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An Empirical Study on the Communication and Usage Psychology of Emoji in Wechat

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Abstract

As an indispensable active atmosphere and meaningful emotional expression in social media, emojis describe the emotions of users in specific situations in a funny, humorous, euphemistic, and implicit form and attract users to use them consciously or unconsciously with their quick and convenient features. Currently, the research on the psychology of emoji usage is mostly from the perspective of users, while neglecting the essential attributes of emojis. The purpose of this study was to investigate and summarize the multi-dimensional factors that affect the communication and usage of emojis and to elucidate the influence of the essential attributes of emojis on their use. This study took the users of WeChat (the most widely used instant messaging app in China) as the research object. Data were collected utilizing semi-structured interviews and questionnaires. SPSS 25.0 software was applied to conduct exploratory factor analysis on relevant data to explore and summarize several dimensions of WeChat users' emoji communication and usage psychology. The results showed that gender, age, education, and occupation were important factors affecting the usage and communication of emojis. The psychology of emoji usage had multi-dimensional characteristics and according to the self-

determination theory, it could be divided into internal and external factors. The internal factors included information, efficiency, and entertainment, and the external factors included communicativeness, culture, image, fuzziness, and context. Notably, the influence of fuzziness on the psychology of emoji usage has described the critical role of the essential attributes of emojis, which complemented the neglect of the fuzziness of emoji in previous studies, which might provide a direction for the design of emojis.

Keywords
Emoji; communication and usage psychology; social media; factor analysis

1. Introduction

In 1982, Professor Scott Farman used the ASCII code ":-)" to represent a smile [1], which was the first emoji with a specific meaning online. Since then, emojis have evolved from icons to the current graphic information expressions. These emojis, which map the expressions and actions of users, are rapidly being used in social media. According to the "China Internet Development Report 2018" [2], the usage rate of WeChat reached 87.3%, which was one of the most widely used social platforms in China. In 2017, WeChat users sent more than 600 million emojis per day, and it has shown an increasing trend in recent years. The gradual changes in communication styles and the evolution of the usage categories of emojis have also changed the users' usage psychology. The research on the psychology of emoji communication and usage involved many complex influencing factors and was prone to confusion. Most of the current related studies have been conducted from the user's perspective while ignoring the essential attributes of emojis. Although emojis supplement the fuzziness of textual information in social media communication without prompts such as expression, tone of voice, gesture, etc. [3], the fuzziness in their use cannot be ignored. For example, related cases such as the terrorist crisis caused by the usage of emojis by 12-year-old girls in the United States on social software were a manifestation of emojis' fuzziness and complexity. However, fuzziness is not a disadvantage of the use of emojis. On the contrary, in some cases, it will become an essential factor affecting the use of emojis. However, the research in this area has only stayed on the limitations of the spread of emojis [4] or attributed fuzziness to the contextuality of the research [5]. Therefore, this study aimed to fill this gap through research on the psychology of users' emoji usage in social media, which might provide support for solving the problem of confusion about current influencing factors. We used WeChat as the research platform and WeChat users as the research objects. Literature research methods and semi-structured interviews were used to sort out the measurement indicators and questionnaires were applied to collect data. And SPSS 25.0 software was used to conduct exploratory factor analysis on relevant data to systematically explore and supplement several dimensions of WeChat users' emoji communication and usage psychology.

Self-determination theory as a theoretical foundation can summarize and sort out the basic dimensions of emoji usage [6]. Meanwhile, self-determination theory as a macro theory for studying individual motivation has been widely used in various fields through continuous development. Based on this theory, user psychology can be divided into internal and external factors [6]. Internal factors refer to users' internal needs or purposes for using emojis on WeChat. External factors

mainly refer to the relevant factors that users are affected by external goals in the process of using emojis. The purpose of this study was to provide constructive suggestions on the development and design of emoji based on the research results, and to open up a new perspective on emoji research.

The research objectives of this paper were: first, to clarify the research status and existing problems of emoji usage psychology; secondly, to use WeChat users as the research object, through semi-structured interviews, questionnaires, factor analysis, and other methods to explore the user psychology from the dual perspectives of users and emojis; Third, the self-determination theory was applied to summarize the psychological factors of emoji usage. In short, we provided new directions for emoji design by studying the internal and external factors affecting emoji usage.

