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Navigating the Digital Landscape: Exploring the Relationship Between Social Media Affordances and Chinese Generation Z's Online Prosocial and Antisocial Behaviors

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Abstract

Online prosocial and antisocial behaviors are increasingly prevalent on social media, highlighting the need to explore the factors that shape these online social behaviors. Understanding the influencing factors, including social media use, is crucial for fostering healthy online interactions and mitigating potential risks in digital environments. In this study, we examine whether and how online prosocial and antisocial behaviors are associated with social media affordances, specifically the notions of bandwidth, social presence, anonymity, and ephemerality. Based on the collected sample of Chinese Generation Z (N = 782), the online survey study finds that bandwidth and social presence are positively associated with online prosocial behavior through online social support. On the other hand, anonymity is negatively related to online prosocial behavior through online social support and positively related to online antisocial behavior through online disinhibition. Also, ephemerality is positively associated with online antisocial behavior through the indirect effect of online disinhibition. Interestingly, while online social support positively predicts online prosocial behavior and online disinhibition positively predicts online antisocial behavior, the relationship between online social support and online antisocial behavior is not as simple. The relation is found to be positive for females and emerging adults, negative for adolescents, and insignificant for males. Theoretical implications for social media use and online social behaviors, as well as practical implications for online prosocial and antisocial behavior interventions, are discussed.

Keywords: social media affordances; prosocial behavior; antisocial behavior; online social support; online disinhibition; Generation Z

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Introduction

Social media has become increasingly pivotal in today's world. Generation Z, often characterized as being born between 1997 to 2012 and for growing up alongside the development of social media, has integrated digital platforms into their daily lives (Dimock, 2019). In 2022, a mere 6% of American Generation Z individuals reported having spent less than one hour on social media on a daily basis (Statista, 2022). In China, statistics from the same

year indicate that the number of Chinese Generation Z internet users exceeded 342 million, with a staggering 98% of them using social media (Uzunoglu, 2024). Moreover, reports indicate that Generation Z uses social media in different patterns compared to previous generations, leading to distinct effects on their social behaviors (Cox et al., 2023). Given its extensive penetration in the modern era, it is important to understand social media's effects on Generation Z.

Among all types of social media effects, social behavior is one of the most important due to the significant socialization challenges faced by Generation Z. The issues of cyberbullying and online hate have become significant social problems: a national survey in China revealed that nearly 40% of its population have experienced cyberbullying, leading to severe consequences such as anxiety (48.7%), insomnia (42.2%), depression (31.7%), and even suicidal ideation (15.7%; Wainao, 2022). However, certain online social behaviors can bring positive consequences. For example, engagement in online prosocial behavior has been shown to decrease feelings of loneliness while increasing one's overall well-being and life satisfaction (Tandoc et al., 2023; W. Zhang et al., 2022). Therefore, this study focuses on how Generation Z individuals' social media use influences their social behaviors. When discussing social behaviors, a clear distinction can be drawn between those with positive and negative behavioral outcomes. This division is supported by the classification of behaviors with moral relevance as either prosocial or antisocial (Malti & Krettenauer, 2013). Prosocial behavior refers to voluntary conducts intended to benefit specific individuals or foster harmonious relationships, while antisocial behavior involves actions that harm or neglect the welfare of others (Erreygers et al., 2018b). Both types of behaviors have significant influences on one's development. Prosocial behavior improves personal well-being and fosters positive relationships with others (W. Li et al., 2024), while antisocial behavior detrimentally affects mental health and damages interpersonal relationships (McClaine et al., 2024).

Considering the importance of increasing prosocial behavior and decreasing antisocial behavior, present research has investigated how these two behavioral concepts are impacted by social media use. However, the existing studies suffer from several limitations that need to be addressed. First, most studies measure social media use based on actual behavior (Lysenstøen et al., 2021) or content exposure analysis (W. Li et al., 2022). To better understand the association between social media use and online social behavior, it is essential to measure social media use through the lens of affordance, which refers to action possibilities enabled by interface features for specific interactions (Sude & Dvir-Gvirsman, 2023). Within the context of social media, social media affordance is defined as "the perceived actual or imagined properties of social media, emerging through the relation of technological, social, and contextual, that enable and constrain specific uses of the platforms" (Ronzhyn et al., 2022, p. 3178). When studying social media use, it is important to go beyond the content exposure analysis or actual behaviors. This leads to adopting the perspective of social media affordances as they can both facilitate and restrict potential behaviors. For example, in an extreme scenario where a social media platform only allows people to express "like", users would have fewer chances to exhibit aggressive behaviors online. While previous studies imply that social media affordances may affect social behaviors (Erreygers et al., 2017; Sude & Dvir-Gvirsman, 2023), they did not directly test this relationship, which requires further empirical examination. Theoretically, measuring social media use from the affordance perspective provides a more comprehensive understanding of how individuals interact with media and technology. This can also have practical implications for digital platform designers to optimize the user experience.

Second, most research on the impact of social media use is devoted to negative aspects such as antisocial behavior, whereas studies that investigate positive outcomes of social media use, including prosocial behavior, are less numerous (de Leeuw & Buijzen, 2016). Research simultaneously addressing the impacts of social media use on both prosocial behavior and antisocial behavior is even more scarce (Erreygers et al., 2017). Prosocial behavior is seemingly the exact opposite of antisocial behavior, suggesting a negative correlation between the two. However, evidence indicates an insignificant relation between the two types of behaviors, or one that is even positive (Erreygers et al., 2018a). This might be because online antisocial behavior can have prosocial roots. Specifically, feedback such as likes, retweets, and supportive messages makes participants feel proud and connected, strengthening their group bonds. However, when bonds in a group become increasingly strengthened by these prosocial behaviors, they may lead to online hate towards other groups due to the motivation of strengthening the in-group bonds (Walther, 2023). This makes the simultaneous consideration of both online prosocial and antisocial behaviors particularly essential. Accordingly, this study explores the relationships that social media affordances have with both prosocial and antisocial behaviors, rather than focusing on just one. We believe that such an investigation can offer more valuable insights into social media's effects on both types of behaviors.

Third, we do not want to stop at the correlation between social media affordances and social behaviors. Instead, we also examine potential mediators, including both online social support and online disinhibition. Numerous studies have highlighted online social support, defined as the resources or assistance that individuals exchange with each other through online interpersonal relations (Oh et al., 2014), as an important antecedent of online prosocial behavior. Simultaneously, online disinhibition, a phenomenon where individuals behave in ways online that they typically would not in face-to-face interactions (C. M. K. Cheung et al., 2021; Suler, 2004), has been consistently proven as a significant catalyst for online antisocial behavior. Previous research also suggests relationships between social media use, online social support, and online disinhibition (e.g., Grondin et al., 2019; Ma et al., 2021; Oh et al., 2023; Scott, 2004). Therefore, analyzing the mediation effects of online social support and online disinhibition could elucidate the relationships between social media affordances and online prosocial or antisocial behavior, thereby aiming for a better understanding of the underlying mechanisms.

Furthermore, we explore the boundaries of our proposed model across different groups based on gender and age. In addition to potential gender differences, it is essential to consider the broad age range within Generation Z, as this span may influence their social media use and the development of online social behaviors. On one hand, social media use varies across different age groups within Generation Z. For instance, Ahmed (2019) found that younger Generation Z individuals tend to engage with social media more frequently than their older counterparts do. On the other hand, online social behaviors, including both online prosocial and antisocial behaviors, exhibit age-related differences. Research indicates that participants in older age groups demonstrate a stronger sense of altruism and social responsibility, which positively affects their online prosocial behaviors (Pastor, Pérez-Torres, et al., 2024). Also, it has been found that age is one of the factors capable of impacting how an individual may behave antisocially on the internet (Chui, 2014). Given these variations, the relationships between social media affordances and online social behaviors may likewise differ depending on age. This highlights the necessity of conducting multi-group analyses across diverse groups to identify potential theoretical boundaries.

