

# **The Influence of Narcissism, Leisure Boredom, and Gratifications on WeChat Use and Addiction**

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## Abstract

The goal of this study is to identify the relationships between narcissism, leisure boredom, perceived gratifications and WeChat use and addiction. Data were gathered from a sample of 433 students in a mid-size university in southern China. An exploratory factor analysis yielded five dimensions of gratifications sought from WeChat use (utility assisting, social interaction, information seeking, functional displacement, and relaxation), and five symptoms of WeChat addiction (withdrawal, disregard of negative consequences, craving to use, mood modification, and preoccupation). Based on Young's (1998) classic definition, 7.4% in the study sample were considered as WeChat addicts, characterized by narcissistic tendency and gratifications of relaxation and functional displacement, and they relatively use the function of WeChat moments more frequently. Furthermore, the symptoms of WeChat addiction were predicted by narcissism, gratifications sought, and functional use of WeChat, and there's a clear correspondence between gratifications sought and functional use of WeChat. Finally, narcissism, leisure boredom, gratifications, and functional use all have strong predictive power of use intensity, though the negative relationship between leisure boredom and use intensity is unexpected from previous studies and deserve more analysis.

**Keywords:** WeChat, addiction, use and gratification, narcissism, leisure boredom

## **Introduction**

WeChat, first launched in January 2011, is a mobile communication tool developed by Tencent in China. According to the latest report by CNNIC, the coverage of WeChat in China has reached 61.9%. And globally, 23% of the world's Internet users aged 16-64 are now using WeChat on a regular basis, with 39% in Asia Pacific alone (GlobalWebIndex, 2014).

Users can register WeChat with QQ (another popular Tencent instant message tool) account or phone number and directly add friends from QQ and phone contacts, and log in to WeChat via webpage and application in mobile phone, tablet, and PCs. As an instant message application, WeChat mainly focuses on the communication functions like sending text, voice, video and photo messages, group chat, scanning QR code to add friends, and finding new friends nearby. But with advancement, it started to support Moments (a built-in platform for sharing photos, texts, and links to friends), games, mobile payment, subscriptions of official accounts (providing service or contents by third-party individuals or organizations), and other assistant functions. Besides, WeChat has also become the entrance for other mobile applications such as e-commerce site JD, DiDi Taxi ordering service, and mobile games developed by Tencent. Therefore, with strong and diverse communication functions, and other social, entertaining, information, and e-commerce features, the user stickiness of WeChat has continuously increased. Until August 2014, it has reached 468 million monthly active users, and 25% users check WeChat more than 30 times per day, according to the user and platform data shared by Tencent in Jan. 2015.

As a unique communication tool born in China, the shocking growth and development of WeChat has attracted some researchers' attention. A lot of researches about WeChat focus on WeChat itself, or from social impact, marketing and advertising perspectives (Liu & Xu, 2014). Except those, WeChat using behavior needs more research. Recent survey (Tencent, 2015) about WeChat found that there was a significant increase in frequency and long

duration of WeChat use. Users will check WeChat in all kinds of occasions including relaxing after meal, waiting for bus, and even during work and class. However, such popularity and stickiness of WeChat may lead to some problems in normal life. Previous studies on Internet and SNS addiction reveal that overuse and addiction may trigger distraction and anxiety and negatively affect work efficiency and sleep quality (Kandell, 1998; Koc & Gulyagci, 2013)

As few studies focused on addictive and problematic use of WeChat, this study will try to find out the extent and symptoms of WeChat addiction exist in Chinese university students. Previous studies have reported that psychological factors can predict addictive behaviors such as Internet addiction (Chak & Leung, 2004; Engelberg & Sjoberg, 2004) and game addiction (Kim et al., 2008)), this exploratory study will identify the influence of narcissism, leisure boredom, and gratifications on WeChat use and addiction.

## **Literature Review**

### ***Uses and Gratifications of WeChat***

Uses and gratifications (U&G) theory is an important theoretical framework to understand why and how people actively use specific media to gratify their specific needs, with two main questions: Why do people use media and what do they use them for (Ruggiero, 2000)?

In 1970s, U&G was defined as one concerned with the social and psychological origins of needs, which generate expectations of the mass media or other sources, which lead to differential patterns of media exposure (or engagement in other activities), resulting in need gratifications and other consequences, perhaps mostly unintended ones (Katz, Blumler, & Gurevitch, 1974).

Contemporarily, U&G is based in these five assumptions: (1) "Media selection and use is goal-directed, purposive, and motivated"; (2) "People take the initiative in selecting and using communication vehicles to satisfy felt needs or desires"; (3) "A host of social and

psychological factors mediate people's communication behavior"; (4) "Media compete with other forms of communication for selection, attention, and use to gratify our needs or wants"; and (5) "People are typically more influential than the media in the relationship, but not always" (Rubin, 1994, p.420).

And with development, UGT has recently been used to predict and explain the connections among the needs, goals, consequences of media use, and personal traits. In recent theory applications, the focus of uses and gratifications research has changed from previous mass media to modern technologies like mobile phone (Leung & Wei, 2000; Melanie & Narissra, 2012;), Internet (LaRose, Dana, & Matthew, 2001), social media (Gina Masullo, 2011; Leung, 2013; Raacke & Jennifer, 2008), instant messaging (Leung, 2001), and online game (Colwell, Grady, & Rhaiti, 1995), among others.

Different from a single medium, WeChat incorporates instant communication with comprehensive features like photo sharing, content subscription, mobile payment, games download, files transferring, taxi ordering, online shopping, finance, and so on. This original and powerful instant messaging tool may generate the similar gratifications to those of Facebook, Twitter, Internet, and games. According to previous studies, the basic motivations underlying the use of SNS, Internet, instant messaging, and games are generally similar, including sociability, affection seeking, entertainment, relaxation, recognition, cognitive needs, escapism, inclusion, convenience, information, and fashion, etc. Besides, WeChat may also bring about some fresh gratifications for users. Therefore, one goal of this study is to identify anticipated additional gratifications that the users seek from WeChat, with the research question as below:

**RQ1:** What are the gratifications sought from WeChat use?

### ***Internet, SNS, and WeChat Addiction***

In nearly four years since its birth, the use of WeChat has become a lifestyle for more than 300 million users. Past studies about addictive and problematic use of WeChat are very few, but in the recent report released by Tencent, 55.2% users open WeChat more than 10 times every day, and heavy users who open more than 30 times per day are close to 25%. As previous study noted that habitual/ritualistic use of media implies dependency or addiction (Park, W. K., 2005), this intensity of WeChat use may represent a high possibility that there are a portion of WeChat users get addicted to this application and dependent on it in their daily lives.