The remainder of the paper was structured as follows: Section 2 outlined a literature review on emoji communication and usage psychology. Section 3 was the description of the research methods and data. Section 4 was the data analysis results. At last, Section 5 concluded the study with discussions, implications, and directions for further research.

2. Literature Review

2.1 Emoji Concept

To understand emoji's communication and usage psychology, we must first understand the concept of emojis precisely. But at present, the concept of emoji has disciplinary differences. Based on the perspective of the communication function, Liu & Liu (2020) suggested that symbols were a way to achieve emotional expression and meaning transmission in computer-mediated communication [7]. While Hu (2017) believed that emojis were non-verbal symbols based on network and computer technology, which combined characters, words, pictures, and animation creation to express meanings [8]. And from the perspective of linguistics, Christopher (2021) argued that emojis, as a kind of ideograph, are composed of icons representing facial expressions, emotions, objects, or other symbols, which are commonly used in smartphones, computers, and other technologies [9]. In addition, emojis have been also involved in a large number of researches in artistic design and aesthetics, psychology, marketing, etc. To sum up, previous research on the concept of emojis has shown that the usage function of emojis - expressing emotion and meaning, the usage carrier - computers, the usage form – non-verbal symbols, and the usage limitation - polysemy. Based on the perspective of emoji communication, this study focused on empirical research on usage psychology. Therefore, emojis in this study referred to the user's social network to meet their needs of entertainment, communication, socialization, and other needs. A specific culture and situation do not consciously bind them, emojis were non-verbal symbols with ambiguous meanings.

2.2 Self-Determination Theory and Internal and External Motivation

Previous studies have shown that some researchers have divided the internal and external dimensions of human behavior motivation according to the basic concept of self-determination theory [10]. Therefore, self-determination theory could summarize the psychological factors influencing more profoundly and systematically.

The self-determination theory is a cognitive theory of human self-determination. It is primarily related to the external environment and human adaptability. It classifies human behavior as

motivation and divides motivation into internal and external factors [11]. Based on the existing literature, a brief review of the concepts of internal and external motivation was sorted out as follows:

Internal motivation: internal motivation refers to the motivation to engage in activities due to personal interests and the pleasure of the activity itself [6]. Gagn é, & Deci (2005) classified work motivation based on self-determination theory, and considered that internal motivation referred to the individual's desire to work because the work itself was interesting or enjoyable [12]. Chen & Wu (2010) believed that internal motivation emphasized the satisfaction obtained from the activity itself [13]. Besides, according to Zhao et al. (2016), internal motivation referred to the state of high autonomy and self-determination when an individual engaged in activities for the pleasure of the activity itself [14]. Similarly, Jian & Liu (2022) argued that internal motivation was the action caused by the interest and enjoyment of the activity itself or the pursuit of self-worth [15].

External motivation: external motivation refers to the motivation to engage in activities to obtain other results that activities can bring [6]. First, Gagn é, & Deci (2005) suggested that external motivation was the desire to work caused by content other than work, such as remuneration, recognition of others, or other factors related to the results [12]. Chen & Wu (2010) believed that external motivation emphasized the instrumentality of activities, that was, to achieve utilitarian purposes other than activities [13]. Jian & Liu (2022) argued that external motivation referred to a specific activity or behavior that individuals engaged in to pursue a particular reward or avoid punishment [15].

The current division of internal and external motivation of self-determination theory presents a relatively consistent conclusion. Based on this, the psychology of emoji usage could also be divided into internal and external factors. Where internal factors referred to users using emojis or related factors to meet their needs. External factors were the related factors that users were affected by external factors in the process of using emojis. Therefore, based on comprehensively exploring the psychology of emoji usage, this study clarified the multi-factor input system according to self-determination theory which provided a new perspective for emoji study.

2.3 Research on the Communication and Usage of Emoji

The psychology of using emojis refers to the mental activities of users using emojis on the Internet, including the user's cognitive process, emotional activities, and volitional behavior. Existing research on the communication and usage psychology of emojis has mainly focused on the motivation, behavior, and influencing factors of usage. Motivation for using emojis included conveying information, pursuing efficiency, talking about strategies, and achieving entertainment [7]. Liu et al. (2020) by analyzing the usage of emojis under microblog topics, suggested that users' usage of emojis was related to the topics they expressed and was affected by conformity psychology [16]. Through a systematic classification of the existing literature, Zou et al. (2022) classified the influencing factors of emoji usage into demographic, social, and motivational factors [17]. In present study, by analyzing, sorting, and induction of existing literature, the psychological factors that affected the users' emoji usage were divided into entertainment, information, culture, communication, context, and efficiency factors.

