praised this group, recalling an instance when *“momo”* was featured in an international news article for courageously standing up and speaking out about social issues, which made her feel proud to be part of the group.

The *“Momo Army”* as a whole also work to uphold their positive image in the eyes of the public. Some participants emphasized they always strive to be *“positive energy”* (P18). For them, this leads to an underlying norm of consciously avoiding inappropriate speech. They also highlighted their social values. For example, P18 mentioned the value of building a harmonious and friendly online discussion atmosphere rather than starting a fight on social platforms. P8 also emphasized the significance of *“momo”* in promoting social equity:

“Our existence is valuable and meaningful. For example, when we encounter some social injustices, we can objectively and courageously expose them to provide a correct value to the public, and then they may feel a little more sacred to the image of ‘momo’.”

As these quotes show, the group identity *“momo”* drove them to actively and positively contribute to their community and even our society.

6 Perceived Benefits and Risks of the Unique Anonymity Approach

During the interviews, participants responded to their perceptions of the benefits and risks in terms of responsibility and privacy associated with this unique collective anonymity (RQ3). While participants acknowledged lots of potential benefits (e.g., opening themselves because of the sense of collective accountability, maintaining privacy through collective anonymity), on the other hand, they expressed concerns about the limited privacy protection due to the persistent identity and the potential risks of deindividuation through a shared identity, which may lead to disinhibited behavior and even damage to their group’s reputation.

6.1 Responsibility: the Benefits and Risks of Collective Accountability, and the Traceability Limits Negative Interactions

6.1.1 *“One Mo to Do, A Billion Mo to Bear”: the Benefits and Risks of Collective Accountability.* According to our participants, the *“Momo Army”* often proclaims their rallying cry, *“One Mo to Do, A Billion Mo to Bear”*, which embodies the group’s taking certain responsibility and reputation, with the benefits of allowing people to feel less constrained because of reduced individual accountability, but it also leads to some potential risks.

(1) Open Themselves Because of the Sense of Collective Accountability. Compared to the reason for open expression brought by the lack of accountability of some other anonymity approach [42], sharing the *“momo”* identity created group responsibility and reputation, thus alleviating a certain amount of individual responsibility. Some participants highlighted a sense of collective

accountability compared to the primary pseudonymous accounts on Chinese social platforms. As P9 said:

"The previous (pseudonym) account was entirely at your own accountability, but if you post with the 'momo' account, there is a sense of group protection."

For our interviewees, this collective accountability is thought to reduce constraints on expression and enable them to open themselves to some extent. For example, P7 explained how "momo" relieved her of her responsibilities:

"I am more daring to ask questions after using 'momo'. I feel that everyone's comments are not on me personally but on 'momo'. It's like the group that bears the reputation instead of me."

(2) Risk of the Collective Accountability. Although many participants acknowledged that collective accountability could be beneficial in promoting openness of expression, they also expressed concerns regarding the risk of malicious acts exploiting their shared identity. As P3 noted:

"Momo is like an online ID card that everyone can use. Some people make inappropriate remarks with the mentality that they will not be found, or use our shared identity to conveniently do some malicious acts. I think this is one of the shortcomings of 'momo'."

Moreover, some others acknowledged the risk of the group taking responsibility that the negative behavior of some individuals could result in the group's reputation being damaged, thereby potentially leading to negative impressions by out-groups. As P9 noted:

"Sometimes, one 'momo' speaks inappropriately, which may cause other people to have a negative impression of the entire group, leading to a situation where many other 'momo' bear the burden."

In particular, some participants also shared their experiences of "momo" users being excluded by some other users on platforms. For example, the Douban platform has a special feature that allows moderators of discussion groups to manage member admissions, and P1 and P4 noted that some Douban groups banned "momo" users from joining. P18, who mentioned in retrospect that a "momo" user even chose to quit the "Momo Army" because, *"He felt it easy to take the blame for others, so he didn't want to be 'momo' anymore."* The participants' descriptions indicate that when their shared identity is maliciously exploited, it will inevitably implicate other "momo" users and affect their user experience on social platforms. Therefore, in the discussion, we further discussed the potential risks of collective anonymity.