In sum, drawing upon the theoretical framework of affordances, this study seeks to determine whether and how social media affordances are associated with both prosocial and antisocial behaviors by conducting a cross-sectional survey. This approach facilitates a more granular analysis of how social media affordances can either encourage or hinder prosocial and antisocial behaviors among Chinese Generation Z, with practical implications for behavior intervention tailored to this demographic.

Sketching the Relationship Between Social Media Affordances and Online Social Behaviors

Among various social media affordances, bandwidth, social presence, anonymity, and ephemerality have been found to be related to online social support and/or online disinhibition in previous studies (e.g., Grondin et al., 2019; Ma et al., 2021; Oh et al., 2023; Scott, 2004). While a broader range of social media affordances exists, the current study focuses specifically on these four. In this section, we elucidate how bandwidth, social presence, anonymity, and ephemerality can predict online social support and online disinhibition, which in turn predict online prosocial and antisocial behaviors. We also propose a research question regarding the potential moderating effects of gender and age.

Bandwidth, Online Social Support, and Online Disinhibition

Bandwidth is one of the most cited affordances, indicating how much non-verbal cues can be transmitted through media (Fox & McEwan, 2017). For a long time, computer-mediated communication was seen as lacking non-verbal cues compared to face-to-face communication. However, with the advancement of communication technology, social media has progressively facilitated the transmission of a broader range of non-verbal cues. For instance, social media allows users to utilize emoticons to convey emotions through messages and engage in video chats for communication.

The explicitness of emotional disclosure plays a pivotal role in the potential receipt of social support. People who disclose more emotions on social media may be seen as more legitimate in seeking online social support, as these emotional expressions indicate the stress level of the support-seeker and the degree to which their concerns are valid, thereby giving them more social support from others (S. Li et al., 2019). Therefore, we may expect that the bandwidth of social media can positively influence online social support by enabling a richer presentation of non-verbal cues and emotions. Moreover, from the perspective of the support-givers, higher bandwidth also enables

them to more explicitly convey their empathies, which in turn enhances the support seekers' perception of online social support (Grondin et al., 2019).

On the other hand, non-verbal cues may play a crucial role in influencing online disinhibition. When users engage in computer-mediated communication, the lack of non-verbal cues often leads to a shift in focus from interpersonal relationships to the tasks at hand. This shift can diminish the influence of social norms (i.e., others' expectations and behaviors) and restrictions that typically govern behavior in face-to-face interactions (Kiesler et al., 1984). Consequently, the reduced presence of non-verbal cues can act as a precursor to increased online disinhibition. In contrast, higher bandwidth allows for the transmission of more non-verbal cues, such as facial expressions and body language, which can help users better understand the emotional context of their interactions. As the richness of communication increases with higher bandwidth, we can expect that users will experience less online disinhibition.

Based on the previous discussions, we propose the following hypothesis:

H1: Bandwidth (a) positively predicts online social support while (b) negatively predicts online disinhibition.

Social Presence, Online Social Support, and Online Disinhibition

Social presence, as initially defined by Short et al. (1976), refers to the "degree of salience of the other person in the interaction and the consequent salience of interpersonal relationships" (p. 65). As a social media affordance, social presence denotes the extent to which users feel engaged and connected with others through interactive features such as comments, likes, and direct messaging (van Brakel et al., 2023). Social presence is essential in determining social interaction quality and developing close relationships in virtual environments (Biocca et al., 2003; van Brakel et al., 2023). When individuals perceive a strong social presence, they are more likely to experience a sense of intimacy in virtual interactions, which further cultivates a supportive environment where people are more inclined to share, empathize, and assist each other. Consequently, a higher social presence can lead to more supportive communication and increase perceptions of social support provided by others online (Oh et al., 2023).

Meanwhile, higher social presence implies more awareness of one's behaviors being observed and judged by others (Walther, 2007). This awareness often prompts individuals to regulate their behaviors in order to present themselves more favorably to their audience (Kim & Chang, 2017). For instance, an experimental study conducted among undergraduates by Joinson (2001) demonstrated that individuals tend to self-censor and present a more socially desirable image when they perceive a high level of social presence in online interactions. Conversely, reduced social presence can trigger a process of communication-induced deindividuation. In situations where individuals perceive a lower level of social presence, they may feel more free from others' expectations and behaviors, as well as more detached from the consequences of their actions, thereby resulting in further instances of disinhibition (Lapidot-Lefler & Barak, 2012).

Hence, we propose the following hypothesis:

H2: Social presence (a) positively predicts online social support while (b) negatively predicts online disinhibition.

Anonymity, Online Social Support, and Online Disinhibition

Anonymity in social media allows users to conceal their actual identities and interact under pseudonyms in an online communication channel (Fox & McEwan, 2017). Numerous studies have identified anonymity as an essential factor of online disinhibition. For example, scholars found that anonymity increases the online trolling tendency (Nitschinsk et al., 2022). This disinhibition effect can be explained by the reduced social accountability. When individuals are anonymous online, they perceive a decreased sense of social accountability for their actions. In other words, individuals feel less constrained by the moral norms and expectations of society in an anonymous online environment, where they believe they are invisible and untraceable, as opposed to face-to-face interactions (Postmes et al., 2002).

The effects of anonymity on online social support may be more difficult to speculate. Anonymity provides individuals with a sense of freedom to express themselves without the fear of being identified. Such perceived freedom can lead to increased self-disclosure such as revealing sensitive information to others on social media (Clark-Gordon et al., 2019), which in turn increases the likelihood of people seeking online social support. Hence,

anonymity may positively predict online social support. However, while anonymous social support can appear beneficial, individuals may feel less social support compared to receiving it from a known source. This is because anonymity may result in uncertainty about the intentions or reliability of the support-giver, which could affect the perceived quality of the support received (Joinson, 2001). Furthermore, from the social exchange perspective, when support-givers have higher levels of anonymity, they may feel less likely to receive recognitions or rewards for offering support. This reduced probability of being identified can lead to a decrease in empathetic interactions and the provision of support (Scott, 2004). Therefore, anonymity can also be insignificantly or even negatively associated with online social support.

Based on the above discussions, we propose the following research question and hypothesis:

H3: Anonymity positively predicts online disinhibition.

RQ1: Does anonymity predict online social support?

Ephemerality, Online Social Support, and Online Disinhibition

Ephemerality stems from a technological advancement in social media, designed to automatically delete communication artifacts shortly after they are created (Ma et al., 2021). This affordance can be seen as the opposite of persistence, which refers to "the relative permanence of communication" (Fox & McEwan, 2017, p. 303). It is understandable that ephemerality may have a positive impact on individuals' online disinhibition. When users know that their posts will vanish after a short duration, they often experience a sense of freedom that comes from the reduced risk of their words being stored or revisited later. This can reduce feelings of the content they posted being considered inappropriate in the future (Bayer et al., 2016). Additionally, ephemerality increases feelings of privacy by decreasing perceived public self-consciousness and reducing social desirability (Richman et al., 1999). For example, platforms like Snapchat, where messages and images are designed to disappear shortly after being viewed, have been observed to facilitate more uninhibited communication (Hofstetter et al., 2017). Therefore, we believe that ephemerality can foster online disinhibition.

However, similar to the effects of anonymity, ephemerality's impact on online social support could be two-fold. On one hand, ephemerality may have negative effects on online social support. For example, ephemerality may reduce the audience size of a message due to its short lifespan (Y. Zhang et al., 2021), which could decrease one's chances of receiving social support as a result of fewer viewers. Additionally, the transient nature of interactions can hinder the formation of deeper connections that are necessary for substantial social support. A study combining surveys and interviews on a U.S. undergraduate sample shows that while ephemeral social media platforms like Snapchat can enhance social relationships, they do not necessarily increase substantial online social support (Bayer et al., 2016). On the other hand, ephemerality may have positive effects on online social support. The temporary nature of information can help prevent disclosed information from resurfacing to potentially harm someone in the future. This approach delineates a boundary between public informational spaces, where the latest content resides, and personal informational spaces, which contain outdated content. Such a division can encourage users to actively engage in self-disclosure, knowing their revelations are temporary (Ma et al., 2021). Therefore, ephemerality may positively predict online social support since more self-disclosure, as we argued earlier, usually results in more online social support. To summarize, ephemerality's impact on online social support remains ambiguous.