WeChat is an instant messaging tool based on Internet to offer communication service and relative relaxing, informative, and financial activities for the users. Previous studies assumed that Internet addiction is a kind of behavioral addiction that's similar to people who are addicted to gambling, drugs, and alcohol (Young, 1996). Internet addiction is also thought to share defining features of substance dependence, including excessive use, tolerance, withdrawal and negative repercussions from use (Hormes, Kearns, & Timko, 2014).

To assess Internet addiction, Kimberly Young (1998) devised a brief questionnaire to diagnose Internet addiction user from (1) preoccupation; (2) tolerance (the need to spend an increasing amount of time); (3) unsuccessful attempts to control or limit participation on Internet; (4) psychological withdrawal symptoms; (5) staying longer than originally intended; (6) has jeopardized or lost a relationship, job, or educational opportunity; (7) deceiving family members and/or therapists; and (8) use of Internet games to escape a negative mood. And, Griffiths (2005) has operationally defined the six core components of addiction: salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse, arguing that any behavior that fulfills these six criteria can be operationally defined as an addiction.

Though the pathological gambling is the only behavioral addiction, a lot of studies have

focused on potential behavioral addiction like Internet addiction (Young, 1996), video-game addiction (Fisher, 1994), SNS addiction (Griffiths, 2003), etc. Previous studies on SNS addiction adapted Young's 20-item Internet Addiction scale (1998) to measure Facebook addiction (Chen & Kim, 2013), and also built up some scales to measure SNS addiction. The Addictive Tendencies Scale (Walsh, et al., 2007) has been used by Wilson, et al. (2010) to measure the SNS addiction tendencies in Australia young adults from salience, loss of control, and withdrawal. Similar scales are also used to measure the addictive tendencies in use of text messages and instant messaging. A scale especially for assessing Facebook addiction was also created according to the six components defined by Griffiths (2005) and called The Bergen Facebook Addiction Scale (BFAS).

Compared with Facebook, the use of WeChat has not drawn so much attention on its influence on the user's psychological health and behaviors. Therefore, in this study, one goal is to identify the extent to which university students are addicted to WeChat use, and to identify the symptoms of WeChat addiction:

**RQ2:** To what extent are university students addicted to WeChat and what are the symptoms?

### *Narcissism*

Narcissism is referred to a personality trait closely linked with an inflated and grandiose self-concept. But pathologically, narcissism is actually delineated into two types: the exhibitionistic and closet personalities. The former ones have an inflated, grandiose self-perception expecting that their grandiosity will be mirrored by others and they devalue others who fail to admire them. Comparatively, their counterparts are vulnerable and have a deflated, inadequate self-perception (Masterson, 1993). Therefore, it has been assumed that narcissists' positive explicit (conscious) self-perception mask implicit self-loathing (Campbell, et al., 2007).

Past researches find that in one aspect, narcissists pursue public glory, and tend to be boastful, aggressive, and attention-seeking; but in another aspect, they are unwilling or unable to build close, intimate or other long-term positive relationships (Bergman et al., 2011; Buffardi & Campbell, 2008; Carpenter, 2012; Wallace & Baumeister, 2002; Ong et al., 2011). They just participate in dynamic “self-construction” to use relationships to gain benefits like looking popular or to prove their narcissistic esteem (Morf & Rhodewalt, 2001).

Therefore, as found in previous studies in narcissism and social networking sites (Buffardi & Campbell, 2008), online communities such as in WeChat can be thought as an ideal platform for narcissists to self-regulate via social connections, and also indicated that people with high levels of narcissism engage in frequent use of Facebook. For the narcissistic users, social networking sites and other online communities provide them with a relatively open environment to maintain large numbers of relationships without too much real emotional investment, and they also can completely control how they will be exhibited to others by photo sharing, status updating, and the like. In WeChat, though the relationships are mainly built from real relations by adding friends from telephone contacts or face to face, and personal friends list are not open to others, there are still many ways to fulfill the kind of self-presentation needs. For example, in the WeChat moments, the number of likes and comments on the post, and the times of being reposted are the ways to show popularity. Even in the games download page, the users can see the rank of other friends in the same game.

In addition to the use intensity, narcissism is also found to be associated with the addiction of online game (Kim, et al., 2008), SNS (La Barbera, La Paglia, & Valsavoia, 2009), and other Internet related usage. As addiction is characterized by compulsive engagement in rewarding stimuli, despite adverse consequences, the user with high level of narcissism may fall into the addiction to one activity for the attention, popularity, ideal selves, or other benefits they pursue anxiously.



Therefore, in this study it is expected that WeChat users with high level of narcissism will spend more time on WeChat and be more active to upload photos to Moments and interact with friends, and they will be more vulnerable to be addicted to WeChat use, thus making hypotheses as below:

**H1a:** Subjects who score high on the level of narcissism will use more of WeChat.

**H1b:** Subjects who score high on the level of narcissism will more likely be addicted to WeChat.

### ***Leisure Boredom***

Boredom is generally considered to be a subjectively experienced negative mood state associated with feelings of frustration, displeasure, monotony, demotivation and lethargy, combined with a sense that time stands still (Hill & Perkins, 1985; Iso-Ahola & Weissinger, 1990; Patrick, 1982). And in many studies about young people's leisure, 'having nothing to do' has been thought as a major reason for experiencing boredom in leisure time (Jones, 1992; Patterson, Pegg & Dobson-Patterson, 2000). In fact, Iso-Ahola and Weissinger (1990, p. 4) defined leisure boredom as "... the subjective perception that available leisure experiences are not sufficient to instrumentally satisfy needs for optimal arousal". "Optimal arousal" in some ways means that the leisure time are optimally arranged and the individuals do not have too much or too little to do in their leisure. Thus, leisure boredom is a likely consequence of conflicting perceptions of having too much time available with too little to do (Hill & Perkins, 1985).