6.1.2 The Traceability on Platforms Limits Negative Interactions. Although previous research has similarly revealed anonymous negative interactions due to the lack of attribution and responsibility [33, 45, 88], it is worth noting that most participants believed that such challenges were limited and controllable in "momo", which we will explore in more depth later in the discussion about how this unique anonymous model mitigate the negative impacts.

Given the traceability of the persistent identity, such as a unique ID number on platforms and a linkable profile page to other users, most participants expressed a sense of certain responsibility, which limits the disinhibited behavior. As P16 said:

"On the surface, users can't distinguish these 'momo'; thus some people speak more boldly. But the Internet has a 'memory'. Every user has a unique digital ID number. Therefore, even when using 'momo', no one can act completely without any limitations."

The traceability enables the platform and users to better manage inappropriate behavior, especially requiring each account to be registered through a mobile phone number and real-name information. For example, P15 mentioned the strict regulation of the platform that she once met a

“momo” who caused quarrels and was reported by other users. Then, the account has been blocked by the system. Pointing to a potential benefit of mitigating negative interactions, such as harsh or rude language and acts that are illegal or harmful.

In particular, participants suggested that traceability also promotes trust. P11 compared “momo” with the anonymous posting function (offline in 2023.7 [101]) that once existed on the Chinese social platform Zhihu, where posts cannot be linked to other submissions by the same individual. And P10 pointed out his trust in identifying traces:

“Momo is different from the anonymous function that cannot link identities. I feel more at ease with ‘momo’ users.”

6.2 Privacy: Provide Shallow Privacy Protection through Collective Approach, and Limited Protection Due to the Persistent Identity

6.2.1 Provide Shallow Privacy Protection through Collective Approach. Our participants have emphasized that “momo” serves as a form of shallow privacy protection, particularly in the privacy-constrained context. Although “momo” accounts are traceable like other pseudonymous accounts on the platform, they reduce individual identifiability by sharing nicknames and avatars among a large group, thereby somewhat avoiding the risks of unwanted attention in quick browsing and public-facing scenarios. P16 explains “momo” is regarded as a collaboration and an interdependent strategy for privacy protection:

“Using ‘momo’ collectively can not only protect one’s own privacy but also protect the privacy of others. It’s like everyone is wearing an invisibility cloak together and under the ‘protective umbrella’ on the Internet.”

It is worth noting that, despite the limited role of superficial privacy protections, the privacy-seeking behavior by users in the Chinese context is significant because previous studies have highlighted that users in non-Western, especially Chinese privacy environments may lack privacy awareness and protective behavior [78, 95, 102]. According to P17, “momo” represents a “social movement” where the Chinese public is gradually becoming aware of their privacy rights.

6.2.2 Limited Protection Due to the Persistent Identity. The shallow and limited privacy protection inevitably brings social risks due to the persistent identity of the account, which can be continuously disclosed and identified. As P12 said:

“Momo only protects the superficial privacy to the public, but it cannot protect the deeper levels. In fact, the accounts can still be identified and tracked by others, and information can be obtained by the platforms.”

These quotes illustrate that “momo” is an incomplete anonymity to other users and platforms. Although having gone beyond the primary pseudonymous account, the “momo” account is still persistently identifiable to other users, with all posts being linked from the stable profile page, which may lead to some social risks. For example, P9 suggested that cyberstalking and harassment cannot be completely avoided if posts that disclose personal information are made. P13 believed that although using “momo” was relatively safer than before, her “momo” account still experienced negative experiences of being recommended by platform’s algorithm to acquaintances and then being recognized through the post content. These concerns demonstrate the potential risks of the persistent identity markers to other users still make users cautious on social platforms.

