The Influence of Social Networking Self-Efficacy on Friendship Quality: A Moderated Mediation Model

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Abstract: The quality of friendship is a key indicator in personal relationships. Investigating new friendship patterns, particularly individual cognitive and behavioral patterns in the digital age, this study administered the social networking self-efficacy scale, Online communication Motivation Scale, Friendship Quality Scale, and the Internet Self-Representation Scale to 935 college students. Findings indicated that social networking self-efficacy positively predicts friendship quality. Additionally, online communication motivation partially mediated the relationship between social networking self-efficacy and friendship quality. Moreover, online Self-Disclosure moderated the initial stage of this mediation model. These results aim to help students shape a healthy perspective on friendships, utilize online resources for interpersonal interactions, and provide a theoretical foundation for mental health education in academic institutions.

1. Introduction

According to the 53rd "China Internet Development Statistics Report," as of December 2023, the number of instant messaging users in China reached 1.06 billion, accounting for 97.00% of internet users. As "digital natives," China college students utilize online social tools like QQ and WeChat to maintain interpersonal relationships[1]. The internet, with its anonymity, timeliness, and interactivity, provides a free space for communication, enabling students to broaden their social circles, experience diverse social roles, and showcase their identities[2-3]. The online interpersonal communication style not only influences individuals' thinking and behavior patterns but also impacts the construction of friendship quality[4]. Therefore, whether social networking promotes or undermines friendship quality has always been a question.

1.1 Definition and Function of Friendship Quality

Friendship quality is a critical indicator of the emotional connection between individuals and their friends[5]. Numerous studies have shown that high friendship quality promotes individual mental health. Zou (1988) argued that high-quality friendships are an essential source of social and emotional support, aiding individuals in better growth[6]. Hu (2023) proposed that friendship quality is significantly and positively correlated with positive psychological capital, and high quality helps individuals gain comprehensive understanding of their own abilities and values, promoting their

mental health development[7]. Positive and healthy friendship relationships can promote the development of individuals' self-concept, increasing their sense of security and intimacy[8]. Kingery (2011) found that high-quality friendships can mitigate the negative impact of negative emotions, reducing the likelihood of problematic behaviors[9].

1.2 The Influence of Social Networking Self-Efficacy on Friendship Quality

Self-efficacy refers to individuals' confidence in their ability to utilize their skills to complete a task[10]. Social self-efficacy is the application of self-efficacy in social interactions. It refers to individuals' confidence in their ability to participate in and maintain the social interaction tasks required for interpersonal relationships[11]. Individuals with high social self-efficacy believe they have the ability to cope with social activities and tend to actively establish connections with others, which helps improve their social skills and ultimately influences their interpersonal communication. Some researchers have also found that social self-efficacy positively predicts subjective well-being, parent-child communication, and children's online interpersonal communication[12-13]. Social networking self-efficacy is the embodiment of social self-efficacy in online situations, specifically referring to individuals' subjective beliefs in their ability to develop and maintain interpersonal relationships using network social tools, utilizing text, images, voice, and video and other network technologies[14].

Social self-efficacy significantly influences friendship quality: on one hand, social self-efficacy has a scale effect on the formation of friendship networks, i.e., the higher the social self-efficacy, the more friends individuals have; on the other hand, social self-efficacy has a structural influence on the formation of friendship networks, i.e., individuals with high social self-efficacy are more likely to become the center of social networks[15]. Therefore, we propose hypothesis 1: Social networking self-efficacy will positively predict friendship quality.

1.3 The Mediating Role of Online Communication Motivation

Online communication motivation refers to the coordination of self-avoidance attitudes, consciousness, and value choices in specific online communication situations[16]. The uses and gratifications theory posits that individuals have certain motivations to use the network for socializing to satisfy their social needs[17].

Previous studies have pointed out that self-efficacy plays a crucial role in motivating individuals' cognitive processes. The increase or decrease in self-efficacy will affect individuals' interpersonal communication motivation[18]. The higher an individual's self-efficacy, the more confident they are in their interpersonal communication abilities, which can bring valuable returns, and the stronger their communication motivation will be. In addition, online communication motivation can also predict online peer relationships. An individual's satisfaction and intimacy with their online relationships depend on their motivation[16]. Based on the important role of online communication motivation in human interaction, we propose hypothesis 2: Online communication motivation will mediate the influence of social networking self-efficacy on friendship quality.

