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More Talk, More Support? The Effects of Social Network Interaction and Social Network Evaluation on Social Support via Social Media

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Introduction: Do more friends and more frequent interactions on social media result in more social support? The impact of variables such as interaction size and frequency on the social support individuals receive via social platforms has been studied from the perspective of social networks, and some studies have focused on the role of interaction topics from the perspective of private engagement. Little research has been done on the impact of affect control embedded in social networks. The emotion-first nature of social media and the rise of affect control theory mean that this perspective deserves attention.

Methods: This study examined 634 WeChat users by means of an online survey on variables related to social media use, such as social network size, interaction frequency, users' evaluation of network members, and personal topic involvement, and then tested the influencing mode of these variables on people's perceived social support through chain mediation analysis using Model 80 of the process in spss.

Results: (1) Interaction size influences perceived social support by affecting personal topic involvement; (2) Interaction frequency does not directly mediate the relationship between interaction size and perceived social support, but mediates the relationship in a chain by affecting personal topic involvement; and (3) Social network evaluation not only directly mediates the relationship between interaction size and perceived social support, but also further mediates the relationship by influencing personal topic involvement.

Conclusion: The study confirmed the role of affective control in people's perceived social support through social network interactions. Those people talk about personal matters with individuals who have greater evaluation, potency, and activity in social networks are more likely to get perceived social support. The study draws our attention to the role of affection control in interpersonal relationships in the era of social media mediating people's daily interactions.

Keywords: social media, social interaction, social support, interaction frequency, EPA

Introduction

Social media has become a place in which people carry out their daily lives. Social relationships and networks are mediated and reconstructed by social media platforms, which raises the question of how people gain social support in their daily interactions on social media. Traditional studies analyzing the impact of social networks on social support have focused on social network size,[1] structure,[2] function[3] and other variables closely related to social network characteristics. The development of social media has prompted researchers to pay attention to the medium.[4] Scholars such as Utz, Caba, Lin have studied the effect of social networking site use on perceived social support.[5–7] However, studies of the relationship between social media use and social support acquisition have mainly focused on the variables of media use orientation, such as frequency, intensity, purpose, and motivation for use rather than the interpersonal networks that people have constructed in the Internet space.[8] Actually, social networks born from social media are merging with people's original relationship networks, affecting access to social support. Lu et al examined the impact of differences in connecting interpersonal networks across social media sites on people's social support based on the concept of media affordance.[9] Borrowing from Granovetter's discussion of strong and weak ties, people are reorganizing their social network structures in cyberspace.[10,11] The effects of these structures on

individuals' access to social support can be measured through specific means such as the scale and frequency of interactions in cyberspace.[12] Meanwhile, the theory of affect control (ACT), which Heise discussed as early as 1988 and which focuses on the role of emotions in the process of event-construction equations has long been on the rise.[13] MacKinnon and Heise furtherly summarizes the theory as a formal, mathematical theory of social action stating that individuals interpret events (consisting of actors, behaviors, and object-persons) and act to confirm cultural meanings for themselves and others within the interaction event.[14] The theory has gradually gained importance in the analysis of social networks in recent years. Tucker, for example, analyzes informal control embedded in management.[15] Fan et al also analyzed the mechanisms of emotional contagion and competition in social networks.[16] Taken together, these studies imply that emotions embedded in social networks may play a greater role in people's acquisition of social support than those externally visible variables such as the size and frequency of interactions. It means what kind of interactions one has with whom may be more important for people's acquisition of social support than how many interactions one has with how many people.[13,17] Finally, the probability of people gaining social support via social media is also related to the topics they talk about; many studies have found that whether or not a personal topic is involved is key to accessing social support.[18]

Our research question therefore focuses on how social network interactions on social media affect people's perceived social support. How do interaction size, interaction frequency, social network evaluations, and personal topic involvement interact with each other to influence people's perceived social support?

