

# Being Addicted to Chinese Twitter: Exploring the Roles of Users' Expected Outcomes and Deficient Self-regulation in Social Network Service Addiction

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## Abstract:

This study focuses on people's addictive use of Weibo in China. As Weibo is one of the most popular social network service sites in China, this study specifically investigates the relationships among people's expected outcomes of Weibo use, deficient self-regulation, Weibo usage and Weibo addiction. Social cognitive theory was applied as the guiding theoretical framework in the current study. Participants from a public university in China were asked to fill out the surveys. The results suggested that participants have expected self-reactive outcome, expected status outcome, and expected novelty outcome in Weibo use. Expected self-reactive outcome positively predicted deficient self-regulation and all the dimensions of Weibo addiction. Weibo usage also positively predicted deficient self-regulation and all the dimensions of Weibo addiction. Research implications and future research directions were discussed in this study. [Kun Xu, Meichen Lin, Paul Haridakis Wang Pan. **Being Addicted to Chinese Twitter: Exploring the Roles of Users' Expected Outcomes and Deficient Self-regulation in Social Network Service Addiction.** China Media Research 2015; 11(2): 1-16]. 1

**Key words:** social network service, media addiction, social cognitive theory, deficient self-regulation

## Introduction

When people use the Internet excessively, they may become addicted to the Internet (Brenner, 1997). Internet addiction makes people feel compelled to use the Internet despite the negative consequences (LaRose, Lin, & Eastin, 2003). Scherer (1997) found that 13% of the college students in his study fit the criteria for unhealthy Internet use. Young (1998a) suggested that many dependent online users' sleep patterns were disrupted due to their excessive Internet use.

As a type of Internet addiction, researchers have focused on people's social network service (SNS) addiction in recent years. SNSs have been referred to web-based services that allow individuals to construct public or semi-public profiles and connect with others (Boyd & Ellison, 2008). Typical SNS sites include Facebook, Twitter, LinkedIn, and so on. Kuss and Griffiths (2011) argued that the overuse of SNS can be a health issue that may require professional treatment. In addition, Kittinger, Correia, and Irons (2012) found that problematic use of SNS may cause participants to be late for school, to lose track of time, and to feel addicted to SNS.

In this paper, I will focus on SNS addiction in China. Specifically, I will look at people's Weibo addiction. Weibo, as an equivalent of Chinese Twitter, is one of the most popular SNS sites in China. In 2011, the number of Weibo users reached about 200 million,

which means every one out of six online users used Weibo (CNNIC, 2011).

People can use Weibo via personal computers and mobile phones. Weibo allows users to post each message within 140 characters. Consistent with prior research on SNS functions (La Barbera, Paglia, & Valsavoia, 2009; Lampe, Ellison, & Steinfield, 2008; Valkenburg, Peter, & Schouten, 2006), Weibo allows individuals to construct a personal identity within virtual communities. Users can contact friends, enter information about their demographics or cultural tastes, add comments, send private messages, share photos and videos, and post blogs, which is similar to what other SNS users can do on MySpace or Facebook (Boyd & Ellison, 2008; Christofides, Muise, & Desmarais, 2009; Lewis, Kufman, Wimmer, & Christakis, 2008; Liu, 2007; Sledgianowski & Kulwiwat, 2009; Young, Dutta, & Dommety, 2009). People can also use applications such as radios and online games on the platform of Weibo.

With the large number of people using Weibo in China, the concerns about Weibo use also emerge. A study showed that over 80% of the 1,300 respondents felt that they experienced "Weibo addiction" and were once unable to control their behavior (Guangzhou Daily, 2011). Another study suggested that spending too much time on Weibo can lead to Weibo addiction, which may cause people's tiredness, anxiety, and depression (Uee,

2011).

Considering that more and more people are becoming Weibo users and that the addictive use of Weibo has negative effects on people's lives, in this paper, I will examine how people become addicted to Weibo. I will first explore people's expected outcomes of Weibo use. Then I will investigate how these expected outcomes and Weibo usage influence Weibo addiction and deficient self-regulation respectively. Additionally, the role of deficient self-regulation and Weibo usage in Weibo addiction will be discussed.

### **Review of Literature**

In this section of the paper, I will first conceptualize Internet addiction and rationalize the use of "Weibo addiction." Then, within the framework of social cognitive theory, I will discuss the roles of expected outcomes, Weibo usage, and deficient self-regulation in Weibo addiction. Research questions will be provided following the discussion.