1.4 The Moderating Role of Online Self-Disclosure

Self-disclosure refers to the process by which an individual reveals information about themselves to others with whom they are exchanging information, and shares their personal thoughts and feelings[19]. Online Self-Disclosure, as a new form of self-disclosure in the information age, is gradually replacing traditional interpersonal self-disclosure, becoming the primary method of self-disclosure. Online Self-Disclosure is defined as an individual's online behavior of using various means to convey information to others on the internet, in order to maintain online communication or

meet personal needs[20]. The forms of online Self-Disclosure are diverse; individuals can engage in self-disclosure on social networking sites through various means such as updating status, uploading photos, and publishing blogs/diaries/comments, which represents an extension of real-life self-disclosure in the online context[21].

Previous studies have shown that individuals with high self-efficacy have confidence in many things, are not worried about failure, and are therefore willing to actively attempt and challenge many tasks. They are also not shy about disclosing themselves to others, resulting in a higher level of self-disclosure[22]. Moreover, individuals with higher self-efficacy are more likely to become core nodes in social networks and exhibit stronger self-disclosure in social interactions[23].

Based on the impression management model in network chat rooms, individuals have the motivation to establish and maintain interpersonal relationships. They utilize the anonymity of chat rooms to reveal their information and establish and maintain online relationships with others[24]. Traditional interpersonal communication theory points out that as time goes by, the depth and breadth of individuals' self-disclosure will increase, and the increase in self-disclosure will make individuals more satisfied with the relationship between the two parties. In the context of the internet, relevant studies have shown that the breadth and positivity of self-disclosure are significantly positively correlated with intimacy[25]. In social networking sites, individuals' self-disclosure has a positive impact on their interpersonal relationships. On one hand, revealing positive emotional states can enhance the connection individuals feel with their friends, facilitating the development and maintenance of interpersonal relationships; on the other hand, revealing information containing negative emotions can prompt individuals to trust others more, thereby deepening the intimacy between individuals. In general, both positive and negative online self-disclosure can enhance the connection between social networking site users and their friends to a certain extent. This can partially compensate for the loss of communication motivation in individuals with low social networking self-efficacy. Therefore, we propose hypothesis 3: Online Self-Disclosure will moderate the first stage of the mediation model where social networking self-efficacy influences friendship quality through online communication motivation.

In summary, friendship accompanies humans throughout their lives, and its quality is of great significance for the development of individual physical and mental health. However, previous research has mainly explored the development patterns of friendship quality in traditional contexts, and further investigation is needed for new friendship patterns in the digital age, especially the mechanism of the influence of individual cognitive and behavioral patterns on friendship quality. Based on the above theoretical considerations, we focus on exploring the current status and basic characteristics of college students' social networking and the influence of social networking self-efficacy on their friendship quality and its underlying mechanism. The research framework is shown in Figure 1.
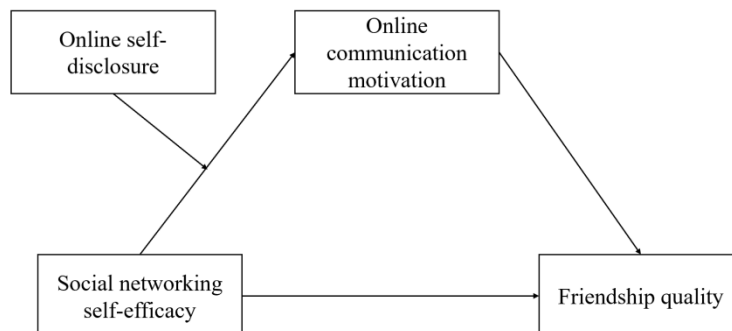

Figure 1: Hypothesized Model

2. Method

2.1 Participants

Using cluster sampling, a survey was conducted among 1,000 college students in a university in Hubei. After removing invalid questionnaires (those that were not fully completed, those with patterned responses, and other non-valid responses), 65 questionnaires were excluded, resulting in 935 valid questionnaires, with an effective response rate of 93.5%. The average age was 19.01 ±1.22, with 336 males, 591 females, and 8 missing entries. The number of students from freshmen to fifth-year students was 443, 223, 253, 4, and 1, respectively, with 11 missing entries. There were 379 students from urban areas and 551 from rural areas, with 5 missing entries.