7 Discussion

In this section, we discuss our findings from three perspectives: the collective privacy strategy driven by cultural and regulatory contexts in China, the dual roles of Momo identity in facilitating collective

anonymity and community bonds, and then how these insights inspire us to propose design implications for online identity and anonymous communities in China and potentially worldwide.

7.1 A Collective Privacy Strategy Driven by Cultural and Regulatory Contexts in China

The “momo” phenomenon, characterized by spontaneous collective anonymity, exemplifies a new form of collective privacy strategy driven by socio-cultural and regulatory contexts in China. Our research contributes to the existing literature by extending the focus from individual to collective privacy strategies and provides new perspectives on anonymity practices and privacy concerns within non-Western, particularly Chinese environments.

Constraints on anonymity in Chinese social media have led to the emergence of the “momo” phenomenon. Popular platforms like the Q&A forum Zhihu have reduced the usability of anonymity tools by disabling features that allow anonymous comments [101]. Persistent identity markers on user accounts, such as public IP disclosures, increase user visibility and the risk of toxic online behaviors. For example, Ma et al. found that the display of IP locations on Chinese social media raises significant concerns regarding the users’ location privacy and self-presentation, and risks encouraging geographic discrimination and cyberbullying [61]. Moreover, the real-name policy, intended to enhance network security, can be misused by platforms, compromising user privacy. For instance, real-name registration linked to mobile numbers is often used for algorithmic recommendations without explicit user consent, undermining pseudonym effectiveness.

In this context, the collective approach to anonymity can be seen as a new type of collective privacy strategy within the limited options for privacy and self-expression available in China’s social media space. Traditionally, privacy protection on social platforms has primarily been achieved through individual strategies, such as using anonymous [4, 42], self-limiting content, and avoiding location sharing [39, 87, 91, 92]. Some recent works have broadened online privacy management beyond the individualistic viewpoint to collective approaches [10, 23, 40]. These methods include collaborative management of shared content and joint efforts to safeguard each other’s privacy, which involves co-owners [10, 49]. Compared to previous collective strategies, the anonymous collective of “momo” does not rely on explicit rule-setting but achieves privacy protection through the anonymity of shared identity. Although this form of privacy protection is quite shallow, it becomes particularly significant during quick browsing or in scenarios of widespread screenshot sharing, where personal information can be rapidly disseminated and exposed. However, the superficial nature of this anonymity and the traceability mean that deeper investigations could still reveal personal identities, which underscores a persistent risk, especially amidst internal data processing or external threats on Chinese social media platforms.

Our study highlights the unique privacy challenges and strategies in non-Western contexts. Cultural and contextual factors significantly shape how privacy is perceived and protected [36, 95]. In China, for example, users often trust the government and are more concerned about information leakage than data collection and storage [78, 102]. Previous research indicates a general lack of privacy awareness among the Chinese public [78, 95, 102]. Our findings suggest that the “momo” phenomenon reflects an increasing awareness of privacy issues and provides valuable insights into the specific privacy dynamics of the Chinese social media landscape. This contributes to a more comprehensive understanding of global privacy practices, emphasizing the need to consider cultural and contextual differences in privacy research.

7.2 The Dual Roles of Momo Identity: for Collective Anonymity and Community Bonds

Our findings highlight that the Momo identity serves not only as a means to achieve collective anonymity but also as a group identity that binds the community. In this section, we discuss these dual roles, as illustrated in Figure 6: **(1) Shared Identity for Collective Anonymity:** Unlike other

shared identities formed based on interests or organizational affiliation [83], the Momo identity was originally shared as collective anonymity to address identity constraints. **(2) Group Identity for Community Bonds:** With the common goal of advocating for privacy and social interactions within the group, a meaningful group identity is formed that fosters a sense of belonging and cohesion and impacts community dynamics. These dual aspects of the Momo identity present unique opportunities and challenges, advancing the work on anonymity models.