### **Weibo Addiction**

The term "addiction" has been extensively used in Internet use research (Griffiths, 1995; Kuss & Griffiths, 2011; Le Barbera, La Paglia, & Valsavoa, 2009; Widjanto & McMurran, 2004; Young, 1996a, 1999). Researchers have maintained that the term "addiction" is not only associated with substance but also with behavior (Huh & Bowman, 2007; Lesieur & Rosenthal, 1991). The Diagnostic and Statistical Manual of Mental Disorders (DSM), published by the American Psychiatric Association in 1994, is another reference for scholars to identify the use of "addiction" in Internet use. Young (1996b) developed a questionnaire for diagnosing Internet addiction based on the pathological gambling criteria in DSM-IV as the pathological gambling in DSM-IV was viewed as most comparable to the nature of Internet addiction. The criteria include tolerance (a need for more substance to achieve the same effect), withdrawal (a syndrome that results if the substance use is reduced or stopped), preoccupation with the substance (persistent desire for the substance), heavy use (a great deal of time spent on using it), centralized activities to gain more of the substance (the substance is taken in larger amounts than is intended), loss of interest in other activities (forget about school, family, or work), and disregard for the physical or psychological consequences (continue to use the substance despite physical or mental problems) (APA, 1994; Leung, 2004, Young, 1996b).

Based on the DSM-IV criteria, Young (1996a) defined Internet addiction as "an impulse control disorder that does not involve intoxicants" (p. 2). Young (1998a) further developed a 20-item Internet addiction test to help respondents assess the impacts of the

Internet on their daily life. These items were related to six factors: salience, excessive use, neglecting work, anticipation, self-control, and neglecting social life (Widjanto & McMurran, 2004).

Some researchers supported the use of "addiction" in media studies. For example, according to Pies (2009), the term "Internet addiction" is acceptable because Internet addiction is treatable by inhibiting the Internet use, which is consistent with general treatment known for addictive disorders. Additionally, the diagnostic criteria of DSM-IV have been applied to a number of media addiction research such as video gaming addiction and television addiction (Chak & Leung, 2004; Chou & Hsiao, 2000; Griffiths, 1991; Griffiths, 1992; Horvath, 2004; Hur, 2006; Kim & Haridakis, 2009; King, Delfabbro, & Griffiths, 2004; McIlwraith, Jacobvitz, Kubey, & Alexander, 1991).

Though other researchers use "pathological Internet use", "problematic Internet use", or "Internet dependency" to describe people's excessive or maladaptive use of the Internet (Anderson, 1998; Caplan, 2002; Caplan, 2010; Davis, 2001; Kim & Davis, 2008; Lin & Tsai, 2002; Morahan-Martin & Schumacher, 2000; Thatcher & Goolam, 2005; Tokunaga & Rains, 2010; Wang, 2001; Yuen & Lavin, 2004), researchers have been critical of using these terms. For example, the term "Internet dependency" is criticized because "Internet dependency" focuses more on the normal consequences of individuals' media use, even when it is related to extreme affinity with the Internet (Kim & Haridakis, 2009).

Depending on the rationale of using "Internet addiction", researchers have argued that SNS addiction is a subcategory of Internet addiction because people's main motivation to use SNS is to maintain online or offline relationships (Karaiskos, Tzavellas, Balta, and Paparrigopoulos, 2010; Kuss and Griffiths, 2011). Prior research has suggested that SNS addiction such as Facebook addiction involves experiencing the same symptoms of substance-related addiction such as life stress, psychological vulnerability, mood modification, tolerance, and relapse (Echeburua & de Corral, 2010). Similarly, La Barbera, La Paglia, and Valsavoa (2009) suggested that the addictive use of SNS can decrease real-life community engagement, compromise academic performances, and result in self-absorption. Therefore, considering that Weibo is a typical SNS in China and SNS addiction involves the same symptoms of substance addiction, using "Weibo addiction" as an umbrella term in the remaining parts of the study should be tenable.

### **Social Cognitive Theory**

Social cognitive theory has been applied to media addiction research (LaRose et al., 2001; Shaw et al., 2006). According to social cognitive theory, human

behaviors can be affected by both direct experiences and observational experiences (Bandura, 1986). Direct experiences of performing particular behaviors can affect people's expectations for future behavioral consequences (LaRose et al., 2001). People also can form their outcome expectations by observing others gain desired outcomes through particular behaviors. Through either direct experiences or observational learning, the outcome expectations function as incentives to perform the behaviors (Bandura, 2001). Researchers have argued that by continually forming the expectations about the outcomes of media use, people will increase their media exposure and intensify their media usage (Bandura, 2001; LaRose et al., 2001).

Additionally, social cognitive theory suggests that people are capable of self-regulating (Bandura, 1991). Self-regulation is one's ability to direct his or her own behavior instead of being passively affected by external influences (Bandura, 1991). The self-regulatory mechanism includes self-monitoring, judgmental process, and self-reaction. According to LaRose (2001), in the self-monitoring process, people observe their own behaviors and provide information about the impact of their behaviors on self, others, and the environment. Then, the judgmental process assesses the result of the self-observation compared with personal standards or standardized group norms. At last, the self-reaction process provides behavioral and psychological feedback. People either strengthen the behavior that is positively evaluated or stop pursuing the action that results in negative self-judgment (Liu & Peng, 2008).