2.2 Measures

2.2.1 Social Networking Self-Efficacy Scale

The study utilized the College Students' Social Networking Self-Efficacy Scale by Yang (2016) [14]. This questionnaire consists of 20 items divided into four dimensions: interpersonal communication, self-protection, self-disclosure, and self-control. Participants rated each item on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Average scores of all items were computed, with higher scores representing higher levels of social networking self-efficacy. In the present study, the measure had adequate internal consistency (α = 0.91), and confirmatory factor analysis indicated good structural validity (χ^2/df = 2.63, RMSEA = 0.04, CFI = 0.97, TLI = 0.96).

2.2.2 Internet Communication Motivation Scale

The study adopted the Internet Communication Motivation Scale developed by Zhang et al. (2006)[27]. This questionnaire comprises 17 items and is divided into two dimensions: information acquisition motivation and interpersonal emotional motivation. Participants rated each item on a 7-point scale ranging from 1 (completely disagree) to 7(completely agree). Average scores of all items were computed, with higher scores representing higher levels of internet communication motivation. In the present study, the measure had adequate internal consistency (α = 0.92), and confirmatory factor analysis indicated good structural validity ((χ^2/df = 2.95, RMSEA = 0.05, CFI = 0.98, TLI = 0.97).

2.2.3 Online Self-Disclosure Scale

The study used the Online Self-Disclosure Questionnaire translated and revised by Cao (2014)[28]. This questionnaire consists of 18 items and is divided into five dimensions: consciousness, quantity, positivity, depth, and honesty. Participants rated each item on a 7-point scale ranging from 1 (completely disagree) to 7(completely agree). Average scores of all items were computed, with higher scores representing higher levels of online self-disclosure. In the present study, the measure had adequate internal consistency (α = 0.92), and confirmatory factor analysis indicated good structural validity (χ^2/df = 3.58, RMSEA = 0.05, CFI = 0.98, TLI = 0.96).

2.2.4 Friendship Quality Scale

The study employed the Friendship Quality Questionnaire developed by Parker and Asher (1993) and revised by Zou et al. (1998)[29]. This questionnaire consists of 38 items and is divided into five dimensions: trust and support, companionship and entertainment, affirmation of value, intimate disclosure and communication, and conflict and betrayal. Participants were instructed to consider

their real-life interactions with their most important friend when responding, and rated each item on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Average scores of all items were computed, with higher scores representing a higher quality of friendship. In this study, the Cronbach's α coefficient for this scale was 0.94, and confirmatory factor analysis indicated good structural validity ((χ^2/df = 2.48, RMSEA = 0.04, CFI = 0.96, TLI = 0.96).

2.3 Procedure and Data Processing

The Research Ethics Committee of the corresponding author's institution reviewed and approved this study. The tests were administered in a group setting by class, with three undergraduates responsible for the uniform distribution and collection of questionnaires. Subsequently, SPSS 26.0 was used to conduct relevant data analyses. The Process 4.1 macro was employed to perform a moderated mediation test. Based on Model 7, the mediating effects and the moderating mediating effects were calculated using bias-corrected bootstrapping with 5000 samples.

3. Results

3.1 Preliminary analyses

Descriptive statistics and Pearson product moment correlation coefficients of study variables are presented in Table 1. Specifically, social networking self-efficacy was found to have a significant positive correlation with online communication motivation (r=0.52, p<0.01), online self-disclosure (r=0.35, p<0.01) and friendship quality (r=0.48, p<0.01). Additionally, there was a significant positive correlation between online communication motivation and the quality of friendship (r=038, p<0.01), as well as between online self-disclosure and friendship quality (r=0.19, p<0.01).