Entertainment factors: entertainment is not only an essential feature of emojis but also a key factor for users to use emojis. Wolf (2000) suggested that expressing humor was one of the

motivations for users to use emojis [18]. Walther et al. (2001) found several types of motivations of emoji use including entertainment and expressing humor [19]. Li (2011) found through investigation that being fun and interesting was one of the motivations for college students to use network emojis [20].

Informational factors: according to relevant research, transmitting information is the primary psychological factor for users to use emojis. For example, Wolf (2000) suggested that users used emojis to strengthen or weaken the content of language information to build interpersonal relationships [18]. And Crystal (2006) proposed that emojis could satisfy five purposes, including expressing personal views and attitudes [21]. Kuang & Qiu (2017) argued that the use of WeChat emojis was based on images to vividly expresses current emotions [22]. Li (2011) proposed that the primary motivation for college students to use emojis was to express emotions, followed by supplementary explanations and emphasis on text content and attracting attention [20]. In addition, Ye (2016) proposed three types of motivation for emoji use, including self-image building and display [23]. Meanwhile, Shen (2017) summarized the motivations for using emojis including publicity and personality [24].

Cultural factors: The communication and usage of emojis have always been consciously or unconsciously influenced by cultural factors. Wang (2004) believed that cultural differences in different regions could affect the usage and understanding of emojis [25]. Kuang & Qiu (2017) proposed four factors, including subcultural preferences, that affected the use and satisfaction of emojis [22]. Zhu (2019) argued that three types of cultural factors, including individualism and collectivism, influenced the choice of emoji [26].

Communicative factors: Communicativeness is an essential factor for users to use emojis. Knapp (1972) believed that regulating the expression of textual information was one of the motivations for non-verbal communication behavior [27]. In communication, emojis could adjust the atmosphere, establish and maintain interpersonal relationships, and express politeness [21]. Li (2011) proposed nine motivations for the use of emojis, including integrating into the group, being perfunctory to others, and increasing intimacy [20]. And Wolf (2000) concluded that expressing sarcasm was another motivation that influenced the usage of emojis [18]. Additionally, Boredom was another motivation for using emojis proposed by Ye (2016) [23]. Besides, Kuang & Qiu (2017) provided three psychological motivations, including softening the chat tone [22]. And Liu (2020) suggested that the usage of emojis was affected by individual conformity psychology[16].

Contextual factors: Contextuality is another critical factor for users to use emojis. Kuang & Qiu (2017) found that interactive objects and topics affected emoji use, and some college students used emojis because they could better begin or end a conversation [22]. Bernardo et al. (2022) also suggested that emoji usage was influenced by the relationship and informational characteristics between the interactors [28].

Efficiency factors: studies have shown that people's usage of emojis can be more productive by improving the speed of network communication. For instance, the study of Lewis et al. (2008) showed that the use of emojis can improve work efficiency and enhance interpersonal relationships [29]. Lo et al. (2008) proposed that clarifying information was one of the motivations for using emojis [30]. Crystal (2006) suggested that emojis could be matched with the context for disambiguation [21]. In addition, Kuang & Qiu (2017) argued that saving typing time was another reason for college students to use emojis [22].

In addition, individual factors such as gender, age, and personality of users also affect the usage of emojis. For example, Kuang & Qiu (2017) concluded that the type, quantity, intention, and satisfaction of women using WeChat emojis were higher than those of men [22]. In terms of age, the study by Liu (2017) showed that compared with the middle-aged group, the youth group used WeChat emojis with higher frequency, wider channels, more types, and complex motivations [31]. In personality, by combining the big five model, Wu (2022) suggested that people with extraversion, agreeableness, and emotional stability were more active in using emojis, while people with solid openness and a sense of responsibility showed an upward trend first and then a downward trend in the total number of emojis used [32].

The current research on the communication and usage of emojis has focused on the user's point of view and ignored the inherent characteristics of emojis. From this perspective, we empirically studied the psychology of the communication and usage of emojis on WeChat and explore users' psychological activities in the form of semi-structured interviews and questionnaires to provide constructive suggestions for the development and design of emojis in the future.