There are many influencers in the experience of leisure boredom. Previous study pointed out that lack of awareness of leisure's potential seems to be a major factor leading to perceptions of leisure as boredom, and lack of self-motivations and constraint factors also became "leisure barriers" (Iso-Ahola & Weissinger, 1987). And, as a consequence that the

one who perceives leisure as boredom will believe that available leisure experiences are not sufficiently frequent, involving, exciting, varied, or novel (Iso-Ahola and Weissinger, 1990), the leisure boredom were linked with gambling (Blaszczynski, McConaghy, & Frankova, 1990) and abuse of alcohol and drug (Caldwell & Smith, 1995; Iso-Ahola & Crowley, 1991) as a way of release that kind of negative feelings. And in recent studies, leisure boredom has been used to predict mobile phone addiction (Leung, 2008), Internet addiction (Lin, Lin, & Wu, 2009), SNS-game addiction and the level of use (Zhou & Leung, 2012), for these activities offer a way to enrich leisure experience.

For the university student users of WeChat in China, their lives mainly focus on a campus with too much time but not many meaningful activities. With the prevalence of WeChat, this multi-functional tool may become an easy way for the users to pass time and thus develop a habitual use. And for the users perceive leisure as boredom, it is possible for them to depend on this application to avoid being bored and pursue an enjoyable experience. Therefore, in this study, it is suggested that:

**H2a:** Subjects who score high on the level of leisure boredom will use more of WeChat.

**H2b:** Subjects who score high on the level of leisure boredom will more likely be addicted to WeChat.

In this study, the main purpose is to find out the gratifications sought from WeChat and the situation of WeChat addiction in Chinese university students. Therefore, the psychological traits of narcissism and leisure boredom, and functional use are used to predict the gratifications. Besides, in order to predict the WeChat use intensity and the addiction, demographics, narcissism, leisure boredom, and gratifications sought will all be included as predictors. Finally, the relevant research questions are proposed as below:

**RQ3:** How do demographics, narcissism, leisure boredom, and functional use predict the gratifications sought from WeChat?

**RQ4:** How do narcissism, leisure boredom, gratifications sought from WeChat, and functional use of WeChat predict the extent of WeChat addiction and relative symptoms?

**RQ5:** How do demographics, narcissism, leisure boredom, the gratifications sought from WeChat, and extent of addiction relate to the use intensity of WeChat?

## **Methodology**

### ***Sample and Data Collection***

Targeting on Chinese university students, this research chose a mid-sized university, located in southern China with around 34,000 students, to collect data. And the paper-based questionnaires were distributed in the university student canteens from 6<sup>th</sup> April to 12<sup>th</sup> April. There are 10 different student canteens on campus serving 3 times for breakfast, lunch and supper 7 days a week. Then this study coded the sets of the canteen number, mealtime and the days of the week as a total of 210 probabilities. Then 14 probabilities were randomly chosen out by random number generator and indicate the canteen location, the mealtime and the day of the week to distribute the questionnaire.

A total of 450 valid questionnaires were received and 433 were valid. This sample consists 48.8% male respondents and 51.2% females. Nearly 2.1% of the whole sample were under 18, 21.5% of them age from 18-19, 42.7% of them were 20-21 year old, 18.0% were 22-23, and 15.7% were 24 or older. As for the education background of the 433 respondents, 20.8% were in Year 1, 31.1% were in Year 2, 19.3% were in Year 3, 9.0% were in Year 4, 0.9% were in Year 5, 18.4% were master's students, and 0.5% were PhD students. And, as for their major, 33.6% major in humanities, 28% were science major, and 38.4% were business major students. As for the use intensity, most of the respondents had 151-200 WeChat friends ( $M=4.87$ ,  $SD= 2.13$ ), opened WeChat 1 to 5 times per day ( $M= 4.64$ ,  $SD=2.38$ ), and spent 0

to 10 minutes in each time of using WeChat ( $M= 1.71$ ,  $SD=1.09$ ).

## Measurement

*Gratifications Sought from WeChat.* A focus group was firstly conducted in 15 university students who had used WeChat to understand the gratifications sought from WeChat. Besides, from literature some typical motivations to use IM, SNS and Internet were also incorporated in the questionnaire. Thus the gratification part contained 17 items and adopted a 5-point Likert scale with 1= “strongly disagree” and 5= “strongly agree”.

*WeChat Addiction.* To assess addiction to WeChat, the Bergen Facebook Addiction Scale (Andreassen, et al., 2012), Internet Addiction Test (Young, 1998) and Television Addiction Scale (Horvath, 1999) were revised and combined into an 18-item scale, and initially, a 5-point Likert scale was used with 1= “strongly disagree” and 5= “strongly agree”. Besides, in order to further measure the extent of WeChat addiction, in the 18 items, 8 items are equivalent or similar to the 8-item Young’s brief diagnostic questionnaire (1998), and the 5-point Likert scale was dichotomized with “1” to “3” recoded “0”, and “4” to “5” recoded to “1”. Then the 8 items were combined into one variable “extent of WeChat addiction” with the value ranging from “0” to “8”. Finally, the respondents who got a score of 5 or higher in this variable would be classified as addicts.

*WeChat Use Intensity.* The revised Facebook Intensity scale (Ellison, et al., 2007) was used to measure users’ attitude and use behavior on WeChat. Three items were used to assess users’ attitude with a 5-point Likert scale ranging from 1= “strongly disagree” to 5= “strongly agree”, for example, “WeChat has become part of my daily routine”. And other three items were about measuring the number of WeChat friends, daily frequency of opening WeChat, and the duration of single use with multiple choices.