Table 1: Descriptive statistics and correlations for all study variables (N=935)

Variables	$M \pm SD$	1	2	3	4
1 social networking self-efficacy	3.76±0.60	1			
2 online communication motivation	4.46±1.00	0.52**	1		
3 online self-disclosure	3.92±1.02	0.35**	0.53**	1	
4 friendship quality	3.75±0.59	0.48**	0.38**	0.19**	1

Note. *p<0.05, **p<0.01, ***p<0.001

3.2 Testing for moderated mediation

We completed the moderated mediation analysis using the PROCESS macro (Model 7) to obtain bootstrapped confidence intervals for mediation model at different levels of online self-disclosure. the results presented in Tables 2 and 3. All the covariates were included in the models as control variables. The social networking self-efficacy positively predicted the online communication motivation (β=0.60, p<0.001), and the online self-disclosure also positively predicted online communication motivation (β=0.40, p<0.001), Moreover, social networking self-efficacy interacted with online self-disclosure in predicting online communication motivation (β = 0.07, p<0.05), and 95% confidence interval = [-0.13, -0.01], which does not include 0.

To elucidate how online self-disclosure moderates the relationship between social networking self-efficacy and online communication motivation, simple slope tests were conducted based on the values of online self-disclosure, divided into high and low groups (one standard deviation above and below

the mean), and a simple effects analysis plot was created, as shown in Figure 2. Specifically, when the level of online self-disclosure was low (-1SD), the positive predictive effect of social networking self-efficacy on online communication motivation was stronger (b_{simple}=0.07, $p<0.001$), with a 95% confidence interval of [0.05, 0.10]. Conversely, when the level of online self-disclosure was high (+1SD), the positive predictive effect of social networking self-efficacy on online communication motivation was weaker (b_{simple} =0.06, $p<0.001$), with a 95% confidence interval of [0.04, 0.08].

Table 2: Testing the moderated mediation effects (N=935)

	M				Y			
	β	SE	t	CI	β	SE	t	CI
X	0.60	0.05	13.05***	[2.51, 4.82]	0.36	0.03	11.62***	[0.30, 0.42]
M	—	—	—	—	0.11	0.02	5.95***	[0.07, 0.15]
W	0.40	0.03	14.71***	[0.35, 0.46]	—	—	—	—
X×W	-0.07	0.03	-2.17*	[-0.13, -0.01]	—	—	—	—
C₁: gender	0.04	0.05	0.70	[-0.07, 0.15]	0.27	0.03	8.09***	[0.21, 0.34]
C₂: grade	-0.05	0.05	-1.06	[-0.14 ,0.04]	-0.08	0.03	-2.75*	[-0.14, -0.02]
C₃: age	0.04	0.03	1.33	[-0.02, 0.11]	0.00	0.02	0.01	[-0.04, 0.04]
R²	0.41				0.32			
F	105.76***				86.92***			

Note. X represents social networking self-efficacy; M represents online communication motivation; W represents online self-disclosure; Y represents friendship quality.

Table 3: Analysis of Moderated Mediation Effects (N=935)

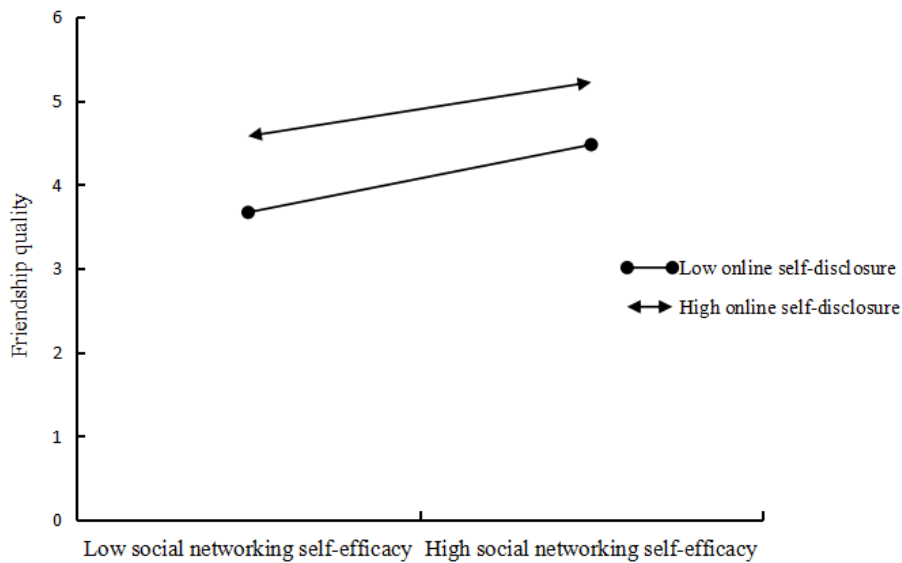|	Indirect effect/Index	SE	LLCI	ULCI
W:M-1SD	0.07	0.01	0.05	0.10
W:M	0.07	0.01	0.04	0.09
W:M+1SD	0.06	0.01	0.04	0.08