Deficient self-regulation refers to "a state in which conscious self-control is relatively diminished" (LaRose, Lin, & Eastin, 2003, p. 232). Deficient self-regulation can happen when any of the sub-functions of self-regulation is diminished. For example, the self-monitoring function can be undermined by both external and internal distractions (Hausman, 2000; Hoch & Loewenstein, 1991). The judgmental process can be impaired when personal standards are ignored or replaced by stimulus (LaRose, 2001). According to Bandura (1999), behavioral addictions can be avoided through self-regulation and the failure of self-regulatory mechanisms can mark the process of addiction.

### **Expected Outcomes, Weibo Usage, and Weibo Addiction**

Expected outcomes refer to people's beliefs about the consequences of behaviors (LaRose et al., 2001; Shaw et al., 2006). According to social cognitive theory, expected outcomes are psychological origins of human behaviors and can guide people's media use.

Prior research has corroborated that people's expected outcomes can influence people's behaviors. For example, Compeau et al. (1999) found that expected job performance outcomes of computer use (e.g., to

increase work efficiency and to increase chances of obtaining a job promotion) can increase people's computer usage. In addition, Garrett and Danziger (2008) found that expected utility of the Internet and routinized computer use are positive predictors of personal Internet use during work.

Bandura (1999) also found the associations between expected outcomes and people's behaviors. Bandura (1999) suggested that high outcome expectations of the effects of addictive substances are strong predictors of urges to use the substance.

Eyal and Kunkel (2008) conducted an experiment to test the effects of sex in television drama shows. Results suggest that exposure to shows that portray negative consequences of sex leads to more negative attitudes toward premarital intercourse and to more negative judgments of characters engaged in the behavior. Martino, Collins, Kanouse, Elliot, and Berry (2005) found that those who watched more televised sexual content had fewer negative expectations of the consequences of engaging in sexual intercourse and higher safe sex self-efficacy. In addition, Liu (2010) did a qualitative research on people's online posting anxiety under the theoretical framework of social cognitive theory. He found that online bloggers experience anxiety due to low self-efficacy and negative outcome expectations.

LaRose and Eastin (2004) conducted a study about people's Internet use. LaRose and Eastin (2004) suggested that there are six types of expected outcomes in people's Internet use. They are expected monetary outcomes, social outcomes, status outcomes, novelty outcomes, enjoyable activity outcomes, and self-reactive outcomes. According to Bandura (1986) and LaRose and Eastin (2004), people's expected monetary outcomes come from people's desire to receive material rewards. Expected social outcomes stem from people's desire to interact with other people. Expected Status outcomes derive from people's need for social recognition or social ranks. Expected novelty outcomes are often aroused by novel stimuli such as new sounds or new information. Expectations for enjoyable activities derive from the desire to engage in preferred activities or entertainments. Expected self-reactive outcomes stem from people's desire to regulate dysphoric moods.

Based on the conceptualization, LaRose and Eastin (2004) found that all six expected outcomes are positively related to Internet usage. In addition, Shaw et al. (2006) found that people's expected status outcomes, monetary outcomes, novelty outcomes, social outcomes, and self-reactive outcomes are all positively related to multiplayer online gaming usage.

Although the roles of people's expected outcomes have been supported in prior research, the six categories of expected outcomes identified in social cognitive

theory may not fully represent all the expected outcomes people have in using Weibo. It is possible that online users have other expectations for convenience, inclusion, affection, academic purposes, following trends, and so on (Flaherty et al., 1998; Flanagin & Metzger, 2001; Jung, Youn, and McClung, 2007; Katz, Blumler, & Gurevitch, 1974; Palmgreen, Wenner, & Rosengren, 1985; Papacharissi & Rubin, 2000; Perse & Rubin, 1990; Turkle, 1995; Raacke & Bonds-Raacke, 2008). Therefore, before examining the relationship between people's expected outcomes and Weibo addiction, it is necessary to explore what expected outcomes people have in Weibo use. I propose the following research question:

RQ1: What expected outcomes do people have when they use Weibo?

The amount of time people spend using media has received much attention in prior media studies (Anderson, Alwitt, Lorch, & Levin, 1979; Hargittai, 2008; Pelling & White, 2009). Echeburua and de Corral (2010) and Pelling and White (2009) found that the excessive use of new technologies is addictive to young people. Similar conclusions have been drawn in a large amount of research on media usage (Beard, 2005; Greenfield, 2004; Pratarelli & Browne, 2002; Tokunaga and Rains, 2010; Widyanto & McMurran, 2004; Young, 1996a; Young & Rogers, 1998). Based on past findings, my hypothesis is that

H1: Weibo usage will positively predict Weibo addiction.

Prior research has suggested that expected outcomes can influence people's Internet usage (Garett & Danziger, 2008) and Beard (2005) found that Internet usage is positively related to Internet addiction. The findings suggest that Internet usage may mediate the relationship between expected outcomes and Internet addiction. However, it still remains unknown whether people's expected outcomes have direct effects on media addiction and how specifically media usage mediates the relationship between expected outcomes and media addiction. Therefore, I propose the following research questions.

RQ2: How will people's expected outcomes of Weibo use predict Weibo addiction?