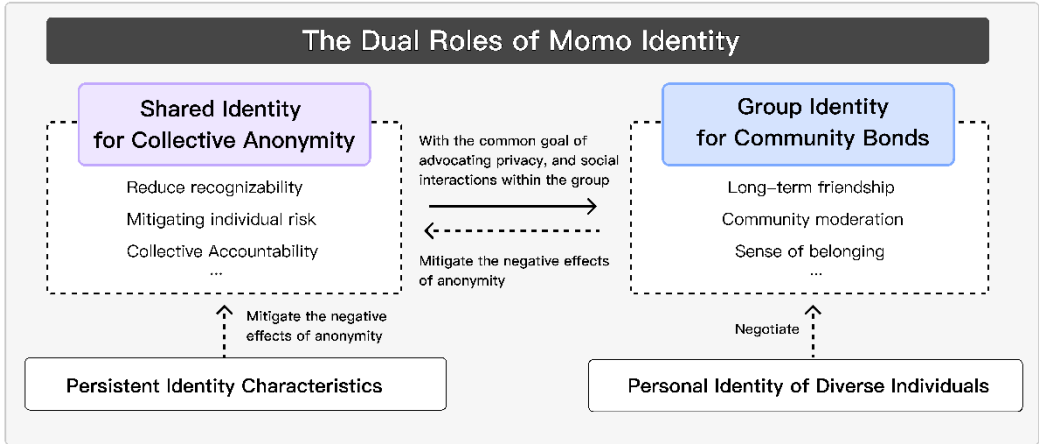


Fig. 6. The dual role of Momo identity and its influencing factors

7.2.1 Shared Identity for Collective Anonymity. While the collective anonymity nature of “momo” can reduce individual recognizability and social risk, the potential challenges need to be discussed. Additionally, we examine how the combination of persistent identity characteristics could impact these challenges, providing unique opportunities compared to previous anonymity models.

(1) Potential Challenges Fostered by Collective Anonymity. Previous research has highlighted the dual-edged nature of anonymity, often linked to negative interactions [33, 45, 70, 88]. Collective anonymity, in particular, exacerbates these challenges. In the case of the ‘Anonymous’ hacker collective [28, 32, 55], the collective anonymity nature has seen the rise of “hacktivists” engaging in unregulated and illegal activities. Similarly, despite operating within a regulated environment, the “momo” group faces challenges related to collective anonymity on social platforms. Participants in our study expressed concerns about collective accountability, as some members might exploit their shared identity to engage in negative behaviors such as trolling and bullying. Meanwhile, the unidentifiability in social interactions may foster online chaos. Additionally, inappropriate behavior by some members can inevitably damage the group’s reputation, leading to negative perceptions and exclusion by outsiders. Although our results do not explicitly show this, there is a risk of membership decline due to increased negativity, as Kang et al. [42] suggested that negative behavior could contribute to the decline of anonymous communities over time.

(2) Mitigating Negative Impacts through Persistent Identity Characteristics. Mitigating the negative effects of anonymity has been a long-standing topic in the CSCW and HCI communities. Previous research suggests that identity signals, such as location, affiliation, or domain of interest, could be a solution [12, 42]. Our research echoes this and reveals the opportunities provided by the persistent identity characteristics of “momo” accounts. Unlike ephemeral anonymity services such as 4chan and Reddit, which allow users to communicate or behave without being identifiable and

traceable over time, the Momo identity, despite its form of collective anonymity, offers a level of traceability and responsibility. This mitigates negative effects and curbs potential uncontrollable and illegal collective actions seen in groups like the ‘Anonymous’ hacker collective, though it does present a higher social risk of disclosure compared to temporary identity technologies.

7.2.2 Group Identity for Community Bonds. On the other hand, our findings reveal how “momo” supports community needs and positively impacts the community through its group identity and how diverse individuals negotiate their group identity within this loosely organized community.