3. Research Methods and Data

3.1 Research Methods and Questionnaire Design

3.1.1 Semi-structured Interviews

In this study, the relevant literature was reviewed, classified, and summarized according to the research content, and referred to the scales of researchers including Walther, Crystal, Kuang, Li, Liu, etc. The research results were used as the basis for compiling the interview outline. According to the "WeChat Data Report", the post-1990 and post-2000 generations were the leading force in using WeChat emojis. Therefore, we selected ten participants between the ages of 18 and 28 to conduct semi-structured interviews, supplemented and improved the scale according to the interview results, and then made the questionnaire.

3.1.2 Questionnaire Design

According to the research content, a questionnaire about the communication and usage of emojis by WeChat users was formulated. The questionnaire was mainly divided into two parts. The first part was the basic information of users and the basic situation of using emojis, including gender, age, educational background, occupation, the frequency of sending and receiving emojis, the types of emojis used, and the ways to obtain emojis. Existing research has shown that gender and age were crucial factors that affected the usage of emojis. The second part was the measurement of the communication and usage of emojis. In detail, first, the scale was obtained based on relevant prior research and semi-structured interviews. The scale was revised according to the research situation and expert advice, then a total of 29 measures were obtained (Table 1). Secondly, improving the measurement indicators in declarative sentences to makes it easier for the subjects to accept. Finally, we applied the five-point Likert scale to measure users' communication and usage psychology, with item 1 representing strongly disagree, item 5 representing strongly agree, item 3 representing neutrality, and 1-5 items gradually strengthened.

Table 1 The psychometric indicators of emoji communication and usage in WeChat.

Number	Measurement index	Number	Measurement index	Number	Measurement index
01	Attract attention	11	Express a sense of humor	21	Concealing personal privacy, implicitly expressing purpose and emotion
02	Clarify information	12	Enhance tone	22	Influenced by collectivism
03	Boring	13	Save typing time	23	Express personal views and attitudes
04	Show courtesy	14	Influenced by individualism	24	Fun
05	Add pleasure	15	Build and maintain relationships	25	Don’t know how to reply with a text
06	Adjust the atmosphere	16	Pastime	26	Influenced by subcultural preferences
07	Perfunctory others	17	Integrate into the group	27	Help me express my emotions and emotions Vividly and accurately help users express their emotions and emotions
08	Disambiguation	18	Self-image building and presentation	28	Influenced by the relationship between the interactors and the characteristics of the information
09	Show off your personality	19	Influenced by individual herd mentality	29	More euphemistic expressions
10	Psychological resonance	20	Regulate the expression of textual information		

3.1.3 Factor Analysis

The survey data collected in this study were processed by SPSS 25.0, and the basic information of the sample was descriptively analyzed by demographic analysis. Then reliability and validity analyses were conducted to explore the possibility of factor analysis. The different dimensions of the original variable were summarized by factor analysis.

3.2 Data Collection

The offline questionnaires were primarily distributed to the college students in Nanchang City by sampling. Online questionnaires were distributed through multiple channels based on Wenjuanxing (www.wjx.cn) regardless of age. The questionnaire survey was from March 8-28, 2022, for about 20 days. A total of 397 questionnaires were collected, and after screening and eliminating invalid questionnaires, a total of 375 valid questionnaires were recovered, with an effective rate of 94.5%.

4. Data Analysis

4.1 User Statistics and Usage Behavior Analysis

The survey data of user statistics in Figure 1 showed that the number of women was higher than the number of men, with men accounting for 39.5%, totaling 148, and women accounting for 60.5%, totaling 227. About the age distribution, there were 252 users aged 18-25, accounting for 67.2%, followed by 72 users under the age of 18, accounting for 19.2%, followed by 72 users under the age of 18, accounting for 19.2%, and finally, 36 users aged 26-35, accounting for 9.6%. Therefore, the main force using emojis was young people, accounting for 96% of the total sample. In terms of education, users with a bachelor's degree were 228, accounting for 60.8%, followed by 48 users with a technical secondary school or high school degree, accounting for 18.7%. From the perspective of occupation, the top-ranking group was the student group of 300 people, accounting for 80%, followed by enterprise employees of 26 people, accounting for 6.9%. And the frequency of most users using emojis was "always" and "often," with a total of 324 people, accounting for 86.4%.