*Functional Use of WeChat.* Eight main functions built in WeChat are chosen to measure the

functional use, and a 5-point Likert scale with 1= "almost never" and 5="very frequently" was used to assess how often they use the following functions: send text or voice messages, group chat, emoticons, moments, transfer files, WeChat wallet, official account, shaking or finding people nearby.

*Narcissism.* The Narcissistic Personality Inventory-13 (Gentile, et al., 2013) was used to measure the level of narcissism. NPI-13 has a total of 13 items and each item consists of a pair of attributes, such as "A. I find it easy to manipulate people" and "B. I don't like it when I find myself manipulating people", then the respondents were asked to mark with one choice that they most agree with. Because the NPI-13 is a forced-choice dichotomous measure of narcissistic tendencies, and in every pair of attributes A or B indicates a narcissism tendency, so in assessment, the choice for narcissism was recoded into "1" and the other was recoded into "0", then all 13 scores for each item were summed up to a total score of narcissism.

*Leisure boredom.* The Leisure Boredom Scale (Iso-Ahola & Weissinger, 1990) was used to examine the perceptions of boredom in leisure experiences, and 10 items chosen from the complete 16-item scale are related to the quality of leisure time. A 5-point Likert scale (1="strongly disagree" to 5="strongly agree") was used, and the sample items contained "During my leisure time, I become highly involved in what I do," "Leisure time gets me aroused and going," and "Leisure experiences are an important part of my quality of life."

*Demographics.* Demographic variables were measured in this study as control variables, including gender (male=0), age, and grade.

## **Findings**

### ***Gratifications of WeChat***

As shown in the Table 1, a principal component analysis (with Varimax rotation, Eigenvalue greater than 1, and factor loading greater than .50) of the 17 items about gratifications sought

from WeChat usage yielded five factors explaining 72.03% of total variance.

The first factor is “Utility assisting” ( $\alpha = .877$ ), indicating that WeChat as an instant message tool also has become users’ assistant in online shopping, finance, transportation, and other aspects. The second factor is “Social interaction” ( $\alpha = .784$ ) and illustrates that WeChat offers a communication channel to keep up correspondence with friends or families and to share personal feeling, experiences and information with others. “Information seeking” ( $\alpha = .819$ ) is the third factor, which shows that WeChat is used as a way to get valuable, entertaining, and interesting contents, information, and news. The fourth factor is “Functional displacement” ( $\alpha = .806$ ), and included three items meaning that WeChat is used to replace SMS, phone, and QQ or other IM tools. The last factor is “Relaxation” ( $\alpha = .813$ ) indicating WeChat is used for relaxation, entertainment, and passing time.

In summary, “Social interaction”, “Functional displacement” and “Information seeking” are the strongest gratifications gained from WeChat use. Though the mean score of “Utility assisting” is rather lower than other four, this gratification is relatively unique in SNS and IM applications use, which also suggests in some users’ mind it makes WeChat important and different from other similar apps.

### ***Extent of WeChat Addiction***

To measure the extent to which the university student users were addicted to WeChat, in the initial 18 items, 8 items with equivalent or similar meaning to Young’s brief diagnostic questionnaire (1998) were used. The sample items included “I use the WeChat as a way to forget about problems or reduce feelings of guilt, anxiety, helplessness, and depression”, “I spent more time on WeChat than initially intended”, and “I would be restless or troubled if I were prohibited from using WeChat.”

(\* Insert Table 1 about here \*)

Firstly, the 5-point Likert scale for these 8 items was dichotomized with “1” to “3” recoded to “0” and “4” and “5” recoded to “1.” Then the 8 items were combined into one variable “extent of WeChat addiction” with the value ranging from “0” to “8.” And according to the classic definition by Young (1998), the respondents who got a score of 5 or higher in this variable would be classified as addicts. Finally, based on the descriptive analysis, 7.4% of the 433 respondents were considered to be addicted to WeChat, namely 32 respondents in this sample. Though such magnitude is not that large, the real number of WeChat addicts in the whole user group can be very huge. According to released data by Tencent in 2015, the monthly active users in WeChat has reached 549 million, and 45.4% of the users are 18-25 which accords with the age distribution of this study, so that the result can be translated to nearly 18 million WeChat addicts. Besides, the descriptive analysis results also showed that in this sample, 56.3% of the addicts are male, 65.6% are undergraduates in Year 1 and 2, and 75% of them are aged from 18 to 21.

### ***WeChat Addiction Symptoms***

To figure out the symptoms of WeChat addiction, the 18 items about addiction were put into an exploratory factor analysis (EFA with Varimax rotation, Eigenvalue greater than 1, and factor loading greater than .50) to have identified five factors with 63.52% of total variance explained.

The first factor is “Withdrawal” ( $\alpha = .82$ ), reflecting that if prohibited from using WeChat the users would feel bad and restless, and that life would be empty and joyless without WeChat. The second factor is “Disregard of negative consequences” ( $\alpha = .74$ ) indicating that because of WeChat overuse the students suffer from the productivity loss and worse study performance, and spend less time on hobbies, but they would still keep using. “Craving to use” ( $\alpha = .74$ ) is the third factor that illustrates that the users have an urge to use more and more of

WeChat to get pleasure. The fourth factor is “Mood modification” ( $\alpha = .82$ ) indicating WeChat use helps the users to forget disturbing problems and to reduce the negative emotions like restlessness and depression. The last factor “Preoccupation” ( $\alpha = .58$ ) includes 2 items meaning that the users feel preoccupied with WeChat, and WeChat has dominated their thoughts and life.

(\* Insert Table 2 about here \*)

### ***Hypotheses Testing***

After regression analysis, narcissism was found to be positively and significantly related to both the use intensity of WeChat ( $\beta = .188, p \leq .001$ ) and extent of WeChat addiction ( $\beta = .196, p \leq .001$ ), confirming the H1a and H1b. That implies that the higher level of narcissism the users have, the more they will use WeChat and get addicted to WeChat.