In light of the above arguments, we propose the following research question and hypothesis:

H4: Ephemerality positively predicts online disinhibition.

RQ2: Does ephemerality predict online social support?

Online Social Support, Online Prosocial Behavior, and Online Antisocial Behavior

According to social exchange theory, the exchange process can be defined by reciprocity, where someone compensates another person for benefits received from that individual (Molm et al., 2007). This is also a widely acknowledged process in considering online social behavior (Pastor, Pérez-Torres, et al., 2024). In this case, the reciprocity of social support can be illustrated as the "balance of received support and provided support" (Takizawa et al., 2006, p. 654). In other words, in the process of reciprocity, received social support becomes the catalyst for prosocial behaviors, as empirically supported by Chen et al. (2010). Additionally, the relationship

between social support and prosocial behavior can be elucidated by social capital theory, which argues that factors like norms of reciprocity are integral to the establishment of collective communities (Sturtevant, 2006). One past study indicates that an increase in social resources is related to higher levels of prosocial behaviors: the more social support one receives, the more likely one is prompted to demonstrate prosocial behaviors (Lenzi et al., 2012). In the digital era, online social networks have been identified as the ideal platforms for social exchanges to occur (Surma, 2016) and for social capital to be accumulated (Steinfield et al., 2012). Therefore, drawing upon both social exchange theory and social capital theory, we propose the following relationship:

H5: Online social support is positively related to online prosocial behavior.

However, the relationship between online social support and online antisocial behavior remains unclear. On one hand, social support fosters a secure environment that helps adolescents feel safe, corrects irrational beliefs about hostility, and reduces the likelihood of antisocial behavior (X. Liu et al., 2007). Additionally, social support indicates more communication with others, which encourages adolescents to reevaluate their beliefs and leads to a decrease in antisocial behaviors (A. Liu et al., 2021). On the other hand, a Chicago study found that supportive friendships can only reduce adolescents' delinquent actions, a form of antisocial behavior, in dangerous and disadvantaged neighborhoods by limiting exposure to risky situations and mitigating toxically stressful environments (Anderson et al., 2015). Consequently, rather than suggesting a hypothesis to connect the two concepts, it would be more fitting to propose the following research question:

RQ3: Is online social support related to online antisocial behavior?

Online Disinhibition, Online Prosocial Behavior, and Online Antisocial Behavior

Online disinhibition is often negatively attributed to toxic behaviors in the new media environment (Lapidot-Lefler & Barak, 2012). This phenomenon can be outlined by Zimbardo's deindividuation theory, which suggests that "when the self becomes immersed in a group, antisocial behavior is tolerated to a large degree, leading to aggressive behaviors that are usually inhibited under normal circumstances" (Wen & Miura, 2023, p. 73). The conceptual overlap between online disinhibition and deindividuation is defined by deindividuation on the internet (Wen & Miura, 2023). Put differently, online disinhibition becomes a substitute for deindividuation when placed within the online context, thereby taking over the latter's position as a stimulus for antisocial behaviors. One experimental study conducted on Australian undergraduates reinforces this relationship by showing that the antisocial behavior of online trolling is increased by the disinhibiting effects (Nitschinsk et al., 2022). Furthermore, another study attributes trolling in online communities to "the online disinhibition effect, where we engage in behavior online that we might not in face-to-face interaction" (Park et al., 2022, p. 3). Therefore, the following hypothesis can be established:

H6: Online disinhibition is positively related to online antisocial behavior.

The relationship between online disinhibition and online prosocial behavior is more ambiguous. It has been underscored that disinhibited actions, besides being characterized as antisocial behaviors, can be prosocial as well (Postmes & Spears, 1998). This is supported by Hirsh et al. (2011), which shows that disinhibition can lead to prosocial behaviors in addition to antisocial actions. However, another study suggests that online disinhibition has no significant effects on prosocial behaviors (Lapidot-Lefler & Barak, 2015). Considering this contradiction, it would be appropriate to propose the following research question:

RQ4: Is online disinhibition related to online prosocial behavior?

Mediating Roles of Online Social Support and Online Disinhibition

To explore how the interface features of digital media influence users' psychology and behavior, Sundar et al. (2015) developed the Theory of Interactive Media Effects (TIME). The starting point of the TIME is an affordance offered by the medium, rather than the source or content of communication. This affordance lies at the intersection of the medium and the user, aligning with established conceptualizations of "affordance" (Norman, 1988). According to the TIME, researchers can link media affordances as predictors to outcomes, including actual behaviors, through mediating variables that associate with individuals' internal states (W. Li et al., 2021; Sundar et al., 2017). Building on the TIME framework as well as the hypotheses and research questions outlined from Section 2.1 to Section 2.6, we propose the following hypotheses and research questions

regarding the mediating roles of online social support and online disinhibition in the relationships between social media affordances and online social behaviors:

H7: Online social support positively mediates the relationship between (a) bandwidth and (b) social presence with online prosocial behavior.

RQ5: Does online social support mediate the relationship between (a) anonymity and (b) ephemerality with online prosocial behavior?

RQ6: Does online social support mediate the relationship between (a) bandwidth, (b) social presence, (c) anonymity, and (d) ephemerality with online antisocial behavior?

H8: Online disinhibition positively mediates the relationship between (a) anonymity and (b) ephemerality with online antisocial behavior.

RQ7: Does online disinhibition mediate the relationship between (a) bandwidth and (b) social presence with online antisocial behavior?

RQ8: Does online disinhibition mediate the relationship between (a) bandwidth, (b) social presence, (c) anonymity, and (d) ephemerality with online prosocial behavior?

Moderating Roles of Gender and Age

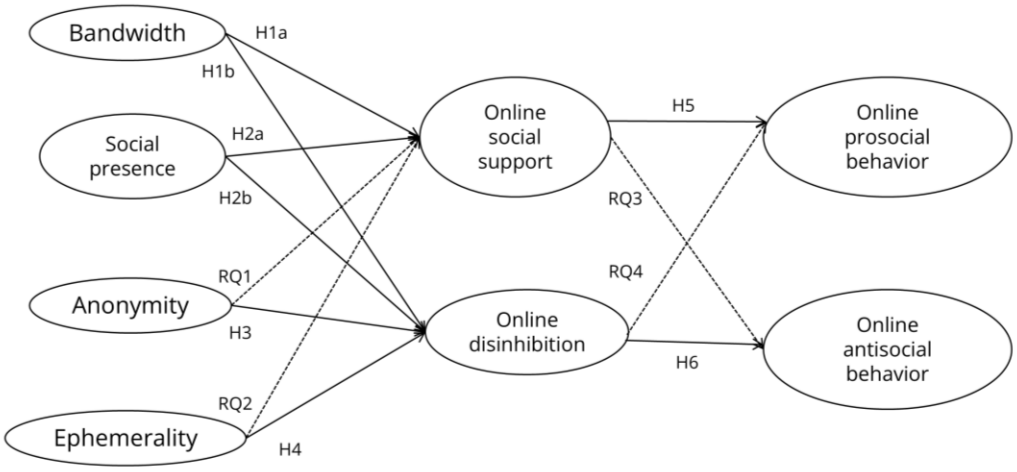
The aforementioned relationships may not be stable across different demographic groups, with gender and age potentially influencing these dynamics. On one hand, the patterns of online social interaction vary across gender and age groups (Liang et al., 2008; Politte-Corn et al., 2023). These differences could result in varying effects of different social media affordances. For instance, females generally prefer higher-quality communication; when bandwidth is high, they may feel stronger social support than males (High et al., 2014). Moreover, females are more likely to disclose their personal information compared to males (Bond, 2009). This may influence the potential effects of perceived anonymity and ephemerality on social behaviors across gender groups. As for age, the patterns of social interactions on social media also significantly differ between adolescents and emerging adults. For instance, younger adolescents, requiring greater familial support, typically interact more with their families compared to older adolescents or emerging adults (Cheng & Chan, 2004). These differences have the potential to alter the hypothesized relationships.