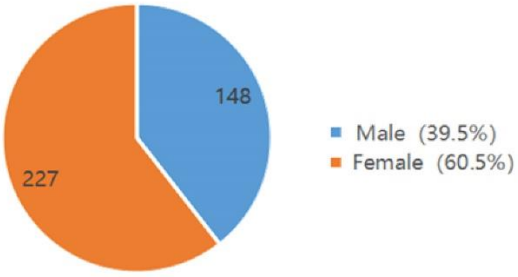
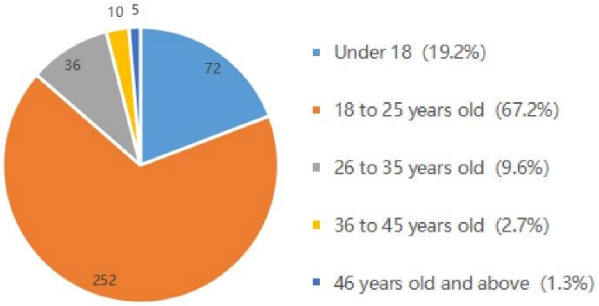
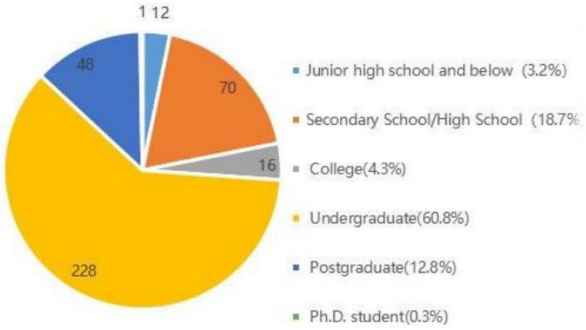
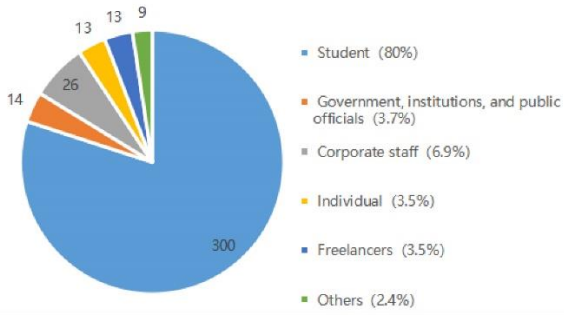
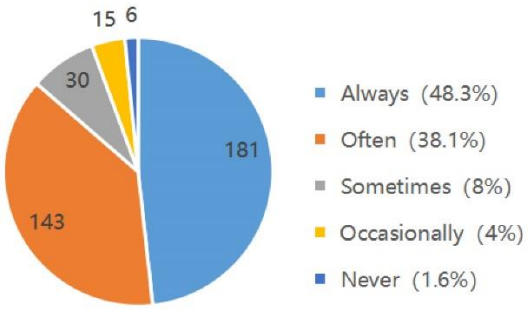
Item	Frequency	Category (Percentage%)
Gender		
Age		
Education		
Profession		
Usage frequency		
Total	375	100%

Figure 1 Descriptive statistics of demographic variables.

The results of the statistical survey on user behavior were presented in Figure 2. The results indicated that in terms of the types of emojis, users preferred to use icon emojis and picture emojis, accounting for 74.4% and 71.5%, respectively, followed by dynamic emojis accounting for 50.45%. In terms of the way to obtain emojis, users mostly saved their friends' reposts and WeChat's emojis, accounting for 84.3% and 62.45%, respectively, indicating that users were more inclined to obtain emojis conveniently and quickly.

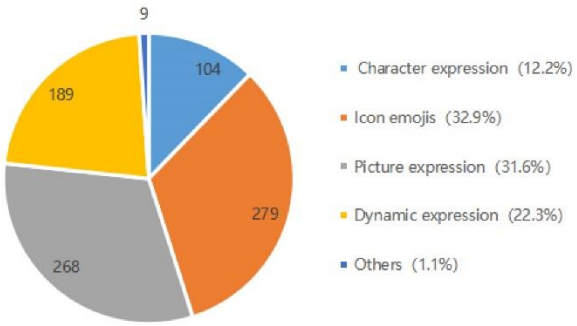
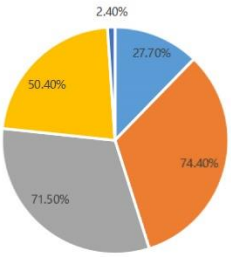
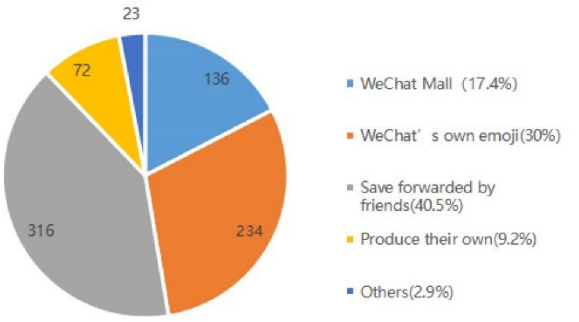
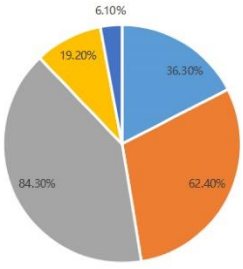
	Number of cases	Percentage%	% of cases
Which type of emoji is used often			
Total	849	100%	226.40%
Ways to get emoji			
Total	781	100%	208.30%