RQ3: How will Weibo usage mediate the relationship between expected outcomes and Weibo addiction?

### **Expected Outcomes, Weibo Usage, and Deficient Self-regulation**

According to LaRose et al. (2003), the relationship between expected outcomes and deficient self-regulation can be explained by classical conditioning process. That is, people's uncontrollable use of the

Internet can happen when Internet use becomes the only way to relieve depression or stress. When Internet use becomes excessive, it causes people's life problems. Those negative life consequences may deepen dysphoric moods, leading to further reliance on media for relief. Therefore, expected self-reactive outcomes have been positively related to deficient self-regulation (Caplan, 2010; LaRose et al., 2003).

By using the conditioning mechanism, the relationships between other expected outcomes and deficient self-regulation also can be explained. Davis (2001) argued that when an individual initially tries a new Internet feature, his/her behaviors will be influenced by the ensuing response. If the response is satisfactory, the individual will continue using the Internet. The individual is then conditioned to perform the behavior more often in order to achieve the same satisfaction as the one associated with the initial event.

Though researchers have provided theoretical explanations for the relationships between people's expectations for satisfaction and deficient self-regulation, empirical evidence of the effects of expected outcomes on deficient self-regulation is lacking.

Additionally, given that the more time an individual spends on the Internet, the more likely he/she is to lose control of Internet use (Caplan, 2002; Davis, 2001; La Barbera et al., 2009), I propose the following research question and hypothesis.

RQ4: How will people's expected outcomes of Weibo use predict deficient self-regulation?

H2: Weibo usage will positively predict deficient self-regulation.

### **Expected Outcomes, Deficient Self-regulation, and Weibo Addiction**

Kim and Haridakis (2009) suggested that though it is logical to assume that those who are addicted would spend much time on the media, not all heavy use is equivalent to addiction. Instead, the loss of control and the disruptive effects on self-regulation are major distinguishing characteristics between heavy use and addiction (Kim & Haridakis, 2009). Furthermore, Liu and Peng (2008) found that deficient self-regulation is an antecedent of online gaming addiction. Therefore, it is speculated that deficient self-regulation may have strong influence on media addiction. Additionally, as deficient self-regulation may be the key factor in distinguishing excessive use of media and media addiction, I propose that

H3: Deficient self-regulation will positively predict Weibo addiction.

RQ5: How will people's deficient self-regulation mediate the relationship between Weibo usage and Weibo addiction?

### **Research Model**

In sum, the hypotheses and the research questions of this study are as follows. The research model has been exhibited in Figure 1.

H1: Weibo usage will positively predict Weibo addiction.

H2: Weibo usage will positively predict deficient self-regulation.

H3: Deficient self-regulation will positively predict Weibo addiction.

RQ1: What expected outcomes do people have when they use Weibo?

RQ2: How will people's expected outcomes of Weibo use predict Weibo addiction?

RQ3: How will Weibo usage mediate the relationship between expected outcomes and Weibo addiction?

RQ4: How will people's expected outcomes of Weibo use predict deficient self-regulation?

RQ5: How will people's deficient self-regulation mediate the relationship between Weibo usage and Weibo addiction?

## Method

Survey was used to measure participants' expected outcomes of Weibo use, deficient self-regulation, Weibo usage, and Weibo addiction. Students were recruited on a volunteer basis.

## Participants and Procedures

Participants were recruited from communication courses in a public university in China on a volunteer basis. Students were told that they were invited to participate in a study about people's social network service use habits. Those who participated in the study would be given extra credits for their final communication course grades. All the information was kept anonymous and confidential. Students were also informed that they could quit the study whenever they felt uncomfortable with the measures. Consent forms were provided for the students.

Those who were willing to participate in the study were asked to fill out the demographic information and the measures with pen and paper. Those who do not use Weibo in their daily life did not need to fill out the measures. After eliminating the responses that were incomplete and invalid, the total sample included 211 college students ranging from freshmen to graduate students. The sample included 95 male students (45%) and 116 female students (55%). The participants' age ranged from 18 to 25. The mean age of the sample was 20.13 years ( $SD = 1.73$ ). In all, 102 freshmen (48%), 49 sophomores (23%), 21 junior students (10%), 21 senior students (10%), and 18 graduate students (9%) were included in the sample.

## Measures

**Expected outcomes.** The LaRose and Eastin (2004) measure of expected outcomes was adapted to assess people's Weibo use. The measure has six factors with 24 items. Participants were asked to respond to the items on a 5-point scale (1 = Very Unlikely, 5 = Very Likely). The measure reflects expected social outcomes, monetary outcomes, novelty outcomes, self-reactive outcomes, enjoyable activity outcomes, and status outcomes. In addition, in order to include other possible expected outcomes people have for using Weibo, another nine items from the Jung, Youn, and McClung (2007) measure of SNS use motives, three items from the Subrahmanyam et al. (2008) measure of SNS use activities, and two items from the Ferguson and Perse (2000) measure of Internet use motives were adapted and added to the measure. These items were about professional advancement, following trends, escaping reality, and so on. Examples of the items include "how likely are you to share video clips and to read comments" and "how likely are you to get away from what you are doing when using Weibo."