Literature and Hypothesis Development
Interaction Size, Personal Topic Involvement, and Perceived Social Support
The size (people number) of people's daily interactions can effectively predict the amount of social support they receive. For example, Wang found a strong correlation between social network size and the subjective well-being of elderly people: a larger size of interpersonal interaction was associated with a greater likelihood of receiving different types of support, which in turn promoted subjective well-being.[1] Bertucci et al reported that individuals with larger interaction sizes in the workplace were more likely to experience collaborative support, resulting in better work outcomes.[19] Other studies have pointed to the associations of interaction size with child rearing[20] and mental health,[21] indicating that an important basis for generating connection in relationships is the scale of interactions that can provide people with more psychological and material support. Various studies have reported similar conclusions about the size of interpersonal interactions and the acquisition of social support via the Internet. For example, Nabi et al found a positive correlation between the number of friends young people had on Facebook and their perceived social support, and this support acquisition helped them to counteract life stress.[22] Hlebec et al even more directly considered interpersonal networks on the Internet as individual social support network.[23] These studies all demonstrated a positive correlation between the size of interpersonal interactions and social support acquisition.

How does interpersonal interaction contribute to the provision of social support, especially in the Internet space, where people interact primarily through conversation? Lee found that positive self-disclosure on the Internet can facilitate social support for lonely people.[24] Choudhury's research on Reddit also demonstrated that self-disclosure can make people more likely to receive intimate support.[25] White et al further suggested that topics that are personally relevant are more likely to garner social support, and that honesty and intimacy are key to social media connections that help people gain social support.[26] Furthermore, public issues are more likely to attract attention and support when they are transformed into a private experience.[27] Walther and Boyd's study illustrated that personalized, private discussions in computer-mediated communication are more likely to bring about social support.[28] Similarly, Frison and Eggermont demonstrated that girls' private Facebook conversations were more likely to bring about social support.[29] Accordingly, we made the following hypothesis.

H1: Personal topic involvement mediates the relationship between social interaction size and perceived social support.

The Role of Interaction Frequency in the Relationships Between Interaction Size, Personal Topic Involvement, and Perceived Social Support
Studies have suggested that there is a positive correlation between social interaction size and perceived social support. However, simply having a large number of people from whom one might acquire support does not necessarily lead to

social support; it only indicates the potential support. Daily interaction maintenance is also required if interpersonal interaction size is to translate into social support. The classic study by House et al therefore considered both interaction frequency and interaction size as intrinsic dimensions of social support acquisition.[30] These dimensions are particularly relevant for interpersonal networks on the Internet. Oh et al found that the frequency of online interactions significantly predicted the strength of social support received.[31] Seo et al[32] and Li et al[33] demonstrated that frequent interactions and rapid feedback can help people gain more social support faster. Thus, interaction frequency may be the key to whether people can gain social support on social media, rather than the size of social interactions. In contrast to studies of strong and weak ties, strong ties on the Internet are more likely to provide social support,[12] and whether ties are strong depends heavily on whether people interact frequently.[10] Accordingly, we made the following hypothesis.

H2: Interaction frequency mediates the relationship between interaction size and perceived social support.

More frequent interaction inevitably increases the range of topics that people discuss in their daily interactions, and the involvement of personal topics increases people's access to social support. This is particularly evident in the support offered to those with diseases such as cancer. For example, Huesch et al showed that frequent mentions of personal topics and sharing about mammography on Facebook increased the social support of breast cancer patients.[34] Older people who receive intimate relationship support were also found to be those who regularly communicate about private social life matters in their daily lives.[19] Tschan et al found that long-term work interactions led to an increase in private conversations, and this reduced social stress and increased job satisfaction.[35] These findings indicate that there is a strong correlation between the frequency of social interaction and social support.[36] We therefore made the following hypothesis.

H3: Interaction frequency and personal topic involvement mediate the relationship between interaction size and perceived social support.

The Role of Social Network Evaluation in the Relationships Between Social Interaction Size, Personal Topic Involvement, and Social Support

Freeland and Hoey's study revealed that people have different levels of respect for the social networks they construct in their daily lives, and that people or occupations that score high on the three dimensions of evaluation, potency, and activity are valued more highly and are more influential.[37] There are also differences in evaluations of social networks in terms of the daily social support they provide. In general, members who are more influential in an individual's social network are able to provide more social support. Heiydari et al[38] represented differences in the social support provided to individuals through their personal social networks in the form of a map. A study of adolescents by Del Valle et al[39] showed that family, parents, and peers play different roles in terms of social support. Embedded in these relationships are differences in the amount of influence different individuals have over adolescents. With the development of interpersonal networks on social media platforms, sources of social support have expanded, but the degree to which individuals respect and value others in their social networks remains a determinant of the acquisition of social support.[40] Those with high-quality social networks are more likely to receive social support.[41] To summarize, those who receive high individual evaluations are more likely to be in social groups with high levels of recognition, and these people have relatively high social resource mobilization and ability to provide help. In addition, from the perspective of affect control, people are more likely to be influenced by or accept help from these people he/she truly recognizes. We therefore made the following hypothesis.