Figure 2 Statistical survey of emoji usage behavior.

4.2 Reliability and Validity Analysis

SPSS 25.0 software was used to test the reliability and validity of the survey data about the communication and usage of emojis. The results were shown in Table 2 and Table 3. The result in Table 2 showed a Cronbach Alpha coefficient of 0.947, which was higher than 0.7, indicating a relatively satisfactory level of reliability. The results in Table 3 indicated that the KMO value was 0.946, which was very close to 1, and the significance of Bartlett's sphericity test was 0.000, which was less than 0.05, indicating that the validity was very high. Therefore, the data were very suitable for exploratory factor analysis.

Table 2 Reliability statistics.

Cronbach's Alpha	Cronbach's Alpha based on the normalization term	Number of items
0.947	0.950	29

Table 3 KMO and Bartlett Test.

KMO Sampling Suitability Quantity		0.946
Bartlett's sphericity test	Approximate chi-square	5795.631
	Degrees of freedom	406
	Significance	0.000

4.3 Exploratory Factor Analysis

SPSS 25.0 software was used to extract and rotate the factors from the survey data of users on the spread and use of emoji. The rotated factor load component matrix presented an 8-factor structure, and the common degree value was usually greater than 0.4. If this value was less than 0.4, the factors cannot extract the information from each question well. If the factor load was greater than 0.4, this factor could be included for further factor induction. The results in Table 4 presented that the maximum load of the 29 measurement indicators in each factor was greater than the standard of 0.4, so they can be summarized into the corresponding factors. And the cumulative variance of the eight factors was 68.574%, which was greater than the standard value of 60%. All the indicators were significantly greater than the standard value, which can be further analyzed.

Table 4 Factor loadings of variable indicators in emoji communication and usage of psychological scale.

Item	Information	Efficiency	Entertainment	Communicativeness	Culture	Image	Fuzziness	Context
Sometimes emojis express emotions that resonate with me	0.683	0.142	0.288	0.184	0.222	0.245	0.010	0.075
Use emoji to regulate and control the expression of textual information	0.676	0.262	0.172	0.317	0.104	-0.013	0.135	0.110
The intimacy of the communication objectives and the characteristics of the information to be expressed will affect the choice and use of emojis	0.669	0.085	0.121	0.112	0.227	0.263	0.147	0.005
Use emojis to help attract attention.	0.618	0.201	0.031	0.099	0.081	0.088	0.225	0.234
Use emojis to express your sense of humor.	0.614	0.189	0.249	0.042	0.028	0.094	0.310	0.084
Using emoji will make you feel like you are spending time in a pleasant way of communicating	0.608	0.080	0.219	0.233	0.149	0.391	-0.056	0.089
Sometimes the use of emojis can clarify or correct the expression of information	0.567	0.250	-0.072	0.133	0.465	0.237	0.028	0.144
Use emojis to enhance your tone	0.505	0.121	0.253	0.256	-0.054	0.015	0.396	0.157
Sometimes the use of emojis is mainly influenced by the attitudes and	0.448	-0.064	0.237	0.347	0.399	0.265	0.169	0.105