And, the regression analysis showed significant but negative relationship between leisure boredom and WeChat use intensity ( $\beta = -.105, p \leq .05$ ), and no significant relationship between leisure boredom and extent of WeChat addiction, rejecting both the H2a and H2b. From this result, it can be suggested that the users who perceive higher level of boredom of leisure experiences will not use more of WeChat.

### ***Predicting the Gratifications Sought from WeChat Usage***

Regression analysis (Table 3) was conducted to examine the predictive power of the demographics, narcissism, leisure boredom, functional use, and extent of addiction on the five dimensions of gratifications.

(\* Insert Table 3 about here \*)

Results indicated that functional use of “Shaking or finding people nearby” ( $\beta = .424, p \leq .001$ ), “WeChat wallet” ( $\beta = .315, p \leq .001$ ), “send text or voice messages” ( $\beta = -.196, p$



$\leq .001$ ) and “Transfer files” ( $\beta = .163, p \leq .001$ ) were the strongest predictor of the gratification of “Utility assisting”, followed by the predictor of “narcissism” ( $\beta = .149, p \leq .01$ ) and demographic variable “grade” ( $\beta = .139, p \leq .01$ ). The results imply that the users who use WeChat for “Utility assisting” rather than other gratifications will use more of the functions like “shaking or finding people nearby”, “WeChat wallet”, “Transfer files” but less of “Send text or voice messages.” Psychologically, narcissistic users will have more of this gratification to be fulfilled. Demographically, the student users with such need are in higher grade than those with other needs.

As for the user with the gratification of “Social interaction”, they would use more of “WeChat moments” ( $\beta = .469, p \leq .001$ ) and “Emoticons” ( $\beta = .152, p \leq .001$ ) and “Send text or voice messages” ( $\beta = .114, p \leq .05$ ) functions. Psychologically, leisure boredom ( $\beta = -.189, p \leq .01$ ) was a significant but negative predictor showing the users with boredom in leisure activities would not use WeChat to gratify their “Social interaction” needs. And the results also show the “social interaction” was also linked to gender ( $\beta = .118, p \leq .05$ ), and extent of addiction ( $\beta = .116, p \leq .01$ ), implying female users in WeChat are more in need of “social interaction”, and those addicted to WeChat are more likely to have such gratification.

And for “Information seeking” gratification, the functional use of “Official account” ( $\beta = .419, p \leq .001$ ) was the strongest predictor, followed by leisure boredom ( $\beta = -.209, p \leq .001$ ) and grade ( $\beta = .157, p \leq .01$ ). This reflects that the users who want to seek information by WeChat will use more of the “Official account” function, and they relatively have lower level of boredom in leisure and such students are demographically in higher grade.

For “Functional displacement”, functional use was found to have greater predictive power, including the “Send text or voice messages” ( $\beta = .331, p \leq .001$ ), “WeChat moments” ( $\beta = .128, p \leq .05$ ), and “Emoticons” ( $\beta = .049, p \leq .05$ ), illustrating these functions are more used by those use WeChat to displace SMS, phone call and QQ or etc. Besides, extent of

addiction ( $\beta = .147, p \leq .01$ ) also indicated strong predictive power for this gratification and means that the users addicted to use WeChat have higher needs for functional displacement than who are not addicted.

Lastly for the “Relaxation”, the functions of “WeChat moments” ( $\beta = .296, p \leq .001$ ), “Emoticons” ( $\beta = .207, p \leq .001$ ), “Shaking or finding people nearby” ( $\beta = .140, p \leq .01$ ), and “Official account” ( $\beta = .100, p \leq .05$ ) all are significantly related to this gratification. In addition, extent of addiction ( $\beta = .286, p \leq .001$ ), and gender ( $\beta = .111, p \leq .05$ ) were found significantly related to this gratification, reflecting that the addicts to WeChat are more likely use WeChat for relaxation and female users have more of such need.

In summary, every single function in WeChat has its corresponding user need, for examples, “WeChat moments” is designed for “social interaction”, “functional displacement” and “relaxation”, and “Official account” is mainly for “information seeking”. Psychologically, narcissism was only found to be strongly related to the “Utility assisting”, and leisure boredom was found to be negatively related to the gratifications of “Social interaction” and “Information seeking”. Besides, extent of addiction had been found to be very strong predictors for “Relaxation”, “Functional displacement”, and “Social interaction”, implying those addicted may mostly use WeChat to fulfill their those needs.

### ***Predicting the Addiction to WeChat***

To figure out the predictors for the extent of WeChat addiction and its five symptoms, a regression analysis were conducted and the results were shown in the Table 4.

(\* Insert Table 4 about here \*)

Firstly, as for the extent of addiction, the gratifications including “Relaxation” ( $\beta = .354, p \leq .001$ ) and “Functional displacement” ( $\beta = .113, p \leq .05$ ) was the most significant predictors, followed by the psychological trait of “narcissism” ( $\beta = .196, p \leq .001$ ) and the

function of “WeChat moments” ( $\beta = .116, p \leq .01$ ). It is implied that those who are more vulnerable or easily addicted to WeChat are mainly motivated by the need for relaxation and functional displacement, and they are more likely to be narcissistic and use WeChat moment very frequently.

To compare the predictive power for the five dimensions of WeChat addiction symptoms, it is found from the results that narcissism is more influential than leisure boredom, because narcissism can predict the symptoms of “Withdrawal” ( $\beta = .164, p \leq .001$ ), “Craving to use” ( $\beta = .150, p \leq .01$ ), and “Preoccupation” ( $\beta = .101, p \leq .05$ ), but leisure boredom is only significantly linked to “Craving to use” ( $\beta = .144, p \leq .01$ ).