On the other hand, the development of prosocial and antisocial behaviors also varies across gender and age groups (Crocetti et al., 2016). This variation may alter the relationship between online social support, online disinhibition, and online social behaviors. For example, a study on Spanish female adolescents shows that the participants exhibit stronger beliefs in various factors (e.g., altruism, social responsibility, and indirect reciprocity) that influence online prosocial behaviors compared to their male counterparts (Pastor, Pérez-Torres, et al., 2024). Additionally, female adolescents demonstrate a higher frequency of online prosocial behaviors than male adolescents across four countries (Pastor, Hihara, et al., 2024). Among the Chinese adolescents, research indicates that the relationship between social support and online prosocial behavior is stronger among males than females (Cui & Z. Li, 2023). For the impact of age, as individuals grow older, they become less susceptible to prosocial influence (Foulkes et al., 2018), which could weaken the relationship between online social support, online disinhibition, and online social behaviors. In consideration of the points discussed, we wonder whether the relationships we hypothesized could vary depending on gender and age:

RQ9: Do the relationships among social media affordances, online social support, online disinhibition, and online prosocial or antisocial behaviors differ based on (a) gender and (b) age?

Based on the aforementioned hypotheses and research questions, we propose a conceptual model to investigate the relationships among social media affordances, online social support, online disinhibition, and online social behaviors (See Figure 1).

Figure 1. *Proposed Conceptual Model in This Study.*



Note. For clarity, we do not include the hypotheses and research questions regarding the mediating role of online social support and online disinhibition (H7/H8 and RQ5/6/7/8), as well as the moderating role of gender and age (RQ9), in the conceptual model.

Methods

Procedure and Participants

We employed a survey method to collect data for testing the proposed model. The study was approved by the Institutional Review Board at the first author's institution. Prior to the formal survey, a convenience sample of 85 Generation Z individuals was recruited to test the reliability of the key constructs. The main online survey was then conducted over three weeks in October 2023. The participants were from four middle schools (two junior and two senior middle schools) and two universities in an East China city.

We used the snowball sampling method, encouraging participants to share the survey link with classmates or friends from the same school or university. For the participants from middle schools, we secured help from the teachers at the participating schools, who played a crucial role in ensuring the protection of participants' rights and privacy. Additionally, all participants were informed about the study's purpose and procedures before their involvement, and we adhered to ethical guidelines throughout the research process. Given the sensitive nature of our variables, especially online prosocial and antisocial behaviors, measures were taken to minimize potential social desirability bias (Kreuter et al., 2008). At the beginning of the questionnaire, respondents were informed that there are no incorrect answers and that the research would only be valuable if they provided truthful responses. They were also assured of the confidentiality and anonymity of their responses. Furthermore, we intermixed the items measuring online prosocial behavior with those measuring online antisocial behavior in our questionnaire.

Finally, 905 participants responded to the survey. To ensure data quality, we removed cases where the response time was less than 120 seconds or where almost all responses were identical. After data cleaning, the final sample consisted of 782 participants. Among them, there were slightly more females (51.5%) than males (48.5%). The participants' ages ranged from 11 to 26, with a mean age of 18.80 (*SD* = 3.61). We used the age threshold of 18 to divide all the participants into two groups: adolescents, aged between 11 to 18, and emerging adults, aged between 19 to 26. The results showed that adolescents constituted 45.1% of the sample, while emerging adults made up 54.9%. Furthermore, participants were asked to evaluate their family's economic status compared to others on a scale from 0 (*very poor*) to 10 (*very wealthy*), and the mean of the participants' self-assessment in living conditions was 4.98 (*SD* = 1.725).

Measures

The measurements of the key constructs are described below. The full items measuring the key constructs are shown in Appendix. Unless indicated, all scales used in this study were on a 5-point Likert scale ranging from *Strongly Disagree* to *Strongly Agree*.

Social Media Affordance

We examined four social media affordances: bandwidth, social presence, anonymity, and ephemerality. Specifically, we adapted measures from Fox and McEwan (2017) along with Sude and Dvir-Gvirsman (2023) to measure bandwidth, social presence, and anonymity, as well as from Ma et al. (2021) to measure ephemerality. Each social media affordance was assessed with four items. An example item for bandwidth is *Social media allows me to convey emotion* (M = 3.760, SD = 0.731; α = .829). An example item of social presence is *Social media makes it feel like the other person is present* (M = 3.793, SD = 0.712; α = .852). Example items for anonymity include *Social media allows me to remain anonymous or unidentifiable if I want to* (M = 2.483, SD = 0.873; α = .846), while example items for ephemerality include *I perceive that the message I post on social media becomes difficult to find after some time* (M = 3.367, SD = 0.920; α = .796).

Online Social Support and Online Disinhibition

To measure online social support, we chose three items from Han et al. (2018), which gauged the perception of online social support from social media friends. To measure online disinhibition, we adopted the subscale of toxic disinhibition from the online disinhibition scale developed by Udris (2014). Our study used three items to measure online social support (e.g., *There are friends on social media who is around when I am in need*, M = 3.690, SD = 0.785; α = .854) and four items to measure online disinhibition (e.g., *I don't mind writing insulting things about others online*, M = 1.880, SD = 0.960; α = .934).

Online Prosocial and Antisocial Behavior

The original scale measuring online prosocial behavior, as developed by Erreygers et al. (2018a), includes ten items. To manage the length of the questionnaire, we selected the five most relevant items for Chinese participants in our study to measure online prosocial behavior, drawing on the findings from Jin et al. (2023). Example items include *Say nice/friendly things to someone online* and *Help someone online* (M = 3.247, SD = 0.985; α = .924). In the same way, we chose five items to measure online antisocial behavior, referencing H. Liu et al. (2014) and Saulnier and Krettenauer (2023). Example items include *Send someone a threatening message online* and *Kick somebody out of an online group conversation or online game for no reason* (M = 1.643, SD = 0.815; α = .908). Participants were asked to self-report the frequency of engaging in such behaviors, as described in the items, over the past six months. The response options were presented on a 5-point Likert-type scale from 1 (*Never)* to 5 (*Always)*.

Control Variables

We controlled for demographic variables such as gender, age, and family economic status. Participants were asked to evaluate their family's economic status compared to others on a scale from 0 (*very poor*) to 10 (*very wealthy*). Two personality traits, namely Machiavellianism and moral identity, were also controlled due to their potential impacts on prosocial and antisocial behaviors (Farrell & Vaillancourt, 2021; Hardy et al., 2015). An instrument subscale for measuring amorality (Dahling et al., 2009) was adopted to measure Machiavellianism for our study (e.g., *I believe that lying is necessary to maintain a competitive advantage over others*; M = 2.189, SD = 0.793; α = .811). Moral identity was assessed using a method adapted from Aquino and Reed (2002), where participants reflected on traits such as "caring" and "compassionate". They visualized a person embodying these qualities and then rated their alignment with this ideal on five statements (M = 3.812, SD = 0.746; α = .845).

Results

Common Method Bias

Survey-based studies that collect data from the same source may suffer from CMB (Conway & Lance, 2010). To assess the potential for CMB, we conducted two different statistical analyses. First, we applied the Harman single-factor test. The results indicated that, after entering all items of key variables into the analysis simultaneously, seven factors with eigenvalues greater than 1 were extracted. The variance explained by the first factor was 27.72%, which is less than the critical threshold of 40%, suggesting that significant CMB is unlikely to be present (Podsakoff et al., 2003).