lifestyles specific to a region or a group								
Using emojis helps me express my words more tactfully	0.188	0.747	0.196	0.246	0.033	0.151	0.213	0.017
I think using emoji saves typing time	0.140	0.667	0.249	0.301	0.146	0.114	0.082	0.211
Use emojis to help express personal opinions and attitudes	0.266	0.601	0.378	0.059	0.265	0.157	0.057	-0.002
Use emojis to help me express my emotions vividly and accurately	0.312	0.546	0.258	0.286	-0.025	0.242	0.186	0.038
Sometimes the use of emojis is mainly centered on personal preference, starting from the individual	0.159	0.186	0.729	0.019	-0.015	0.182	0.196	0.205
Sending or receiving emojis is fun	0.249	0.230	0.701	0.179	0.272	0.067	0.009	-0.039
Use emojis to add joy	0.167	0.273	0.567	0.456	0.123	0.035	-0.047	0.038
Using emojis can help build and maintain relationships	0.203	0.323	0.509	0.251	0.258	0.315	0.134	-0.01
Sometimes emojis are used because I don’t know how to reply with text	0.235	0.250	0.108	0.705	0.216	0.113	0.054	0.187
Use emojis to adjust the mood and ease the embarrassment	0.174	0.297	0.430	0.623	0.090	0.084	0.050	-0.040
Using emojis helps me be polite when communicating on WeChat	0.260	0.192	0.024	0.590	0.099	0.143	0.464	0.050
The use of emojis in different countries and regions is affected by the unique culture of each region	0.397	0.065	0.294	0.176	0.643	0.013	0.113	0.231

I use emojis when I don't want to chat with someone but have to reply	0.135	0.238	0.217	0.202	0.622	0.131	0.364	0.020
Using emojis helps me blend in quickly	0.270	0.254	0.157	0.265	-0.011	0.694	0.185	0.142
Use emojis to help with self-image and presentation	0.288	0.212	0.308	-0.029	0.194	0.548	0.260	0.203
Use emoji to disambiguate and avoid misunderstandings	0.198	0.440	0.074	0.026	0.368	0.498	0.062	0.147
Use emojis to hide personal privacy and veiled expressions of purpose and emotion	0.236	0.174	0.129	0.091	0.182	0.170	0.748	0.042
Sometimes emojis are used because of boredom	0.136	0.010	0.096	0.159	0.023	0.201	0.020	0.839
Use emojis to help express your personality	0.533	0.266	0.120	-0.082	0.159	-0.065	0.080	0.563
Sometimes emojis are used because everyone uses them	0.163	0.082	-0.063	0.028	0.268	0.092	0.504	0.532

Note: The rotation has converged *after ten iterations.*

The first factor included psychological resonance, regulating the expression of textual information, being influenced by the relationship between interactors and information characteristics, attracting attention, expressing a sense of humor, amusing, clarifying information, enhancing tone, and being influenced by collectivism. The indicator mainly revolved around conveying information and influencing factors, therefore this factor was renamed informative. The explained variance was 15.741%.

The second factor included four indicators: expressing words euphemistically, saving typing time, expressing personal opinions and attitudes, and helping me express my emotions and emotions vividly and accurately. It mainly focused on improving network communication efficiency, so this factor was renamed efficiency. The interpretable variation was 9.816%.

The third factor included four indicators: being influenced by individualism, fun and interesting, entertainment, as well as establishing and maintaining interpersonal relationships. This factor was mainly focused on personal entertainment needs, so renamed this factor to entertainment. The amount of variance explained was 9.578%.

The fourth factor included three indicators: not knowing how to reply with words, adjusting the atmosphere, and expressing politeness. It was mainly centered on communicating with others, so this factor was renamed communicativeness. The explained variance was 8.181%.

The fifth factor included the influence of subcultural preference and perfunctory others, which mainly revolved around the cultural influence of personal usage of emoji, so this factor was renamed as culture. The explained variance was 6.682%.

The sixth factor included three indicators: integration into the group, self-image shaping and presentation, and disambiguation. It mainly focused on how to display personal images, so this factor was renamed image. The explained variance was 6.386%.

The seventh factor included hiding personal privacy, implicitly expressing purpose and emotional indicators, which mainly revolved around the ambiguous aspect of the emoji itself, hence renaming this factor to ambiguity. The explained variance was 6.267%.

The eighth factor included three indicators: boredom, publicity, and the influence of individual conformity. It mainly focused on the context of emoji, so this factor was renamed to contextuality. The explained variance was 5.923%.

According to the self-determination theory, the above eight factors could be classified into two categories: internal factors and external factors. According to the definition of the internal and external factors of the use of emoji, the internal factors included information, efficiency, and entertainment, and external factors included communicativeness, culture, image, fuzziness, and context (Table 4).