As for the influence of gratifications on the five symptoms, those who use WeChat for “Utility assisting” will show symptoms like “Craving to use” ( $\beta = .222, p \leq .001$ ), “Mood modification” ( $\beta = .155, p \leq .001$ ), “Withdrawal” ( $\beta = .119, p \leq .05$ ), and “Disregard of negative consequences” ( $\beta = .103, p \leq .05$ ). And the users to fulfill the gratification of “Social interaction” will more have symptom like “Preoccupation” ( $\beta = .419, p \leq .001$ ) and “Disregard of negative consequences” ( $\beta = .115, p \leq .05$ ). And, for the one with “information seeking” need, the easily shown symptom is “Mood modification” ( $\beta = .191, p \leq .001$ ). Furthermore, the more often the users adopt WeChat for “Functional displacement”, the more likely they will exhibit symptoms of “Withdrawal” ( $\beta = .118, p \leq .05$ ) and “Preoccupation” ( $\beta = .117, p \leq .001$ ). In addition, if the users with strong gratification of “Relaxation”, they will be possible to show all of these five symptoms: “Mood modification” ( $\beta = .361, p \leq .001$ ), “Craving to use” ( $\beta = .357, p \leq .001$ ), “Disregard of negative consequences” ( $\beta = .334, p \leq .001$ ), “Withdrawal” ( $\beta = .335, p \leq .001$ ), and “Preoccupation” ( $\beta = .207, p \leq .001$ ).

Besides, in functional use part, the regression analysis results shows that the more frequently the users use “WeChat moment”, the more likely they will have the following symptoms, “Disregard of negative consequences” ( $\beta = .176, p \leq .001$ ), “Preoccupation”

( $\beta = .111, p \leq .05$ ), “Withdrawal” ( $\beta = .134, p \leq .01$ ), and “Craving to use” ( $\beta = .099, p \leq .05$ ). And, if they use “WeChat wallet” more, then will possibly show symptom of “Disregard of negative consequences” ( $\beta = .114, p \leq .05$ ). Demographically, the users with younger age will be more likely to have the “Disregard of negative consequences” ( $\beta = -.117, p \leq .05$ ) symptom.

### ***Predicting the Use Intensity of WeChat***

Regression analysis results in Table 5 show the different influence of demographics, narcissism, leisure boredom, gratifications, and functional use on the use intensity, opening times, as well as average duration of single usage.

Psychologically, narcissism has greater predictive power than leisure boredom. The results show that the more narcissistic users will have higher WeChat use intensity ( $\beta = .188, p \leq .001$ ) and average duration of single use ( $\beta = .149, p \leq .01$ ). But as mentioned in hypotheses testing, the ones who feel more bored in leisure time will not have higher use intensity ( $\beta = -.105, p \leq .05$ ).

In gratifications, those who are motivated by “Social interaction” ( $\beta = .422, p \leq .001$ ), “Functional displacement” ( $\beta = .308, p \leq .001$ ), and “Relaxation” ( $\beta = .177, p \leq .001$ ) will possibly have higher use intensity. And those who use for “Relaxation” ( $\beta = .268, p \leq .001$ ) and “Social interaction” ( $\beta = .165, p \leq .001$ ) rather than other gratifications will open WeChat more frequently everyday. With respect to functional use, the functions of “Send text or voice messages” ( $\beta = .262, p \leq .001$ ), “Transfer files” ( $\beta = .103, p \leq .05$ ), and “WeChat moment” ( $\beta = .092, p \leq .05$ ) will attract the users have higher use intensity. Especially, the one use more “WeChat moment” will also be likely to have longer average duration of single use ( $\beta = .132, p \leq .05$ ).

Last but not least, it is also implied that the extent of addiction is also significantly related to the WeChat use intensity ( $\beta = .301, p \leq .001$ ), daily opening times ( $\beta = .181, p$

$\leq .001$ ), and average duration of single use ( $\beta = .120, p \leq .05$ ).

(\* Insert Table 5 about here \*)

## **Discussions and Conclusions**

This study mainly focused on exploring unique gratifications sought from WeChat use and WeChat addiction symptoms, and how narcissism, leisure boredom, perceived gratifications, and functional use were related to WeChat use intensity and addition.

First and foremost, this study identified five dimensions of gratifications sought from WeChat by the Chinese university student users, and these include “utility assisting,” “social interaction,” “information seeking,” “functional displacement,” and “relaxation.” Because previous studies on WeChat had few focus on the gratifications, so these five has a value of reference for future study. Considering the multi-functional characteristic of WeChat, it can be compared with other instant messaging tool like WhatsApp and Line, and meanwhile it can also be seen as social networking site to be compared with Facebook and QQ. By comparison, in WeChat “utility assisting” was the unique gratification indicating that WeChat can satisfy diverse kinds of needs including calling for a taxi, online shopping, finance, and mobile games downloading. From the product design aspect, utility assisting motivation also means WeChat is useful in different scenarios of life, which creates more chances to get users dependent on this application. Correspondently, the regression analysis also showed that utility assisting gratification was a powerful predictor of the WeChat addiction symptoms including withdrawal, disregard of negative consequences, craving to use, and mood modification.

Another primary goal is to identify the WeChat addiction situation among university students in Mainland China. According to Young’s brief questionnaire, present study found that 7.4% respondents were addicted to WeChat. Given that in 2015 the monthly active users

in WeChat has reached 549 million and 45.4% of the users are 18-25, 7.4% addicts may be translated to 18.4 million WeChat users aging from 18-25. Besides, an exploratory factor analysis yielded five WeChat addiction symptoms with 63.53% of total variance explained. Among them, the Cronbach's alpha of "Preoccupation" is approaching 0.60 which may result from the non-probability sampling used in this study influencing the representativeness and generalization of the results. Besides, comparing with previous studies on SNS addiction (Griffiths, 2005; Wilson, et al., 2010), the results found out two different addiction symptoms, disregard of negative consequences and craving to use. Such difference may derive from the sample, because the previous study mainly focused on adolescents, but this study chosen university students as respondents who have a characteristic of poor self-control, so they are more possible to present the symptoms that they never care about the negative consequence like productivity loss and urge to spend more and more time in WeChat. Besides, these two addiction symptoms are similar to the smart phone addiction symptoms (Bian & Leung, 2014). WeChat is mainly used on smartphone, and in some ways WeChat addiction has a close relationship with overuse and dependence on the smartphone, for the smartphone provides a platform to use WeChat to displace other communication channels, and WeChat makes smartphone use more and more frequently and importantly.