Second, we employed the unmeasured latent method factor technique (Williams et al., 2010). Specifically, using AMOS, we performed a confirmatory factor analysis (CFA) where we specified a latent method factor in addition to the factors representing the key constructs in the current study. The non-significant differences in goodness-of-fit indices, between the models with and without the latent method factor, imply that the inclusion of the latent method factor did not significantly improve the model fit (ΔTLI = .018, ΔCFI = .019, and ΔRMSEA = −.008), further indicating that CMB is not a major concern in our data.

Measurement Model

In the CFA, each construct was allowed to co-vary freely with maximum likelihood estimation[1]. To verify an acceptable measurement model, a series of fit indices were estimated. According to Hu and Bentler (1999), most of the key fit indices resulting from the CFA in our study reached the threshold (χ^2/df = 2.960, TLI = .938, CFI = .945, RMSEA = .050, RMR = .054) with the exception of GFI (.897). Given that the loading value for one item intended to measure perceived ephemerality (EP4 in Appendix) was below 0.5, we removed it from the model. Subsequently, we re-ran the CFA and found that all the fit indices were acceptable (χ^2/df = 2.887, GFI = .904, TLI = .943, CFI = .950, RMSEA = .049 and RMR = .050).

Additionally, the measurement model was evaluated to assess the reliability, convergent validity, and discriminant validity of the constructs. As presented in Table 1, the item loadings for each construct exceed 0.5, and the composite reliability (CR) values are above 0.7. These figures indicate good internal consistency and reliability of the items. Furthermore, the average variance extracted (AVE) for each construct is greater than 0.5, demonstrating adequate convergent validity (Fornell & Larcker, 1981). Additionally, Table 2 illustrates that the square roots of the AVE values (represented by the diagonal values) surpass the inter-construct correlations (off-diagonal values), thereby confirming the discriminant validity of the scale (Fornell & Larcker, 1981).

Table 1. *Confirmatory Factor Analysis Results of Key Constructs.*

Constructs	Items and loadings	CR	AVE
Bandwidth	BA1(.885); BA2(.873); BA3(.557); BA4(.701)	.846	.587
Social presence	SP1(.697); SP2(.644); SP3(.873); SP4(.869)	.857	.605
Anonymity	AN1(.736); AN2(.769); AN3(.780); AN4(.761)	.847	.580
Ephemerality	EP1(.875); EP2(.890); EP3(.566)	.829	.626
Online social support	OSP1(.821); OSP2(.809); OSP3(.812)	.855	.662
Online disinhibition	OD1(.900); OD2(.919); OD3(.859); OD4(.856)	.935	.782
Online prosocial behavior	OPB1(.735); OPB2(.756); OPB3(.888); OPB4(.911); OPB5(.904)	.924	.710
Online antisocial behavior	OAB1(.838); OAB2(.858); OAB3(.831); OAB4(.806); OAB5(.745)	.909	.667

Table 2. *Discriminant Validity for Measurement Model.*

	1	2	3	4	5	6	7	8
1. Bandwidth	**.766**							
2. Social presence	.703**	**.778**						
3. Anonymity	−.482**	−.444**	**.762**					
4. Ephemerality	.331**	.335**	−.400**	**.791**				
5. Online social support	.486**	.460**	−.345**	.216**	**.814**			
6. Online disinhibition	−.158**	−.133**	.168**	−.003	−.165**	**.884**		
7. Online prosocial behavior	.283**	.303**	−.187**	.141**	.352**	−.071*	**.843**	
8. Online antisocial behavior	−.158**	−.138**	.131**	.008	−.089*	.455**	.052	**.817**

Note. The diagonal values in bold stand for the square roots of the AVE values.

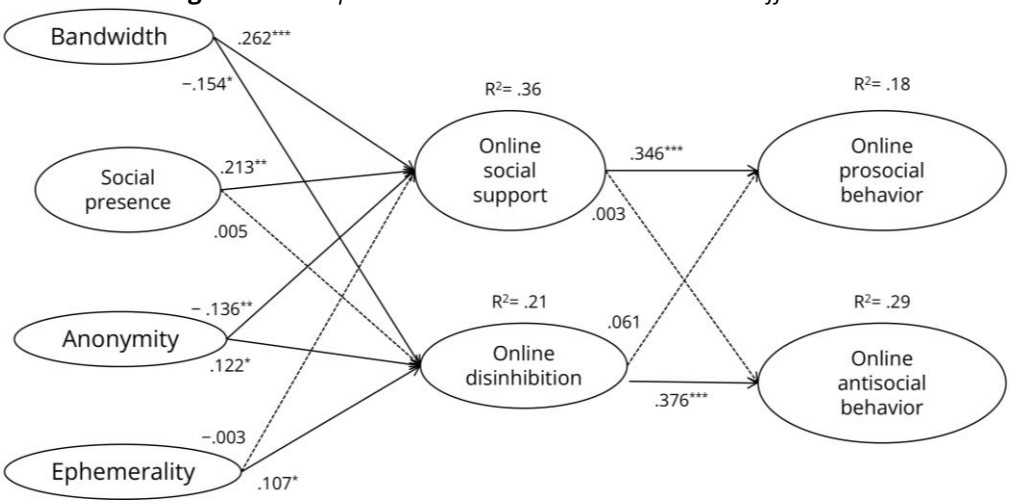
Structural Model for the Whole Sample

In the analysis of the full sample's structural model, we included three demographic variables (i.e., gender, age, family economic status) and two personality traits (i.e., Machiavellianism and moral identity) as covariates to yield more robust results. The model demonstrated a good fit to the data (χ^2/df = 2.699, GFI = .900, TLI = .933, CFI = .943, RMSEA = .047 and RMR = .058).

As Figure 1 illustrates, bandwidth was positively correlated with online social support (β = .262, p < .001) and negatively correlated with online disinhibition (β = −.154, p = .039), thereby supporting H1a and H1b. Social presence was positively correlated with online social support (β = .213, p = .003), while not significantly associated with online disinhibition (β = .005, p = .948), leading to the support of H2a and the rejection of H2b. Anonymity had a positive effect on online disinhibition (β = .122, p = .012), supporting H3. Conversely, it had a negative effect on online social support (β = −.136, p = .004), addressing RQ1. Ephemerality was positively correlated with online disinhibition (β = .107, p = .011), supporting H4, while it was not significantly associated with online social support (β = −.003, p = .935), addressing RQ2. Additionally, Machiavellianism had no significant association with online social support (β = .024, p = .478), and was positively correlated with online disinhibition (β = .324, p < .001). Moral identity was positively correlated with online social support (β = .142, p < .001), while it had no significant association with online disinhibition (β = −.031, p = .389).[2] The four social media affordances in the model, along with the two personality traits and three demographic variables, explained 36% variance of online social support (R^2 = .36) and 21% variance of online disinhibition (R^2 = .21). In the absence of the control variables, the four social media affordances explained 34% of variance in online social support (R^2 = .34) and 8% of variance in online disinhibition (R^2 = .08).

At the same time, online social support was positively correlated with online prosocial behavior (β = .346, p < .001), and was not significantly correlated with online antisocial behavior (β = .003, p = .946). In contrast, online disinhibition was positively correlated with online antisocial behavior (β = .376, p < .001), and was not significantly correlated with online prosocial behavior (β = .061, p = .118). Therefore, H5 and H6 were supported, and RQ5 and RQ6 were addressed. Additionally, Machiavellianism was negatively associated with prosocial behavior (β = −.086, p = .024), and was positively correlated with antisocial behavior (β = .236, p < .001). Moral identity was positively correlated with prosocial behavior (β = .142, p < .001), and had no significant association with antisocial behavior (β = −.051, p = .147).[3] The two constructs of online social support and online disinhibition, together with the two personality traits and three demographic variables, explained 18% variance of online prosocial behavior (R^2 = .18) and 29% variance of online antisocial behavior (R^2 = .29). In the absence of the control variables, online social support and online disinhibition jointly explained 15% of the variance in online prosocial behavior (R^2 = .15) and 23% of the variance in online antisocial behavior (R^2 = .23).