5. Discussion and Conclusions

5.1 Discussion

Emoji plays an essential role in social media due to their entertainment, messaging, and communication characteristics. The research on user usage psychology has always been a critical point. Given the deficiency of the existing research, this study conducted a complete and systematic investigation of the user's usage psychology. The experimental data indicated that gender and age were important factors affecting the spread and use of emojis. It has shown that women used emojis more frequently than men, which was consistent with the conclusive results of Kuang & Qiu's [22].

And young people aged 18-25 used emojis more often than other age groups, consistent with research by Liu [31]. The research results showed the attribution of the five factors of information, efficiency, entertainment, culture, and context was slightly different from the presupposition, it might be that the difference occurs in the case of linguistic ambiguity. Although it was different from the attribution of presupposition and other documents, it did not affect the presentation of the overall data results. In addition, the research results confirmed that education and occupation played a fundamental role. Specifically, the frequency of using emojis by undergraduate education and student groups was much higher than that of other education and occupation, indicating that student groups were the main force of using emojis, and different education and occupation often affected the use and selection of emojis. Besides, users preferred to express with icons and pictures and to use and save emojis of "friend forwarding" and "WeChat self-contained," which also provided references for the design and marketing of emojis. At the same time, consistent with Liu & Liu's findings [7], our results indicated that the communication and usage psychology of emoji had prominent multi-dimensional characteristics, of which the information-driven by internal factors was the most obvious. The informational factors were the main factors that affected the psychology of emoji usage. Most external factors were driven by imagery and context. Therefore, based on the above results, we could propose strategies related to communicating and using emojis. First, as young students are the main force in emojis usage, so to catch the love of young students, the design of emojis should keep up with the fashion, keep pace with the times, pay attention to hot issues and combine them skillfully pay attention to updating. This is essential for the transmission and design of emojis. Second, since the internal factors have the strongest explanation for emoji's communication and usage psychology, it is necessary to pay attention to the expression and expression of information, efficiency, and entertainment in emoji. Besides, emojis attract the communication and usage of user groups through internal and external factors, therefore combining internal and external factors and continuous innovation is essential for the communication and design of emojis. At the same time, this research has made significant contributions to theory and practice.

5.2 Conclusion

Based on the analysis and collation of the existing literature, this study analyzed the specific situation of emoji communication and usage psychology in WeChat. First, the interview outline was designed according to the literature, and then the scale was improved according to the interview results to conduct the questionnaire. Secondly, we compiled questionnaires, collected questionnaires online and offline, and used SPSS 25.0 with exploratory factor analysis to explore the communication and usage of emojis. Finally, according to the data results, eight factors of WeChat users' psychology toward emoji were summarized: information, efficiency, entertainment, communicativeness, culture, image, fuzziness, and context. The key finding of this study was the impact of fuzziness on the psychology of users' use of emojis, which was an essential factor that cannot be ignored.

5.3 Theoretical Contributions

The eight factors of WeChat users' psychology toward emojis have internal correlations. According to the self-determination theory, they can be divided into internal and external factors.

The internal factors included information, efficiency, and entertainment and the external factors included communicativeness, culture, image, fuzziness, and context. Thus, both internal and external factors could influence emojis usage.

This study also verified that there were gender and age differences in the usage of emojis, with undergraduate education and student groups dominating the usage of emojis. Moreover, this study empirically studied the communication and usage psychology of emojis on WeChat, which supplemented the neglect of fuzziness and polysemy of emojis in previous studies. At the same time, we must correct our attitude toward emojis and have healthy and moderate entertainment.

5.4 Practical Implications

The research in this paper provided some inspirations for the design practice of emojis, such as: paying attention to the linguistic context of emojis and designing as many emojis as possible. At the same time, emojis can also be combined with strong brands. When designing emojis, appropriate cute elements can be added on the basis of considering the use scenarios of emojis, to increase the frequency of emoji usage and achieve brand management [17]. And in product design, we can also add elements of emojis.

5.5 Research Limitations and Future Research Directions

There are still some limitations in this study. First, the research participants were primarily young people. In the future research process, the research objects could be extended to other age groups. Second, this study only summarized the psychological factors of using emojis, without analyzing and studying other factors, such as the user's usage context. Therefore, in the future, we should conduct more in-depth research on the communication and usage psychology of emojis in design or marketing.

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Author Contributions

Han Liu: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper. Biao Gao: Conceived and designed the experiments; Wrote the paper. Xingxing Wang: Performed the experiments.

Competing Interests

The authors have declared that no competing interests exist.

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