(1) Better Addressing Community Support and Needs. Our work has empirically demonstrated opportunities for “momo” to foster a sense of group identity through community connections. Prior research suggests that anonymity makes it difficult for people to establish trust or get credit for their contributions in groups and may hinder online community building compared to identified accounts [41, 48]. Some recent studies highlight the benefits of anonymity in enabling similar individuals to form short-term connections [42] and receive social support [4, 60]. However, due to the temporary nature of these anonymous models, emotional connections are often based on post content and may not establish long-term interpersonal relationships. Our findings expand on previous literature by illustrating how “momo” communities develop long-term friendships and foster a sense of belonging, aspects lacking in previous anonymous communities.

Furthermore, the group identity built by “momo” users motivates members to uphold a positive group image and build social values, mitigating the negative impacts of anonymity. Research has shown that moderation practices as emotional labor play a key role in online communities [29, 54, 82, 97]. Spontaneous community moderation by “momo” members partially reduces malicious behavior within anonymous communities, although its efficacy is constrained without explicit group norms and governance systems.

(2) Negotiation of Individual and Group Identity. It is important to acknowledge that group identity within the “momo” community is not uniform or absolute, reflecting diverse individuals’ negotiation between personal and group identities in this loosely organized community. Optimal distinctiveness theory [18–20] explains how individuals in an indistinguishable group assert their distinctiveness. For instance, our participants slightly customized their avatars and nicknames based on “momo”. Additionally, Leung et al. [55] have suggested that within heterogeneous communities like the ‘Anonymous’ hacker collective, a fluid sense of belonging exists, with group identity negotiated differently based on individual subjectivities and social interactions. Similarly, our participants exhibited varying degrees of community belonging, with those engaging more in social interactions reporting a stronger group identity.

7.3 Design Implications

Grounded in our findings, we present design implications and considerations to balance anonymity and accountability and to foster positive community interactions within anonymous collectives. These insights can benefit policymakers and platform designers in enhancing identity design and anonymous communities. Importantly, some of these suggestions should be considered for their applicability to cultural factors and specific scenarios.

7.3.1 Balancing Anonymity and Accountability. Our research underscores the importance of enhancing anonymity usability while mitigating its negative impacts through identity signals. A mixed identity expression model can be considered to achieve this balance: (1) Front stage (to other users): Enhance anonymity usability by allowing users greater control over their level of anonymity and public online traces to meet their social goals. (2) Backstage (to platforms and regulators): Maintain traceable identity signals to ensure individual accountability.

To improve the usability of anonymity on Chinese social platforms, policymakers can refine user identity information policies based on the principle of “real name backstage, voluntary display front stage” to balance accountability and anonymity. In public-facing scenarios, users could exercise more control over the disclosure of their identity information. For example, they could choose not to display their IP locations to reduce identifiability and avoid providing attackers with a clear target. For platform designers, it is essential to enhance the usability of anonymous tools, especially in situations with broader public exposure and higher social risks. For instance, enabling users to make their accounts unsearchable or providing selective anonymous identities in public comment areas can empower users to express opinions while avoiding the risks of cyberbullying, attacks, and stalking [63].

On the other hand, our findings highlight the role of identity signals in enhancing accountability. Compared to temporary anonymous services, systems tied to specific real identities can enforce personal legal responsibilities, effectively mitigating the negative impacts of anonymity. Therefore, platforms might consider strategies like real-identity verification backstage (without disclosure to other users) in certain scenarios. For instance, in professional networking for job seeking or recruitment, real-identity verification backstage can mitigate risks associated with the proliferation of fake accounts engaged in malicious activities like phishing, scamming, or disseminating misleading information [6, 66]. Additionally, platforms can employ content moderation technologies and sanctions to address negative anonymous content. For example, users misusing anonymity to disrupt can face restrictions or bans from anonymous features, coupled with education on appropriate anonymous usage standards. In extreme cases such as illegal activities, platforms can trace real identities linked to accounts to restrict their use across platforms and enforce legal accountability when necessary.

7.3.2 Fostering Positive Community Interactions in the Anonymous Collective. Social platforms can consider how to incorporate the concept of collective anonymity into their privacy protection tools and strategies while enhancing community engagement opportunities. Given the risks associated with collective anonymity, strong community moderation is crucial.