H4: Social network evaluations mediate the relationship between interaction size and perceived social support.

Exposure to a high-quality social network means that individuals are much more likely to receive social support, but this likelihood is related to whether their daily interactions involve private matters. If no personal matters are involved, then individuals are less likely to receive multidimensional social support. As mentioned above, Tschan et al found that work connections that extended the topic of conversation into the private sphere over time were effective in reducing

individuals' feelings of stress and, in turn, increasing their job satisfaction.[35] For social support, which has material, relational, and emotional dimensions.[42] Topics in the private sphere are relatively more likely to prompt emotional support or satisfaction, and this is especially true in the Internet space. For example, Tang et al found that private messaging between close ties on Facebook can significantly promote social support.[43] On the other side, there are also studies suggesting that personal topics should not be involved in work matters, or else they may instead increase personal stress.[44] In any case, these studies predict that whether or not to talk about personal topics in social networks does affect the acquisition of perceived social support. Therefore, we synthesized the hypotheses

H5: Social network evaluations and personal topic involvement mediate the relationship between interaction size and perceived social support.

Research Design
Sample and Data Collection
We used an online survey website (https://www.wjx.cn) to collect data related to daily WeChat usage and other variables from 634 Chinese participants between October 24 and October 29, 2022. WeChat was chosen as the social media application for this study because, as of November 2022, the number of monthly active WeChat users worldwide exceeded 1.2 billion, and WeChat is the most commonly used form of social media in China. In addition, the private social attributes of WeChat make it suitable for examining the impact of individuals' daily interactions in social networks on their perceived social support. The dataset included IP addresses, computers, cell phones, user restrictions, and attention check questions to avoid duplicate responses and invalid data. The demographic data for the final sample are shown in Table 1.

Measurement
Interaction Size
We used individuals' number of daily interactions as an indicator of the scale of their interactions. The specific survey question was "What is the number of people you interact with in your WeChat friend circle (including private chat, group chat, likes, comments and reposts)?" The answer matrix included family members, friends, classmates/colleagues, interesting and thoughtful people, and the participants indicated the number of people they interacted with in each category. The possible answers were (1) 1 person, (2) 2 or 3 people, (3) 3–7 people, (4) 8–15 people, and (5) 16 people or more. We assigned the number ranges in ascending order. We summed the four categories and divided by 4 to obtain an indicator of interaction size. The mean and standard deviation of this variable are shown in Table 2.

Table 1 Participants' Socio-Demographic Information (N = 624)

	Category	Frequency	Percentage
Gender	Male	272	43.6
	Female	352	56.4
Education	High school or below	39	6.3
	College/University	524	84.0
	Master and above	61	9.7
Income/month (RMB)	< 4999	100	16.0
	5000–9999	251	40.2
	10,000–14,999	149	23.9
	15,000–19,999	79	12.7
	20,000–24,999	28	4.5
	>25,000	17	2.7
Age	M = 31.7; SD = 6.995; Range: 16–60		

Table 2 Descriptive Statistics and Correlations of the Main Variables

	Perceived Social Support	Interaction Size	Personal Topic Involvement	Interaction Frequency	Social Network Evaluation (EPA)
Interaction size	0.280**				
Personal topic involvement	0.537**	0.297**			
Interaction frequency	0.246**	0.136**	0.231**		
Social network evaluation (EPA)	0.810**	0.278**	0.536**	0.284**	
Minimum	0	1.25	0	1	0
Maximum	5	5	5	5	5
Mean	3.11	3.00	2.81	3.27	3.21
Standard deviation	0.75	0.76	0.96	0.66	0.72
Cronbach's alpha	0.856	0.734	0.936	0.733	0.856

Note: ** $p < 0.01$.
Abbreviations: EPA, evaluation, potency, activity.

Personal Topic Involvement

To ensure that the personal topic involvement variable measured the same groups as the interaction size variable, we used the following question for the personal topic involvement variable: "Did your conversation (with the above mentioned people) cover the following topics in the past year (0 means no; 5 means a lot of discussion)?" The categories included (1) topics on how to moderate emotions and mindset, (2) topics on maintaining peace and happiness in family life, and (3) troubles or difficulties encountered at work. These three categories covered personal topics about the self, family, and work in daily life. The scores for each category were summed and divided by 3 to obtain an index of personal topic involvement. The mean and standard deviation of this variable are shown in Table 2.