Thirdly, among narcissism, leisure boredom, gratifications, and functional use, gratifications sought from WeChat, especially relaxation gratification, were found to be most significant predictor of both WeChat use intensity and addiction. Previous researches noted that people who have ritualized motives such as habit and passing time are habitual media users and have a high affinity with the medium (Rubin, 1981a, 1983). In this study, relaxation need motivate the users to find relax and entertainment, or just pass time through WeChat use, and this kind of ritual use will drive the users to use WeChat increasingly and get addicted to it. Besides, psychologically, as previous studies found that narcissistic users of online games

(Kim et al, 2007), Facebook (Mehdizadeh, 2010) and other social networking sites would be more vulnerable and easier to get addicted, in this study narcissistic WeChat users also had a higher level of use intensity and WeChat addiction. But different from previous studies (Leung, 2008; Lin, Lin, & Wu, 2009; Zhou & Leung, 2012), leisure boredom was not found to be a predictor of WeChat addiction and only positively linked with the addiction symptom of “Craving to use”. Moreover, opposite to the hypothesis, leisure boredom was found to be a negative predictor of WeChat use intensity. The results show some differences of WeChat from social networking sites or games. Those with high level of leisure boredom usually lacks the perceptions of the potential of leisure and self-motivations, so they won’t actively use WeChat for some explicit goals, instead they would play games to pass time or find something entertaining. However, the most important function of WeChat is instant communication and this study found the three significant gratifications sought from WeChat are social interaction, functional displacement, and information seeking. Therefore, these motivations commonly need an active goal such as communicate with someone and seek some information, so those feel bored in leisure would neither actively make their leisure time rich with WeChat nor get addicted to it. Lastly, WeChat addiction level was a significant predictor of the use intensity, which implies that WeChat addiction in some ways can not only be predicted from psychological attitude toward WeChat but also can be observed from the users’ behavior.

### **Limitations and Suggestions for Future Research**

Firstly, because of the non-random sample, the representativeness and generalizability of this study is influenced, so further studies can consider using a random sampling to validate the findings and results in this research. And secondly, considering previous studies on WeChat have not focused on the gratifications and addiction part, this study mainly made references

to the studies on instant messaging, social networks, Internet, etc. At the same time, with limited time and resources, there must be some other gratifications and addiction symptoms to be discovered. Besides, with no findings about the relationship between leisure boredom and extent of WeChat addiction, the psychological effects on the WeChat use, gratifications, and addiction deserve more studies, taking into consideration of other psychological traits like big five, self-control, and loneliness.

In conclusion, because at the present there are very few researches on WeChat, so the identified gratifications and addiction symptoms will have a meaning for reference. And, from predicting the WeChat addiction and usage, gratifications have shown very strong predictive power, so it can be suggested that the users' intention and needs will determine how they use this application and how much time, effort, and concentration they put in. Psychologically, leisure boredom is not a good predictor of WeChat use and addiction in this study, but it is suggested to use WeChat use to predict the users' leisure boredom. Last but not least, this study illustrates the unique feature of WeChat, and it is not as same as Facebook or other social networking sites but a multi-functional instant messaging tool. Considering the different environment of new media development in China, this unique application and the market behind all deserve more research.



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**Table 1. Factor Analysis of Gratifications Sought from WeChat Usage**

How much do you agree with the following statements about why you use WeChat?	Factors					M	SD
	1	2	3	4	5		
<b>Utility assisting</b>							
to go shopping	.89					1.83	.95
to use financial service	.88					1.82	.96
to download games	.84					1.59	.79
to call for a taxi	.81					1.97	1.02
<b>Social interaction</b>							
share personal experience or opinions		.87				3.53	1.04
share useful, entertaining, special information		.78				3.62	1.03
complain about life		.74				3.15	1.22
keep up correspondence with friends		.47				4.10	.81
<b>Information seeking</b>							
read interesting contents			.84			3.63	1.03
find the useful, valuable or interesting contents			.83			3.73	.96
get news and info			.81			3.22	1.11
<b>Functional displacement</b>							
replace SMS				.87		3.75	1.12
replace QQ or other IM tools				.82		3.70	1.13
replace phone call				.80		3.23	1.21
<b>Relaxation</b>							
entertainment					.83	3.42	.98
relaxation					.81	3.41	1.03
pass time					.75	3.12	1.08
Eigenvalue	4.77	3.06	1.95	1.38	1.09		
Variance explained (%)	18.03	14.25	13.80	13.26	12.69		
Cronbach's alpha	.88	.78	.82	.81	.81		

Note. N=414. Scale used: 1= strongly disagree, and 5= strongly agree. Total variance: 72.03%

**Table 2. Factor Analysis of WeChat Addiction**

How much do you agree with the following statements about why you use WeChat?		Factors					M	SD
		1	2	3	4	5		
<b>Withdrawal</b>								
1.	I felt bad if I, for different reasons, could not log on to WeChat for some time. (BFAS)	.82					2.98	1.17
2.	I fear that life without the WeChat would be boring, empty, and joyless. (IAT)	.76					2.35	1.08
3.	I would be restless or troubled if I were prohibited from using WeChat. (BFAS)*	.75					2.76	1.17
4.	I tried to cut down on the use of WeChat without success. (BFAS)*	.54					2.36	1.04
<b>Disregard of negative consequences</b>								
5.	I would be a lot more productive if I didn't use WeChat so much. (TV)		.84				3.20	1.14
6.	I would spend more time with hobbies if I didn't use WeChat so much. (TV)		.73				3.16	1.15
7.	My study performance or productivity suffers because of WeChat use. (IAT)*		.72				2.85	1.14
8.	I keep using WeChat even though it has caused problems to my life or study. (TV)		.49				3.33	1.05
<b>Craving to use</b>								
9.	I feel that I have to use WeChat more and more in order to get the same pleasure from it. (BFAS)*			.73			2.01	0.98
10.	I have an urge to use more and more of WeChat. (BFAS)			.71			2.29	1.01
11.	I spent more time on WeChat than initially intended. (BFAS)*			.56			2.75	1.14
12.	I want to hide from others how long I've been using WeChat. (IAT)*			.53			2.03	0.99
13.	I often neglect household chores/work/homework or other tasks to free more time to use WeChat. (IAT)			.43			2.37	1.13
<b>Mood modification</b>								
14.	I use WeChat in order to reduce restlessness. (BFAS)				.83		2.48	1.12
15.	I use the WeChat as a way to forget about problems or reduce feelings of guilt, anxiety, helplessness, and depression.*				.81		2.47	1.13
16.	I often block out disturbing thoughts about my life with soothing thoughts or entertaining contents on WeChat. (IAT)				.78		3.26	1.01
<b>Preoccupation</b>								
17.	I often check my WeChat before something else that I need to do. (IAT)					.73	3.34	1.11
18.	I often spent time thinking about previous contents on WeChat or planned use of WeChat. (BFAS)*					.71	3.08	1.05
Eigenvalue		6.21	1.74	1.43	1.04	1.01		
Variance explained (%)		14.74	14.14	13.27	12.51	8.86		
Cronbach's alpha		.82	.74	.74	.82	.58		