Figure 2: The Moderating Role of Online Self-Disclosure

4. Discussion

4.1 The effect of social networking self-efficacy on friendship quality

Our results presented that social networking self-efficacy significantly positively predict friendship quality. It indicated that as social networking self-efficacy increases, so does the quality of friendships, which supports Hypothesis 1. This finding aligns with existing research results, which suggest that higher social self-efficacy is beneficial for maintaining interpersonal relationships and improving relationship quality[5]. According to the Social Information Processing (SIP) theory, an individual's beliefs influence their behavior[30]. In the online context, individuals with high social self-efficacy believe they can handle social activities and reap rewards from them, leading to a greater tendency to actively engage with others. It facilitates social interactions and enhances friendship quality. To some extent, this result also supports self-efficacy theory, as numerous studies have shown that self-efficacy affects an individual's motivation, beliefs, and behaviors[31]. Individuals with higher social self-efficacy have more confidence in their online interpersonal interactions, resulting in higher friendship quality.

4.2 The mediating role of online communication motivation

Online communication motivation plays a significant partial mediating role between social networking self-efficacy and friendship quality. On one hand, social networking self-efficacy had a significant positive impact on friendship quality; on the other hand, social networking self-efficacy could indirectly affect college students' friendship quality through online communication motivation, supporting Hypothesis 2. Bandura's self-efficacy theory provides a theoretical basis for this mediating effect. Self-efficacy refers to an individual's subjective assessment of their confidence in completing a task, and the outcome of this assessment directly affects the individual's motivation in that area. Individuals with high levels of social networking self-efficacy have great confidence in their social abilities, which in turn prompts them to have a strong motivation for online interaction. Maslow's motivation theory suggests that individual's motivation influences the development of their behavior. When someone has strong motivation for online interaction, it encourages them to engage in social activities with friends, thereby helping to improve their friendship quality.

4.3 The moderating role of online self-disclosure

Online self-disclosure played a moderating role in the first half of the mediating model, where social networking self-efficacy affects friendship quality through online communication motivation. According to the social penetration theory of interpersonal communication, the process of "disclosure-feedback-relationship establishment or development" suggests that self-disclosure on social medias promotes the development of interpersonal relationships[32]. Self-disclosure in the online environment can deepen trust among peers, improve interpersonal relationships, enhance individual subjective well-being, and promote the development of mental health, serving as a supplement and development of offline interactions. The positive impact of self-disclosure on one's interpersonal relationships helps to improve individuals' social self-efficacy. College students with highe social networking self-efficacy are more confident in themselves and others, and they believe they can handle situations that arise during online interpersonal interactions, which helps to enhance their motivation for online interaction.

4.4 Limitations

This study has several limitations that must be considered when interpreting the findings. First, in terms of sampling, the participants in this study were undergraduate students and the diversity of the sample was not strictly controlled, which limiting the representativeness of the sample. Second, in terms of research methods, cross-sectional approach has limitations, so future studies should collect and analyze data employing longitudinal designs. Third, in terms of research content, this study only explored the impact of online social self-efficacy on friendship quality and the mediating process in the online context, without examining the influence of individuals' cognitive and behavioral patterns in real-life situations on friendship quality.

5. Conclusions

(1) Social networking self-efficacy can significantly positively predict the quality of friendships among college students. (2) Online communication motivation plays a partial mediating role between social networking self-efficacy and friendship quality, meaning that social networking self-efficacy can indirectly influence the quality of friendships through online communication motivation. (3) Online self-disclosure moderates the first half of the mediation model where social networking self-efficacy affects friendship quality through online communication motivation.

Acknowledgement

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