Frequency of Interaction

Frequency of interaction is a concept that is commonly used in online social network and social capital research.[45] We measured it using the following question: "How often do you chat with the abovementioned close friends on a daily basis in private messages?" The answer categories for all four categories of person were (1) multiple times a day, (2) every day (3) 2–3 times a week, (4) 2–3 times a month, and (5) rarely or hardly ever. Answers were reverse scored to obtain interaction frequency metrics. Because this measure is a direct indication of the frequency of one-to-one private chats, it reflects the impact of deep interactions on perceived social support. The statistical values related to this indicator are shown in Table 2.

Social Network Evaluation: Evaluation, Potency, and Activity

We used the evaluation, potency, activity (EPA) semantic scale, which has been used in recent years in affect control studies, to measure individuals' evaluations of their own social networks.[9] The most influential of these was Freeland and Hoey's embedding of affect control theory into people's perceptions of the division of occupational status, and in this study it embedded the semantic differential scale into three universal affective dimensions consisting of evaluation, potency, activity, which was successfully measurement and validation.[37] This measure was utilized in this study. The specific measurement question was: "Please give an overall evaluation (0 means very poor or inactive, 5 means very good or active) of the above-mentioned categories of people with whom you interact most closely on a daily basis, and categorize the options as competence evaluation, potency, activity,[37] and add the results of the options and divide by 3 to obtain the indicator for individual social network evaluation. The statistical values related to this indicator are shown in Table 2.

Perceived Social Support

There are multiple measures of social support, generally focusing on three dimensions: material, relational, and emotional.[42] To measure perceived social support online, we asked the following question: "When you are depressed or facing a difficult situation, to what extent do you get help from people you interact closely with in the categories mentioned above (0 means not at all, 5 means very much)?" Categories included (1) getting emotional help and support,

(2) getting practical and effective advice on ways to cope with problems, and (3) getting material or interpersonal support. We obtained an indicator of perceived social support by summing the scores for each category and dividing by 3. The mean and standard deviation of this variable are shown in Table 2.

Statistical Analysis

We first performed a pairwise correlation Pearson test on the main variables to check the appropriateness of the variables that we introduced into the model. The five hypotheses proposed in this study were then tested using model 80 in Process. We wish to examine the chain mediation effect between the above variables through this model.[46]

Results

Test for Correlations of Main Variables

As shown in Table 2, *interaction size* (r = 0.288, p < 0.01), *personal topic involvement* (r = 0.488, p < 0.01), *interaction frequency* (r = 0.276, p < 0.01), and *social network evaluation* (EPA) (r = 0.463, p < 0.01) were all significantly correlated with *perceived social support*, and they were also significantly correlated between two-by-two, indicating that it is appropriate to include these variables when considering the effect of social media interaction on *perceived social support*.

It should be noted that gender was not significantly correlated with any of the main variables, and age was only significantly correlated with interaction size (r = 0.169, p < 0.01) and interaction frequency (r = −0.142, p < 0.01), and ultimately, we did not introduce these two variables as moderating variables in the overall model, considering that the study primarily examined relationships.

Hypothesis Testing

We performed a chain mediating effect test using Hayes' Process model 80. The results showed that R = 0.8198, R-sq = 0.6721, F = 317.2472, df1 = 4.00, df2 = 619.00, MSE = 0.1840, p = 0.0000, indicating that the baseline model was a good fit and the model and the results could be adopted. Further analysis of the results showed that the direct effect of interaction size on perceived social support was 0.0366, SE = 0.238, t = 1.5371, p = 1.1248, and the effect result contained 0 (LLCI = −0.0102, ULCI = 0.0834). Examining the two sets of results in relation to each other indicated that the model was a fully mediated effects model. This implies that the effect of interaction size on perceived social support is mediated by the other variables in the model. Further analysis of each chain of influence revealed the following. (1) personal topic involvement increased the effect of interaction size on the perceived social support of individuals with an effect size of 0.0208 (LLCI = 0.0098, ULCI = 0.0353), supporting H1. (2) Interaction frequency increased the effect of interaction size on perceived social support, with an effect size of 0.0004, but this effect was not significant (LLCI = −0.0070, ULCI = 0.0084) and therefore H2 was not supported. (3) Interaction frequency increased personal topic involvement and ultimately influenced perceived social support, with an effect size of 0.0014 (LLCI = 0.0001, ULCI = 0.0035), supporting H3. (4) EPA increased the effect of interaction size on perceived social support, with an effect value of 0.1966 (LLCI = 0.1351, ULCI = 0.2602), supporting H4. (5) EPA increased private issue involvement and ultimately influenced the relationship between interaction size and perceived social support, with an effect size of 0.0175 (LLCI = 0.0086, ULCI = 0.0294), supporting H5. Details in Table 3.