Exploratory factor analysis was used to extract the expected outcomes people have in using Weibo. All the items were subjected to principal component factor analysis with varimax rotation to uncover possible underlying component structure. Factors with eigenvalue of at least 1.0, primary loadings of at least .50 and no items that significantly loaded on another factor were retained (i.e., the factors should meet a 50/30 loading criterion).

Three factors with 13 items were yielded from the analysis. The three factors accounted for 37.97% of the total variance. Responses to the items loading on each factor were summed and averaged to form the indexes of different expected outcomes of Weibo use. The results of the exploratory factor analysis are summarized in the part of results and are shown in Table 1.

**Weibo addiction.** The Kim and Haridakis (2009) measure of Internet addiction was adapted to test people's addictive use of Weibo. It is a three-factor measure with 18 items. Participants were required to respond to the 18 items on a 5-point scale (1 = Never, 5 = Very often). The three factors included "intrusion" ( $M = 2.82$ ,  $SD = .84$ ,  $\alpha = .87$ ), "escaping reality" ( $M = 2.30$ ,  $SD = .67$ ,  $\alpha = .78$ ), and "attachment" ( $M = 2.06$ ,  $SD = 1.02$ ,  $r = .84$ ). Intrusion means that using Weibo can be intrusive to participants' everyday life (e.g., "Lose track of time when I use Weibo"). Escaping reality suggests that Weibo is a tool for keeping away from reality (e.g., "Block out disturbing thoughts with thoughts of using Weibo"). Attachment reflects people's strong affinity for Weibo (e.g., If I cannot use Weibo, I miss it so much that I become upset).

**Weibo usage.** The Compeau et al. (1999) measure

of computer usage was adapted to test Weibo usage. Weibo usage was measured with two questions asking how many hours and minutes the participants spent using Weibo on a typical weekday and how many hours and minutes they spent using Weibo on a typical weekend day. Answers to the two questions were summed and averaged ( $M = 112.09$  minutes,  $SD = 96.30$ ).

**Deficient self-regulation.** The LaRose et al. (2003) measure of deficient self-regulation was used. Participants were asked to report 7 Likert-type items on a 7-point scale (1 = Strongly disagree, 7 = Strongly agree). The responses to the measure were summed and averaged to form the deficient self-regulation index ( $M = 3.14$ ,  $SD = 1.21$ ,  $\alpha = .88$ ). Examples of the items in the measure include "I use the Weibo so much that it interferes with other activities" and "I have to keep using the Weibo more and more to get my thrill."

## Data Analysis

SPSS (version 20.0) and STATA (version 12.0 SE) were used for data analysis. Exploratory factor analysis was used to answer RQ1. Hierarchical multiple regression analyses were used to answer H1, H2, H3, RQ2, and RQ4. Path analysis was used to answer RQ3 and RQ5.

## Results

### Expected Outcomes of Weibo Use

Research question 1 asked about what expected outcomes people have in using Weibo. Three factors were yielded from exploratory factor analysis. They were expected self-reactive outcome, expected status outcome, and expected novelty outcome. The three factors accounted for 37.97% of the total variance.

Factor 1, expected self-reactive outcome (Eigenvalue = 6.25,  $\alpha = .80$ ), accounted for 16.46% of the total variance after rotation. The 6-item factor reflected people's expectations of relieving dysphoric moods ( $M = 2.95$ ,  $SD = .76$ ). The items included "When using Weibo, how likely are you to feel relaxed" and "When using Weibo, how likely are you to feel less lonely."

Factor 2, expected status outcome (Eigenvalue = 4.73,  $\alpha = .73$ ), accounted for 12.45% of the total variance after rotation. The 3-item factor reflected people's expectations of gaining social rank and winning job promotion opportunities ( $M = 2.50$ ,  $SD = .86$ ). The items included "When using Weibo, how likely are you to put your professional resource on Weibo" and "When using Weibo, how likely are you to get a job."

Factor 3, expected novelty outcome (Eigenvalue = 3.45,  $\alpha = .73$ ), accounted for 9.07% of the total variance after rotation. The 4-item factor reflected people's desire to gain novel stimuli such as news ( $M = 3.98$ ,  $SD = .70$ ).

The items included "When using Weibo, how likely are you to find a wealth of information" and "When using Weibo, how likely are you to get immediate knowledge of big news events?"

### Weibo Addiction

RQ2 asked how expected outcomes predicted Weibo addiction. H1 hypothesized that Weibo usage was a positive predictor of Weibo addiction. H3 hypothesized that deficient self-regulation was a positive predictor of Weibo addiction. As Weibo addiction has three dimensions (intrusion, escaping reality, and attachment), three separate hierarchical multiple regression analyses were conducted to examine the extent to which the expected outcomes predicted each dimension of Weibo addiction.