Figure 2. *Conceptual Model With Standardized Path Coefficient.*



Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Mediation Test

To probe the potential mediation effects of online social support and online disinhibition between the relationships of social media affordances and online social behaviors, we utilized the bootstrap confidence interval recommended by Preacher and Hayes (2004), setting a 95% bias-corrected confidence interval based on 5,000 bootstrap samples. Our results indicated that none of the direct effects of social media affordances on the two types of online social behaviors were significant.

As for the indirect effects, as shown in Table 3, online social support positively mediated the relationship between bandwidth and online prosocial behavior; estimate = 0.089, *SE* = 0.042, 95% Boot CI = [0.023, 0.189], and also positively mediated the relationship between social presence and online prosocial behavior (estimate = 0.065, *SE* = 0.034, 95% Boot CI = [0.014, 0.149]). Conversely, online social support negatively mediated the effect of anonymity on online prosocial behavior; estimate = −0.038, *SE* = 0.020, 95% Boot CI = [−0.085, −0.006]. In addition, online disinhibition positively mediated the relationship between anonymity and online antisocial behavior; estimate = 0.043, *SE* = 0.021, 95% Boot CI = [0.006, 0.089], and also positively mediated the relationship between ephemerality and online antisocial behavior; estimate = 0.051, *SE* = 0.023, 95% Boot CI = [0.009, 0.101].

Multiple Group Analysis

Before proceeding with multi-group analyses, we conducted tests for measurement invariance in four steps: configural invariance, metric invariance (weak factorial), scalar invariance (strong factorial), and residual invariance (strict or invariant uniqueness; Putnick & Bornstein, 2016). The results are presented in Table 4. Given that the χ^2 statistic is often criticized for its sensitivity to sample size, we focused on the differences in ΔCFI and ΔRMSEA. Values equal to or smaller than 0.01 indicate the invariance of the model (G. Cheung & Rensvold, 2002). Based on the indices of ΔCFI and ΔRMSEA, we conclude that measurement invariance has been confirmed across gender and age groups at all levels.

Following the assessment of measurement invariance, we conducted a multi-group analysis. To investigate potential discrepancies in path coefficients across different groups, we scrutinized the critical ratios for differences between parameters. By adopting a criterion of absolute values surpassing 1.96 (Byrne, 2008), we were able to ascertain significant differences, across gender groups, for the paths from anonymity to online social support (CR = −3.164) and from online social support to online antisocial behavior (CR = −2.791). Additionally, we confirmed significant differences in the path from online social support to online antisocial behavior across the age groups (CR = 3.222).

Specifically, in the female group, anonymity did not show a significant relationship with online social support (β = .005, *p* = .934), and online social support was positively related to online antisocial behavior (β = .142, *p* = .009). In contrast, for the male group, anonymity was negatively associated with online social support (β = −.282, *p* < .001), and online social support was not significantly related to online antisocial behavior (β = −.074, *p* = .167). Regarding the age group, online social support was negatively associated with online antisocial behavior in the

adolescents' group (β = −.111, *p* = .035), while being positively related to online antisocial behavior in the emerging adults' group (β = .136, *p* = .011).

Table 3. *Indices of Mediation Test With 95% Bootstrap Confidence Intervals.*

	Estimate	Lower	Upper	*p*
Bandwidth → online social support → online prosocial behavior	0.089	0.023	0.189	.009
Bandwidth → online disinhibition → online prosocial behavior	−0.014	−0.051	0.001	.071
Bandwidth → online prosocial behavior	0.163	−0.084	0.394	.166
Bandwidth → online social support → online antisocial behavior	0.023	−0.005	0.078	.101
Bandwidth → online disinhibition → online antisocial behavior	−0.070	−0.157	0.007	.071
Bandwidth → online antisocial behavior	−0.056	−0.278	0.166	.619
Social presence → online social support → online prosocial behavior	0.065	0.014	0.149	.015
Social presence → online disinhibition → online prosocial behavior	0.001	−0.015	0.019	.811
Social presence → online prosocial behavior	0.019	−0.163	0.241	.872
Social presence → online social support → online antisocial behavior	0.017	−0.003	0.063	.117
Social presence → online disinhibition → online antisocial behavior	0.003	−0.063	0.070	.913
Social presence → online antisocial behavior	−0.083	−0.281	0.095	.413
Anonymity → online social support → online prosocial behavior	−0.038	−0.085	−0.006	.019
Anonymity → online disinhibition → online prosocial behavior	0.009	0.000	0.028	.048
Anonymity → online prosocial behavior	0.028	−0.088	0.148	.625
Anonymity → online social support → online antisocial behavior	−0.010	−0.039	0.002	.110
Anonymity → online disinhibition → online antisocial behavior	0.043	0.006	0.089	.027
Anonymity → online antisocial behavior	0.042	−0.061	0.140	.452
Ephemerality → online social support → online prosocial behavior	−0.003	−0.040	0.035	.911
Ephemerality → online disinhibition → online prosocial behavior	0.010	0.000	0.032	.048
Ephemerality → online prosocial behavior	0.072	−0.057	0.209	.248
Ephemerality → online social support → online antisocial behavior	−0.001	−0.017	0.010	.758
Ephemerality → online disinhibition → online antisocial behavior	0.051	0.009	0.101	.018
Ephemerality → online antisocial behavior	0.083	−0.024	0.193	.127

Note. The significant paths are displayed in bold.

Table 4. *Tests for Measurement Invariance Across Gender and Age Groups.*

Model	χ^2 (*df*)	CFI	RMSEA	Model Comp	$\Delta\chi^2$ (Δdf)	ΔCFI	ΔRMSEA
Gender groups (females vs males)							
M1: Configural Invariance	1890.947 (872)	.938	.039	—	—	—	—
M2: Metric Invariance	1930.009 (896)	.937	.038	M1	39.063(24)	−.001	−.001
M3: Scalar Invariance	1974.474 (904)	.935	.039	M2	44.465 (8)	−.002	.001
M4: Residual Invariance	2186.633 (936)	.924	.041	M3	212.159 (32)	−.011	.002
Age groups (adolescents vs emerging adults)							
M1: Configural Invariance	1816.279 (872)	.943	.037	—	—	—	—
M2: Metric Invariance	1869.290 (896)	.942	.037	M1	53.012 (24)	−.001	.000
M3: Scalar Invariance	1887.865 (904)	.941	.037	M2	18.575 (8)	−.001	.000
M4: Residual Invariance	2005.163 (936)	.936	.038	M3	117.298 (32)	.005	.001

Note. *N*_females = 403, *N*_males = 379; *N*_adolescents = 353, *N*_emerging adults = 429.