Note. Scale used: 1= strongly disagree and 5= strongly agree. Total variance: 63.52%, N = 419.

\* Items resemble or are equivalent to the 8-item Young's Internet addiction diagnostic scale.

**Table 3. Hierarchical Regression Analysis of Gratifications Sought from WeChat Usage Using Demographics, Narcissism, Leisure Boredom, and Functional Use as Predictors**

Predictors	Utility Assisting		Social Interaction		Information Seeking		Functional Displacement		Relaxation	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
<b>Demographics</b>										
Gender	.03		.12*		.03		-.02		.11*	.01
Age	-.11		.01		.06		.07		.09	
Grade	.14**	.019	.00	.014	.16**	.025	.08		.04	
<b>Personal traits</b>										
Narcissism	.15**		-.08		-.06		.00		-.02	
Leisure boredom	.06	.022	-.19***	.35	-.21***	.043	-.01		-.07	
<b>Functional use</b>										
Send text or voice messages	-.20***		.11*		.04		.33***		.01	
Group chat	.06		-.04		.01		.10		-.07	
Emoticons	.05		.15***		.06		.05***		.21***	
WeChat moments	.00		.47***	.249	.01		.13*	.149	.30***	
Official account	-.01		-.03		.42***	.171	-.02		.10*	
WeChat wallet	.32***		-.03		.03		.07		-.05	
Transfer files	.16***		-.05		.06		.04		-.03	
Shaking/Finding people nearby	.42***	.32	.04		.02		.06		.14**	.15
<b>Extent of WeChat addiction</b>	.03		.12**	.012	.04		.15**	.02	.29***	.07
$R^2$		.36		0.31		.24		.17		.24
Adjusted $R^2$		.35		0.30		.23		.16		.23

**Table 4. Hierarchical Regression Analysis of Extent and Symptoms of WeChat Addiction Using Demographics, Narcissism, Leisure Boredom, Gratifications Sought and Functional Use as Predictors**

Predictors	Extent of WeChat Addiction		Withdrawal		Disregard of negative consequences		Craving to use		Mood modification		Preoccupation	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
<b>Demographics</b>												
Gender	-.09		.00		-.03		-.04		-.10		.01	
Age	-.06		-.11		-.12*		-.01		.00		-.06	
Grade	-.02	.00	-.10	.00	-.06	.01	-.03	.00	-.07	.00	-.03	.00
<b>Personal traits</b>												
Narcissism	.20***		.16***		-.02		.15**		.01		.10*	
Leisure boredom	.05	.04	.09	.03	.14**	.04	.00	.04	-.01	.00	.10	.01
<b>Gratifications</b>												
Utility assisting	.06		.12*		.10*		.22***		.16***		-.02	
Social interaction	-.04		.04		.12*		-.01				.42***	
Information seeking	-.04		-.01		.00		.02		.11***		.01	
Functional displacement	.11*		.12*		.04		.03				.12***	
Relaxation	.35***	.14	.34***	.14	.33***	.13	.36***	.17	.36***	.19	.21***	.22
<b>Functional use</b>												
Send text or voice messages	-.04		.04		.03		.01		-.02		.01	
Group chat	-.01		.09		.02		.07		.07		.07	
Emoticons	-.03		.08		.02		.02		.01		.03	
WeChat moments	.14**		.13**		.18***		.10*		.04		.11*	
Official account	.07		-.01		.04		.08		.01		.07	
WeChat wallet	.04		.04		.11*		.01		-.06		.02	
Transfer files	.05		.10		.08		.06		.07		.05	
Shaking/Finding people nearby	.08	.02	.03	.02	.02	.03	.10	.01	.19***	.03	-.08	.01
$R^2$		.20		.19		.21		.22		.22		.24
Adjusted $R^2$		.18		.17		.17		.21		.21		.23

**Table 5. Hierarchical Regression Analysis of Use intensity of WeChat Using Demographics, Narcissism, Leisure Boredom and Gratifications Sought as Predictors**

Predictors	Use intensity of WeChat		Average duration of single use		Opening times per day	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
<b>Demographics</b>						
Gender						
Age						
Grade						
<b>Personal traits</b>						
Narcissism	.19***		.15**	.02		
Leisure boredom	-.11*	.05				
<b>Gratifications</b>						
Utility assisting						
Social interaction	.42***				.17***	
Information seeking						
Functional displacement	.31***				.27***	.10
Relaxation	.18***	.28	.10*	.01		
<b>Functional use</b>						
Send text or voice messages	.26***				.15**	.02
Group chat						
Emoticons						
WeChat moments	.09*		.13*	.02		
Official account						
WeChat wallet						
Transfer files	.10*	.07				
Shaking/Finding people nearby						
<b>Extent of addiction</b>	.30***	.07	.12*	.01	.18***	.03
$R^2$		.47		.06		.15
Adjusted $R^2$		.45		.05		.14