**Intrusion.** The hierarchical multiple regression analysis suggested that the expected outcomes, Weibo usage, and deficient self-regulation accounted for 47% of the variance in intrusion [ $R^2 = .47$ ,  $F(5, 205) = 36.73$ ,  $p < .001$ ]. Expected self-reactive outcome, expected status outcome, and expected novelty outcome entered in step 1 accounted for 13% of the variance in intrusion [ $R^2 = .13$ ,  $F(3, 207) = 10.53$ ,  $p < .001$ ]. Expected self-reactive outcome was a positive predictor of intrusion ( $\beta = .35$ ,  $p < .001$ ).

Weibo usage entered in step 2 accounted for an additional 5% of the variance in intrusion dimension [ $\Delta R^2 = .05$ ,  $F_{inc}(1, 206) = 12.22$ ,  $p < .01$ ]. The addition of Weibo usage resulted in a significant increase in  $F$ . Therefore, Weibo usage was a positive predictor of intrusion ( $\beta = .23$ ,  $p < .01$ ).

Deficient self-regulation entered in step 3 accounted for an additional 29% of the variance in intrusion dimension [ $\Delta R^2 = .29$ ,  $F_{inc}(1, 205) = 113.33$ ,  $p < .001$ ]. The addition of deficient self-regulation resulted in a significant increase in  $F$ . Deficient self-regulation was a positive predictor of intrusion ( $\beta = .65$ ,  $p < .001$ ).

**Escaping reality.** The hierarchical multiple regression analysis suggested that the expected outcomes, Weibo usage, and deficient self-regulation accounted for 60% of the variance in escaping reality [ $R^2 = .60$ ,  $F(5, 205) = 61.56$ ,  $p < .001$ ]. Expected self-reactive outcome, status outcome, and novelty outcome entered in step 1 accounted for 23% of the variance in escaping reality [ $R^2 = .23$ ,  $F(3, 207) = 20.81$ ,  $p < .001$ ]. Expected self-reactive outcome was a positive predictor of escaping reality ( $\beta = .44$ ,  $p < .001$ ).

The addition of Weibo usage entered in step 2 accounted for an additional 7% of the variance in escaping reality [ $\Delta R^2 = .07$ ,  $F_{inc}(1, 206) = 21.69$ ,  $p < .001$ ]. The addition of Weibo usage resulted in a significant increase in  $F$ . Weibo usage was a positive predictor of escaping reality ( $\beta = .27$ ,  $p < .001$ ).

Deficient self-regulation entered in step 3

accounted for an additional 30% of the variance in escaping reality [ $\Delta R^2 = .30$ ,  $F_{inc}(1, 205) = 151.45$ ,  $p < .001$ ]. The addition of deficient self-regulation resulted in a significant increase in  $F$ . Deficient self-regulation was a positive predictor of intrusion ( $\beta = .65$ ,  $p < .001$ ).

**Attachment.** Results of the hierarchical regression analysis suggested that the expected outcomes, Weibo usage, and deficient self-regulation accounted for 45% of the variance in attachment [ $R^2 = .45$ ,  $F(5, 205) = 33.01$ ,  $p < .001$ ]. Expected self-reactive outcome, status outcome, and novelty outcome entered in step 1 accounted for 14% of the variance in attachment [ $R^2 = .14$ ,  $F(3, 207) = 10.84$ ,  $p < .001$ ]. Expected self-reactive outcome was a positive predictor of attachment ( $\beta = .28$ ,  $p < .001$ ). Expected novelty outcome was also a positive predictor of attachment ( $\beta = .17$ ,  $p < .05$ ).

The addition of Weibo usage entered in step 2 accounted for an additional 4% of the variance in attachment [ $\Delta R^2 = .04$ ,  $F_{inc}(1, 206) = 9.85$ ,  $p < .01$ ]. The addition of Weibo usage resulted in a significant increase in  $F$ . Weibo usage was a positive predictor of attachment ( $\beta = .20$ ,  $p < .01$ ).

Deficient self-regulation entered in step 3 accounted for an additional 27% of the variance in escaping reality [ $\Delta R^2 = .27$ ,  $F_{inc}(1, 205) = 100.19$ ,  $p < .001$ ]. The addition of deficient self-regulation resulted in a significant increase in  $F$ . Deficient self-regulation was a positive predictor of intrusion ( $\beta = .62$ ,  $p < .001$ ).

In sum, expected self-reactive outcome was a positive predictor of all the dimensions in Weibo addiction. Expected novelty outcome was a positive predictor of the attachment dimension in Weibo addiction. The results suggested that participants who use Weibo to relieve boredom or loneliness are more likely to neglect their daily activities, see offline activities as interruptive, and feel emotionally connected to Weibo. Those who use Weibo for information tend to feel attached to Weibo.

Both Weibo usage and deficient self-regulation positively predicted all the dimensions in Weibo addiction. H1 and H3 were supported. The results suggested that the more time Weibo users spend on Weibo, the more likely they are to be addicted to Weibo. In addition, the more Weibo users lose control of their Weibo use, the more likely they are to be Weibo addicts.