Table 5. *Path Coefficient Comparison Across the Gender and Age Groups.*

	Females (*N* = 403)		Males (*N* = 379)		CR
	β	*p*	β	*p*	
Bandwidth → Online social support	.275	.002	.243	.041	−0.342
Bandwidth → Online disinhibition	−.153	.101	−.181	.146	−0.942
Social presence → Online social support	.292	< .001	.125	.284	−0.095
Social presence → Online disinhibition	−.024	.798	.052	.672	0.489
Anonymity → Online social support	**.005**	**.934**	**−.282**	**< .001**	**−3.164**
Anonymity → Online disinhibition	.041	.524	.218	.003	−0.689
Ephemerality → Online social support	.016	.761	−.040	.515	1.932
Ephemerality → Online disinhibition	.033	.552	.190	.004	1.803
Online social support → Online prosocial behavior	.400	< .001	.300	< .001	−1.673
Online social support → Online antisocial behavior	**.142**	**.009**	**−.074**	**.167**	**−2.791**
Online disinhibition → Online prosocial behavior	.031	.543	.090	.106	0.675
Online disinhibition → Online antisocial behavior	.335	< .001	.395	< .001	1.074
	Adolescents (*N* = 353)		Emerging adults (*N* = 429)		
	β	*p*	β	*p*	
Bandwidth → Online social support	.496	.002	.175	.034	−1.471
Bandwidth → Online disinhibition	−.343	.043	−.099	.222	1.215
Social presence → Online social support	.028	.860	.224	.005	−0.422
Social presence → Online disinhibition	.194	.261	−.038	.627	−0.043
Anonymity → Online social support	−.134	.050	−.147	.024	1.229
Anonymity → Online disinhibition	.172	.019	.074	.245	−1.196
Ephemerality → Online social support	.019	.746	.012	.827	−0.920
Ephemerality → Online disinhibition	.059	.346	.138	.017	0.994
Online social support → Online prosocial behavior	.383	< .001	.318	< .001	−1.612
Online social support → Online antisocial behavior	**−.111**	**.035**	**.136**	**.011**	**3.222**
Online disinhibition → Online prosocial behavior	.080	.178	.047	.375	−0.477
Online disinhibition → Online antisocial behavior	.368	< .001	.367	< .001	−0.078

Note. (1) CR stands for critical ratios for differences between parameters. (2) only CR value greater than 1.96 are displayed in bold.

Discussion

Based on survey data collected from Chinese Generation Z, we examined the relationship between social media affordances and online social behaviors, by considering the mediation roles of online social support and online disinhibition. Additionally, we analyzed the differences in these pathways across gender and age groups, providing further insights into the conditional boundaries of these relationships. These analyses contribute to existing literature by adding a more nuanced examination of how and when specific social media affordances either facilitate or hinder online prosocial or antisocial behaviors among Generation Z.

Among all the relationships, the emphasis of discussion is focused on several findings that are characterized by their importance and intriguing nature. First, aside from the hypotheses (i.e., H1a, H1b, H2a, H3, H4, H5, and H6) which were supported by our data, we found that H2b was not confirmed; specifically, social presence did not negatively relate to online disinhibition as expected. Second, we found that anonymity was negatively associated with online social support (RQ1), while ephemerality was not significantly related to online social support (RQ2). Next, we found that the relationship between online social support and online antisocial behavior demonstrated distinct patterns across gender and age groups (RQ3 and RQ9). We will discuss these findings below.

Regarding the relationship between social presence and online disinhibition (H2b), there are several plausible explanations for the lack of a significant relationship between the two variables among Chinese Generation Z. First, while high social presence usually increases awareness of being observed, Generation Z may be more adept at managing their online personas, thus allowing them to maintain a favorable self-presentation without feeling

overly inhibited (Agarwal et al., 2024). Second, Generation Z may prioritize peer validation differently, focusing more on authenticity and less on conforming to perceived social norms. This shift in focus may not necessarily lead to lower levels of online disinhibition, despite higher social presence of others (Booker, 2024; He, 2025). Third, "the others" on social media often consist of strangers or individuals whose opinions are not valued by people (Elsayed, 2021; Kong, 2015). Consequently, individuals may feel less pressure to conform to social norms, leading to behaviors that are more disinhibited.

Regarding the research question about the relationship between anonymity and online social support (RQ1), we interestingly found a negative association between the two variables. Anonymity can impact users' willingness to disclose personal information online, which in turn affects the level of online social support received. However, the multi-group analysis showed that the negative effect of anonymity on online social support was only exhibited in the male population. Among females, anonymity was not found to be significantly associated with online social support. This discrepancy across gender groups can be explained by gender differences in communication styles. Research has shown that females tend to be more expressive and open in their communication compared to males (Kimbrough et al., 2013). Additionally, females often require social cues and a sense of presence to feel comfortable in disclosing information, which is essential for receiving social support. As a result, females, who are generally more reliant on social cues, may find that their need for connection and support is less hindered by anonymity. Consequently, they may still engage in supportive interactions even when operating anonymously, leading to the non-significant relationship between anonymity and social support among females.

With regards to the research question concerning the relationship between ephemerality and online social support (RQ2), we found that the former was not significantly related to the latter. As we argued earlier, the impact of ephemerality on online social support could be two-fold: On one hand, the temporary nature of information can prevent disclosed information from causing harm, creating a boundary between public and personal informational spaces. This encourages users to engage in self-disclosure, potentially increasing online social support. On the other hand, the transient nature of interactions can hinder the formation of deeper connections necessary for substantial social support. These two opposite impacts could cancel each other out, resulting in non-significant findings. Nevertheless, it is also plausible that there is no association between ephemerality and perceived online social support to begin with. Hence, future research can be conducted to investigate if there is a suppression effect or if the two variables are simply not related.

Another finding worth discussing is the relationship between online social support and online antisocial behavior (RQ3). While the sample as a whole did not show significance, our investigation uncovered distinct patterns across gender and age groups. First of all, the relationship was positive among females and not significant among males. As Walther (2023) noted, prosocial and antisocial behaviors are not necessarily opposites; the reinforcement of small, like-minded groups might result in hate towards other groups. In essence, individuals who receive high levels of supportive interaction from their small groups may be more likely to express antisocial behaviors towards other groups. This phenomenon may potentially elucidate the different impacts of online social support on antisocial behavior across gender groups. In comparison to males, females are more likely to form tight-knit groups due to their extensive contacts and closer relationships within their social support networks (Fuhrer & Stansfeld, 2002).

Meanwhile, the relationship between online social support and online antisocial behavior was found to be negative for adolescents and positive for emerging adults. This result may be explained by the distinct developmental stages of Generation Z. Despite extensive social media use among individuals in this generation, Chinese adolescents often experience significant parental supervision when using the internet (The Paper, 2024). This supervision could steer their online social networks towards prosocial norms, which can help mitigate antisocial tendencies. In contrast, emerging adults typically engage in a wider range of online communities with less oversight. These communities may encompass more complex and conflicting social dynamics, where antisocial behavior is sometimes tolerated or even encouraged. In such environments, online social support may inadvertently reinforce online antisocial behavior, which aligns with previous arguments (Walther, 2023). Given these possible differences, further investigation is needed in the future to better understand the underlying mechanisms at play.

Additionally, while the findings concerning control variables, including three demographic variables (i.e., gender, age, and family economic status) and two personality traits (i.e., Machiavellianism and moral identity), are not the focus of our study, they offer nuanced insights into how these variables influence online social behaviors. Notably, none of the three demographic variables significantly correlated with either online prosocial or antisocial behavior,

suggesting that these demographic factors do not play a substantial role in predicting how individuals engage in these online social behaviors. This implies that other factors, such as contextual influences or personality traits, might be more significant in determining online social behaviors. Regarding the two personality traits, results indicate that Machiavellianism was negatively associated with prosocial behavior and positively correlated with antisocial behavior. This aligns with the notion that individuals with high Machiavellianism tend to prioritize their own interests over the well-being of others, leading to a lower likelihood of engaging in prosocial actions and a greater likelihood of engaging in antisocial actions (Farrell & Vaillancourt, 2021). In contrast, moral identity was positively correlated with prosocial behavior, but showed no significant association with antisocial behavior. This result indicates that having a strong moral identity does not necessarily prevent individuals from engaging in negative behaviors, even though it plays a positive role in fostering prosocial behaviors (Hardy et al., 2015). Overall, the findings highlight the contrasting roles of these two personality traits in shaping online behaviors. Machiavellianism appears to promote antisocial behaviors while moral identity appears to encourage prosocial ones, thereby emphasizing the importance of personality traits in determining online social behaviors.