It is important to note that interaction frequency did not mediate interaction size and perceived social support alone, but rather enhanced perceived social support by increasing personal topic involvement. In contrast, social network evaluation not only mediated interaction size and perceived social support directly, but also enhanced perceived social support by increasing personal topic involvement. Also, in terms of effect size, the latter had a greater impact, indicating that social network evaluation, which reflects affective control, has a greater impact than interaction frequency on perceived social support on social media. Details in Figure 1.

Table 3 Summary of Process Model 80 Test Results

| Item	Indirect Effect	BootSE	BootLLCI	BootULCI
Total indirect effect	0.2368**	0.0359	0.1671	0.3071
Interaction size = > Personal topic involvement = > Perceived social support	0.0208**	0.0066	0.0098	0.0353
Interaction size = > Interaction frequency = > Perceived social support	0.0004	0.0037	−0.0070	0.0084
Interaction size = > Interaction frequency = > Personal topic involvement = > Perceived social support	0.0014**	0.0009	0.0001	0.0035
Interaction size = > Social network evaluation (EPA) = > Perceived social support	0.1966**	0.0316	0.1351	0.2602
Interaction size = >Social network evaluation (EPA) = > Personal topic involvement = > Perceived social support	0.0175**	0.0053	0.0086	0.0294

Notes: Level of confidence for all confidence intervals in output: 95.0000; Number of bootstrap samples for percentile bootstrap confidence intervals: 5000. **$p < 0.01$.
Abbreviations: EPA, evaluation, potency, activity.

Discussion

This study examined how social media interactions affect the generation of perceived social support and found that individuals' social network size affects perceived social support by influencing their involvement in personal topics, which is mediated by interaction frequency and social network evaluation. Social network evaluation is more effective than interaction frequency, indirectly demonstrating that affective control theory may be more effective than technology-oriented interaction theory for explaining the effect of social media interactions on individuals' perceived social support. Several aspects of the findings deserve further discussion.

First, when researchers discuss social support acquisition on social media, they tend to limit themselves to objective variables such as interaction size, frequency of interaction, and other attributes of external media channels,[1,24] and tend to ignore the influence of interaction content. We found that the involvement of personal topics plays an important mediating role between interaction size and perceived social support acquisition. This means that if the content of interpersonal interactions mediated by social media does not include personal topics, it will greatly limit people's social support acquisition, which echoes research findings related to social support acquisition among older adults and adolescents.[1,6,19,27,29] It also demonstrates the specificity of the social media space, ie, people bring their old social relationships into the Internet space, while integrating regenerated social relationships, and whether people can obtain support depends crucially on the depth of interactions and whether personal topics are involved.[23] The frequency of interaction alone does not have a mediating effect, but it affects relationships between interaction size and the outcome of
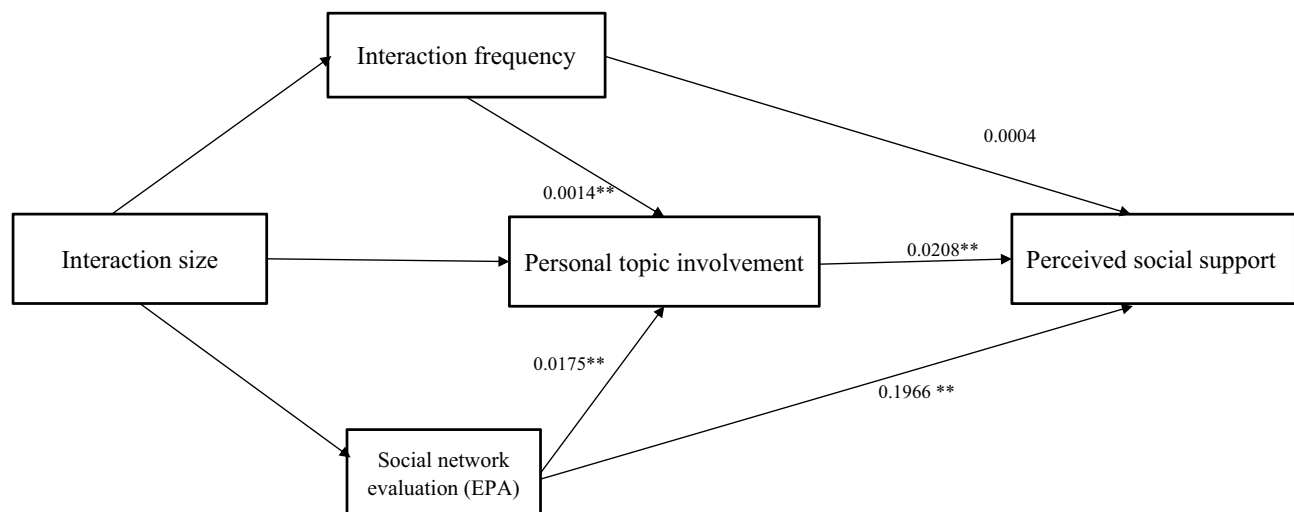
Figure 1 Relationships among social media use and perceived social support variables.