### Deficient Self-regulation

RQ4 asked about how expected outcomes predicted deficient self-regulation. H2 postulated that Weibo usage was a positive predictor of deficient self-regulation. Results of the hierarchical regression analysis suggested that the expected outcomes and Weibo usage accounted for 30% of the variance in Weibo addiction [ $R^2 = .30$ ,  $F(4, 206) = 22.09$ ,  $p < .001$ ].

Expected self-reactive outcome, novelty outcome, and status outcome entered in step 1 accounted for 20% of the variance in deficient self-regulation [ $R^2 = .20$ ,  $F(3, 207) = 17.08$ ,  $p < .001$ ]. Only expected self-reactive outcome was a positive predictor of deficient self-regulation ( $\beta = .41$ ,  $p < .001$ ).

The addition of Weibo usage entered in step 2 accounted for additional 10% of the variance in deficient self-regulation and resulted in a significant increase in  $F$  [ $\Delta R^2 = .10$ ,  $F_{inc}(1, 206) = 29.98$ ,  $p < .001$ ]. Weibo usage was a positive predictor of deficient self-regulation ( $\beta = .33$ ,  $p < .001$ ). H2 was supported.

After all the variables were entered in the regression analysis, results suggested that those who expect to use Weibo for relief of dysphoric moods are likely to lose control of Weibo use. The more time Weibo users spend using Weibo, the more likely they are to become deficient in self-regulation. Final results of the multiple regression analyses are shown in Table 2.

### Mediation Analysis

RQ3 asked how Weibo usage mediated the relationship between expected outcomes and Weibo addiction. Results of path analysis suggested that expected self-reactive outcome had indirect effects on intrusion ( $\beta = .05$ ,  $p < .05$ ), escaping reality ( $\beta = .06$ ,  $p < .05$ ), and attachment ( $\beta = .04$ ,  $p < .05$ ). Taking into consideration the direct effects of expected self-reactive outcome on intrusion ( $\beta = .31$ ,  $p < .001$ ), escaping reality ( $\beta = .41$ ,  $p < .001$ ), and attachment ( $\beta = .28$ ,  $p < .001$ ), Weibo usage partially mediated the relationship between expected self-reactive outcome and Weibo addiction. In addition, expected novelty outcome only had direct effects on attachment ( $\beta = .22$ ,  $p < .01$ ). Weibo usage did not mediate the relationship between expected novelty outcome and attachment.

RQ5 asked how deficient self-regulation mediated the relationship between Weibo usage and Weibo addiction. Results of path analysis suggested that Weibo usage had indirect effects on Weibo addiction mediated by deficient self-regulation [for intrusion,  $\beta = .27$ ,  $p < .001$ ], escaping reality ( $\beta = .29$ ,  $p < .001$ ), and attachment ( $\beta = .26$ ,  $p < .001$ )]. Considering that the direct effects of Weibo usage on Weibo addiction are not significant, deficient self-regulation fully mediated the relationship between Weibo usage and Weibo addiction.

The final research model was supported with structural equation modeling (Figure. 2). Results suggested that the model was a good fit to the data [ $\chi^2(9) = 19.70$ ,  $p < .05$ ,  $CFI = .98$ ,  $RMSEA = .08$ ]. As it is defendable that the more Internet addicts ignore their daily activities, the more likely they will see these activities as disturbing, the measurement errors of intrusion and escaping reality were correlated according to modification indices.

### Discussion

The purpose of the study was to examine the relationships among Chinese people's expected outcomes of Weibo use, Weibo usage, deficient self-regulation, and Weibo addiction. Participants were found to have expected self-reactive outcome, status outcome, and novelty outcome in Weibo use. The current study further focused on how these expected outcomes contributed to Weibo addiction and the role of deficient self-regulation in Weibo addiction.

#### Expected Outcomes of Weibo Use

All the three expected outcomes have been identified in past Internet addiction research and social cognitive theory (LaRose et al., 2001). The first factor, expected self-reactive outcome, reflects Weibo users' expectation for relief of pressure, boredom, or loneliness. It is consistent with past research findings that Internet users or SNS users have needs for mood relief (Charney & Greenberg, 2001; Kaye, 1998; Greenhow & Robelia, 2009; Perse & Rubin, 1990).

The second factor, expected status outcome, reflects Weibo users' expectation for social recognition and job opportunities. It should be noted that in prior SNS research, few researchers have stressed SNS users' expectations for potential job opportunities and future prospects. In this study, the finding extends prior research on people's SNS use needs. Weibo allows users to post their work experiences and education backgrounds so that employers can pay attention to competitive job hunters through online social network. Job hunters also can connect with professionals or headhunters on SNS sites.