In low-risk social interactions, employing shallow collective anonymity might be effective. Social platforms can provide shallow deindividualization techniques [44], such as uniform appearance among group members, to reduce unwanted attention and enhance immersion. To meet the needs of anonymous individuals seeking community connections and emotional bonds, platforms can design features that allow users to join anonymous groups based on interests or topics, interacting and communicating under the group’s identity rather than as individuals, creating a more inclusive environment. Additionally, traceability features like contact lists and follower sets can support the development of long-term social interactions and friendship maintenance.

It is essential to establish strong norms and moderation processes within anonymous collectives to promote prosocial behavior and prevent destructive actions [38, 41]. We also reveal opportunities for non-hierarchical governance in leaderless communities, where community moderation can not be done by moderators but also by community members [47, 54]. Community designers can consider enabling equal participation in rule-making and enforcement. For instance, members could collaboratively establish clear norms through democratic negotiation, setting clear behavioral expectations and prohibiting certain actions. The anonymous collective could also establish voluntary community management groups, allowing members to identify and report inappropriate behavior, employing measures like communication, warnings, expulsion from the community, or utilizing the platform’s reporting mechanism to enforce strong regulatory sanctions, managing disruptive behavior and improving the well-being of their communities.

8 Limitations

A few limitations of this study should be noted despite our effort to recruit a diverse interviewee pool. Firstly, the sample is skewed towards active users on social platforms, which may introduce potential bias. Another limitation is generalizing findings from 20 interviewees to represent the perspectives of the entire, large group. While the participants were relatively evenly distributed across the two platforms, only one participant had experience using “momo” on both Douban and Xiaohongshu. Consequently, more detailed nuances between the two platforms could be missing. Future research should aim to expand and deepen our understanding of the “momo” community with a larger and more diverse sample. A large-scale survey can also be conducted to distinguish results based on categories of users in terms of gender, platform affiliation, etc. Moreover, community dynamics are continuously evolving. Therefore, longitudinal research is needed to track temporal changes and long-term trends within the “momo” community.

9 Conclusion

To summarize, this research offers insights into how spontaneous collective anonymity is driven by socio-cultural and regulatory contexts in China. Moreover, the shared identity “momo” fostered collective social interactions and intra-community connections and then formed a meaningful group identity. The opportunities and limitations of this unique collective anonymity were examined and discussed. We hope that these insights could lead to a more in-depth understanding of anonymity practice and privacy concerns in non-Western and mainly Chinese contexts and inform future directions on online identity and anonymous communities in China and potentially worldwide.

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A A Set of Interview Questions

This is a set of questions that participants were interviewed.

Basic Questions:

- (1) Demographics: What is your age, gender, education, and occupation?
- (2) What platform do you use your Momo account on, and how long have you used it?

Formal Interview Questions:

- (1) What is your motivation for using Momo?
- (2) Where and when did you first learn about Momo, and how did you join this group?
 - (a) What was your opinion of the Momo group before you joined?
 - (b) How to join the momo group? Are there boundaries?
- (3) Why use Momo instead of other anonymous or privacy protection strategies?
 - (a) Before using Momo, did you pay attention to the privacy security of your account on social platforms?
 - (b) Have you ever adopted a strategy to protect account privacy or manage online identity? If so, what kind of strategy is it?
 - (c) What do you think are the unique features of Momo compared to other privacy protection strategies?
- (4) Besides the Momo account, do you also use other social media accounts?
 - (a) If so, what are their different uses? How is your behavior different?
- (5) What do you usually do on social platforms with your Momo account?