Implications and Limitations

This study provides significant theoretical contributions by examining social media use through the lens of affordances, offering a comprehensive understanding of user interactions with media and technology as well as their effects on Generation Z's online social behaviors. First, by focusing on affordances, this research goes beyond the dominated content exposure analysis when exploring social media impacts. Also, measuring social media use through an affordance lens reveals how platform features enable or constrain user behaviors, offering deeper insights than mean frequency counts of actual use. Second, the research addresses a literature gap by investigating both prosocial and antisocial behaviors simultaneously, thereby revealing the complex relationship between them. Third, while the TIME model serves as a foundation, our research extends its applicability by investigating the mediating roles of online social support and online disinhibition. This exploration not only deepens our understanding of the underlying mechanisms at play, but also contributes to the theoretical discourse by identifying how specific social media affordances can lead to both online prosocial and antisocial behaviors. Lastly, our multi-group analyses based on gender and age provide a nuanced perspective that highlights the variability in user experiences and behaviors, thereby refining existing theoretical assumptions about the impacts of social media affordances on individuals' online social behaviors.

Practically, this study's findings serve as a crucial reference for parents and educators, helping them understand how social media use influences online prosocial and antisocial behaviors in Generation Z. This understanding enables them to devise effective strategies to prevent harmful online interactions. For instance, interventions and education programs should address the negative effects of anonymity and ephemerality on online antisocial behavior through the mediation of online disinhibition. These strategies should also consider group differences, ensuring they effectively leverage the negative relationship between online social support and antisocial behavior without compromising the positive mental health benefits of online social support. For example, online platforms should offer gender-sensitive features, such as optional anonymity settings, to enhance online social support by catering to males' need for identity visibility and females' preference for expressive communication. Additionally, the findings can guide social media platform developers in creating safer environments and promoting positive engagement through features that encourage supportive interactions, such as increasing perceived bandwidth and social presence.

However, this study is not without limitations. First, since it utilizes a convenience sample, our findings cannot be generalized to the entire Generation Z population in China. Further research with representative samples is necessary to enhance the generalizability of the results. Second, the reliance on cross-sectional data in our study makes it hard for causal inference. The relationships in our proposed model could be bidirectional; for instance, individuals who engage in more online prosocial behavior might also receive more social support, which could in turn enhance their perception of social presence of other users. Therefore, employing additional research methods, such as longitudinal surveys or experiments, is essential in future studies to clarify the direction of influence among the constructs examined. Third, this study focuses on Generation Z as the target population. However, it is important to note that this concept originates from a Western perspective and may not fully pertain to the Chinese context. Future research should therefore conduct cross-cultural comparative studies to better understand the variations among Generation Z across different cultural backgrounds. Additionally, although we performed a multi-group analysis across age groups to examine how social media affordances relate to

participants' online prosocial and antisocial behaviors, the inclusion of a broad range within the sample may limit the depth of our findings. Future studies could benefit from a more narrowly defined age cohort to enhance precision and relevance. Finally, this study found that the relationship between online social support and antisocial behavior is quite complex, with varying impact patterns in different demographic groups. This requires further examination to elucidate how and why such differences exist.

Footnotes

[1] Given the sensitive nature of our variables, especially online prosocial and antisocial behaviors, we implemented measures to minimize potential social desirability bias when we conducted the survey (details are provided in Section 3.1). After data collection, we also assessed the skewness of online prosocial and antisocial behaviors, with results indicating that the skewness value for both constructs were −0.309 and 1.521, respectively. According to Hair et al. (2021, p. 66), a skewness value between −1 and +1 is considered excellent, while a value from −2 to +2 is generally acceptable. Values beyond −2 and +2 suggest substantial non-normality. Therefore, although the skewness value for antisocial behavior is slightly elevated, it remains within an acceptable range. Additionally, some statisticians (e.g., Bentler, 1990; Kline, 2023) argue that if the sample number is sufficiently large, maximum likelihood (ML) estimation is considered to be suitable for data analysis. Our study's sample size of 728 far exceeds the recommended minimum of 200, allowing us to use ML estimation for our data analysis. In sum, we believe the approach of ML estimation is acceptable in our study given the data distribution and the large sample number.

[2] Regarding the demographic variables, the results indicate that gender was not significantly related to online social support (β = −.029, p = .378), but was positively associated with online disinhibition (β = .127, p < .001). Age showed a negative relationship with online social support (β = −.066, p = .049) and no significant association with online disinhibition (β = −.016, p = .638). Additionally, family economic status was positively related to online social support (β = .071, p = .034), but had no significant association with online disinhibition (β = .008, p = .814).

[3] With regards to the demographic variables, the results indicate that gender was not significantly related to prosocial behavior (β = −.012, p = 0.742) or antisocial behavior (β = .039, p = .244). Similarly, age showed no significant relationship with prosocial behavior (β = −.024, p = .486) or antisocial behavior (β = .009, p = .775). Additionally, family economic status was not significantly related with prosocial behavior (β = .015, p = .658) or antisocial behavior (β = .045, p = .167).

Conflict of Interest

The authors have no conflicts of interest to declare.

Use Of AI Services

The authors declare they have not used any AI services to generate or edit any part of the manuscript or data.

Authors' Contribution

Wu Li: conceptualization, methodology, formal analysis, writing—original draft, writing—review & editing, project administration. **Pengya Ai**: methodology, writing—original draft. **Tian You Guo**: methodology, writing—original draft. **Lianshan Zhang**: conceptualization, writing—review & editing.

Acknowledgement

Ethic Approval

The study was approved by the IRB at the authors' institution.

Data Statement

The data set used in this study is available from the corresponding author on reasonable request.

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Appendix

Table A1. *Measurement Items of Key Constructs.*

Constructs	Code	Items	Reference
Bandwidth	BA1	Social media allows me to convey emotion.	Fox & McEwan (2017); Sude & Dvir-Gvirsman (2023)
	BA2	Social media allows me to express emotion.	
	BA3	Social media allows me to receive cues about the other person is feeling.	
	BA4	In social media, just what I want to say, but how I want to say it.	
Social presence	SP1	Social media makes it feel like the other person is present.	Fox & McEwan (2017); Sude & Dvir-Gvirsman (2023)
	SP2	Social media makes it feel like the person I'm communicating with is close by.	
	SP3	Social media makes it feel like other people are really with me when we communicate.	
	SP4	Social media allows me to determine if someone is really "there" when communicating.	
Anonymity	AN1	Social media allows me to remain anonymous or unidentifiable if I want to.	Fox & McEwan (2017); Sude & Dvir-Gvirsman (2023)
	AN2	Social media can mask my true identity when communicating.	
	AN3	When I communicate on social media, the receiver doesn't necessarily know it's me.	
	AN4	I can post content to social media without having my user name attached or anyone knowing who I am.	
Ephemerality	EP1	I perceive that the message I post on social media becomes difficult to find after some time.	Ma et al. (2021)
	EP2	For my friends, the message I post on social media is only visible for a limited period of time.	
	EP3	After a while, the audience can no longer see the message I post on social media.	
	EP4	If I activate "Last Three Days/One Month/Six Months Visibility", I perceive the message I post on social media is existing temporarily for the audience.	
Online social support	OSP1	There are friends on social media who is around when I am in need.	Han et al. (2018)
	OSP2	I can talk about my problems with online friends on social media.	
	OSP3	I have friends on social media with whom I can share my joys and sorrows.	
Online disinhibition	OD1	I don't mind writing insulting things about others online.	Udris (2014)
	OD2	It is easy to write insulting things online because there are no repercussions.	
	OD3	There are no rules online therefore you can do whatever you want.	
	OD4	Writing insulting things online is not bullying.	
Online prosocial behavior	OPB1	Say nice/friendly things to someone online.	Erreygers et al. (2018a); Jin et al. (2023)
	OPB2	Help someone online.	
	OPB3	Cheer up someone online.	
	OPB4	Comfort/console someone online.	
	OPB5	Support someone online.	
Online antisocial behavior	OAB1	Send someone a threatening message online.	H. Liu et al. (2014); Saulnier & Krettenauer (2023)
	OAB2	Kick somebody out of an online group conversation or online game for no reason.	
	OAB3	Spread a rumor about someone online.	
	OAB4	Create a fake identity to fool someone else online.	
	OAB5	Insult somebody online for fun (e.g., trolling).	

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