perceived social support by deepening involvement in personal topics, further illustrating that what matters is not how often people interact with a given number of people, but whether the content of the interactions has depth, which is the main pathway of social support acquisition. To summarize our focus on the impact of social network interactions on the acquisition of social support, it is important to focus on the content of the communication and not just on variables such as the size or frequency of technologically oriented interactions.

The findings further reveal the important role of social network evaluation. That is, it is generally held that more people interacting, more frequent interaction, and talking about personal topics may increase social support, but the composition of individual interpersonal networks, especially subjective evaluations of these networks, has tended to be ignored. Although the roles of opinion leaders, strong ties, etc. were noted as early as the last century,[8,10,11,18] they are often measured only in terms of objective dimensions and not in terms of individual subjective dimensions.[12] Our study reveals that members of social networks who are perceived as having high levels of competence, potency, and activity have a strong influence on perceived social support. While confirming the validity and utility of Freeland and Hoey's operationalization of affective control in general social research, the findings also demonstrate a model of how the theory of affective control works in social media interactions.[37] It reveals how affect control from interpersonal relationships is embedded in individuals' social media use and perceived social support relationships at the level of micro-interaction networks. This highlights the influence of relationship quality in an individual's social media network.

Limitations

The study has shortcomings in the following three areas. First, given the richness and diversity of today's social media, the different characteristics of different types of social media, such as Facebook and Reddit, mean that there are differences in interpersonal connections and topic content. This study only examined WeChat and the findings need to be supported by more specific studies on other social media types. Second, data collection was based on self-reporting by WeChat users, and the validity of the findings would be enhanced if data could be analyzed in conjunction with evidence of users' social media usage data. Third, the findings point to the pathways by which affective control plays a role in individual social media use and perceived social support, but the exact mechanisms of influence need to be identified in a focused and in-depth study.

Conclusion

In conclusion, we found that the influence of social network evaluations that reflect affect control was significantly greater than the influence of the frequency of social network interactions, and that social network evaluations were mediated by involvement in personal topics. This finding provides insights into methods for promoting social support in social networks for disadvantaged or marginalized groups such as adolescents, the elderly, and people with various diseases. Related social aid organizations could focus on guiding their social networks so that they have the active participation of highly qualified people with the ability to assert emotional influence via social media.

Ethics Statement

Hereby, the author of this paper, Ruixia Han, do consciously assure that this study has followed the guidelines and principles as set forth by the following ethical statement:

1. The body of work comprising this paper is entirely original and none of it has been previously published.
2. Informed consent was obtained from all participants in this study prior to their participation.
3. This study's research methodology, the data collected, and findings were all conducted without anything being falsified or purposefully altered.
4. This study was reviewed and verified an ethics committee under the governing institution of Shanghai Jiao Tong University.
   Ethics Committee: The Academic Committee of the School of Media & Communications.
   Ethics Committee Members: Benqian Li; Guoliang Zhang; Jinwen Xie; Yan Ge.

5. This study was conducted under the principles set forth by the most recent Declaration of Helsinki ethical standards and the World Medical Association to ensure the safety, well-being, and overall benefit of all study participants.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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The author reports no conflicts of interest in this work.

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