- (6) Do you add customized elements to the Momo avatar or nickname?
 - (a) If so, why do you pursue personalization while using Momo?
 - (b) Do you think there is a conflict between maintaining anonymity and personalization?
- (7) Do you think your Momo identity will affect your social interactions with other users on social platforms?
- (8) Have you ever interacted with other Momo users?
 - (a) If so, what is the way of interaction?
 - (b) What do you feel when you interact with them? Do you tend to interact with them?
- (9) How do you think you are involved in the Momo community?
 - (a) Does the Momo community have group culture, values, or norms?
 - (b) As a group member, how do you view the connection between Momo users?
 - (c) Do you feel that you have a group identity and belong to one group?
 - (d) Do you think the behavior of other Momo users is related to you?
- (10) Do you have any memorable experiences (positive or negative) while using Momo account?
- (11) What benefits do you think using Momo has brought you?
- (12) Do you think using Momo could protect privacy? To what extent?
- (13) In the context of Chinese social platforms, how do you view the emergence of the Momo phenomenon?
- (14) What do you think of the collective anonymity of Momo? What positive impact and challenges will it bring to Chinese social platforms?
- (15) How should this Anonymous community be guided in its development?

B Code System

This is the coding system according to which qualitative data from “momo” users are coded.

RQ1: Motivations to Adopt Momo Collectively

(1) Blend into the Collective to Achieve Anonymity on Identity-Constrained Platforms

- (a) Evade account tracking
 - (i) By Algorithm Recommendation
 - (ii) By Searching
 - (iii) By Cross-Platform
- (b) Reduce the risk of toxic online behavior
 - (i) Cyberstalking
 - (ii) Doxxing
 - (iii) Harassment
- (c) Avoid attracting attention

(2) Entertainment and Discover Additional Benefits to Stay in It

- (a) Out of curiosity and follow the trend
- (b) Discover additional benefits to stay in it
 - (i) Discovered the benefits of anonymity later
 - (ii) Engage in the community
- (c) The attraction of the cute image of Momo
- (d) Being stuck for a nickname on the platform

RQ2: Social Interaction Exhibited by Momo

(1) More Inclusive in Online Discussions

- (a) Open expression under the shared identity
- (b) Community culture fosters an inclusive and friendly atmosphere
- (c) Predominantly female fosters inclusive interaction

- (i) Reduce risks women face in online space: sexual harassment, prejudice, etc.
- (ii) Encourage discussion of women's issues
- (2) **Self-presentation with Restraint**
 - (a) Self-presentation through slightly customized avatars and nicknames
 - (i) Create, collect, and share customized avatars within the community
 - (ii) Personalization activates group members' roles and builds connections
 - (b) Different views: Conflict between anonymity and self-presentation
- (3) **Collective Social Interaction Fostered by Collective Anonymity**
 - (a) Causing visual confusion
 - (b) Collective speech acts: gathering to play the chain game
- (4) **Building Intra-Community Connections**
 - (a) Short-term social support
 - (i) Share experiences and information
 - (ii) Emotional support
 - (b) Long-term friendship and a sense of belonging
 - (i) Create group chats to further connect
 - (ii) Build friendships with other members
 - (iii) A sense of belonging
 - (iv) Another view: lack of community engagement and belonging
 - (c) Spontaneous community moderation
- (5) **A Meaningful Group Identity Formation**
 - (a) A sense of group honor
 - (b) Motivate members to maintain a positive group image
 - (c) Building social values
- (6) **Loose Community Structure**
 - (a) Fluid and loosely organized
 - (b) Boundaryless
 - (c) Leaderless
 - (d) Lack of explicit group norms

RQ3: Perceived Benefits and Risks by Momo Users

- (1) **Responsibility**
 - (a) Benefit: the collective accountability opens themselves
 - (b) Risks of the collective accountability
 - (i) Malicious acts exploiting their shared identity
 - (ii) Result in the group's reputation being damaged
 - (iii) Rejection from out-groups
 - (c) The traceability limits negative interactions
- (2) **Privacy**
 - (a) Benefit: provide shallow privacy protection
 - (i) Collaboration and interdependence strategy for privacy protection
 - (ii) An increased awareness of privacy rights in China
 - (b) Risks: limited privacy protection
 - (i) The persistent identity accounts can be continuously identified and tracked
 - (ii) Stalking and harassment cannot be completely avoided
 - (iii) Unable to avoid platform algorithm recommendations completely

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