The third factor, expected novelty outcome, reflects Weibo users' expectations for news and information. The finding is consistent with much research on information seeking motive in Internet studies (Flanagan & Metzger, 2001; Papacharissi & Rubin, 2000; Raacke & Bonds-Raacke, 2008). The mean value of expected novelty outcome suggests that participants' expected novelty outcome ( $M = 3.98$ ) is stronger than both expected self-reactive outcome ( $M = 2.95$ ) and status outcome ( $M = 2.50$ ). That is, participants use Weibo mostly to seek information. As Weibo allows all people to post all kinds of information (Osawa, 2013), the rapid diffusion and the high accessibility of information enable Weibo users to update and receive news at anytime they want.

Though Weibo is a SNS site, expected social outcome did not come up as a primary factor in participants' Weibo use. It is inconsistent with prior research findings that people have strong needs for socializing in SNS use (Cheung et al., 2010; Kim et al., 2010; Subrahmanyam et al., 2008). However, the result is not unexplainable. Though Weibo is popular in China, people can use lots of other communication tools for

socializing. For example, QQ, as an instant messaging tool in China, accounted for 712 million active users in China in 2011 (Tencent, 2011). The diverse communication tools (e.g., QQ, RENREN, and WeChat) may overshadow the social functions of Weibo and make Weibo users' social expectations less distinct.

#### Effects of Expected Outcomes

Results suggested that Weibo users' desire to relieve dysphoric moods can make them neglect offline activities, keep away from reality, and feel emotionally connected to Weibo. Results also suggested that Weibo users' expectations for mood relief can increase their time spent on Weibo and further lead to Weibo addiction. The results corroborate the tenets of social cognitive theory that people's expected outcomes of media use can intensify their media consumption behaviors. The results are also consistent with prior research findings that to relieve loneliness and depression contribute to problematic Internet use (Rotunda et al., 2003; Tokunaga & Rains, 2010; Zillman, 2000).

Results further suggested that the participants who use Weibo to relieve dysphoric moods are likely to become uncontrollable in their Weibo use. The result is consistent with the explanation of the conditioning process and prior research findings (Anderson et al., 1996; Caplan, 2010; Davis, 2001; LaRose & Eastin, 2004).

Weibo users' desire to find career development opportunities will not lead to their addictive use of Weibo or uncontrollable use of Weibo. Weibo users' information seeking will not interfere with their daily lives, keep them away from reality, or affect their self-regulation. According to Rubin (2002), it is because people's instrumental use of media may inhibit negative media use outcomes. Rubin (2002) argued that people's instrumental use of media is characterized by utility, intention, selectivity, and involvement. As Weibo users' behaviors of seeking job opportunities and specific information are goal-oriented and involve selections of the information they want and the job promotions they are interested in, those who use Weibo to seek future career improvements or specific information may have a better control over their behaviors.

Though expected novelty outcome did not exert effects on intrusion or escaping reality, it had direct influence on attachment. It is consistent with prior research finding that people who use the Internet for information are likely to develop dependence on the Internet (Sun, Rubin, & Haridakis, 2008). The prediction of attachment may be because Weibo users can obtain the information that they cannot procure through other communication channels. Compared with the information released through traditional media (e.g., televisions, radios), Weibo provides an open platform

where information is less regulated and easier to be delivered. Bamman (2012) argued that whereas Weibo users are prohibited from searching for specific terms at a given time (e.g., the term “Egypt” during the Arab Spring), content censorship generally allows Weibo users to post and receive politically sensitive messages. This may also be the reason why participants’ expectation for novelty outcome is stronger than the other two expected outcomes. When people find that they can get specific information on Weibo, they may feel captivated by the accessibility of information on Weibo.

In addition, the finding that expected novelty outcome predicted attachment but not escaping reality or intrusion may manifest that attachment is a less intense form of Internet addiction (Kim & Haridakis, 2009). Perhaps it can be postulated that Internet addiction is a progression moving from mild use of the Internet to intensive use of the Internet (Kim & Haridakis, 2009). However, given that still limited research has supported this claim, scholars should conduct more research to confirm the different phases in media addiction.

### **Effects of Weibo Usage**

Researchers have found that media usage can result in loss of control and media addiction (Chak & Leung, 2004; Davis, 2001; Echeburua & de Corral, 2010; La Barbera et al., 2009; Tokunaga & Rains, 2010). The findings have been supported in this paper. Weibo usage predicted all the dimensions of Weibo addiction. Moreover, the relationship between Weibo usage and Weibo addiction was fully mediated by deficient self-regulation, meaning that loss of control is the major cause of Weibo addiction. The results suggest that Weibo usage is not necessarily deleterious to all people. For example, those who spend much time using Weibo due to job requirements are not necessarily addictive media users, while those who spend less time but fail to regulate their behaviors are at the risk of becoming problematic users.

Additionally, it is premature to surmise that spending time on SNS is perilous because the current research only focused on how people become addicted to SNS use. The current study did not include the factors that may protect people from loss of control (e.g., parental instructions and self-efficacy). Therefore, the conclusion of the effects of Weibo usage on deficient self-regulation and Weibo addiction is not comprehensive. In order to have a more detailed view of media usage and deficient self-regulation, future researchers may take other influential factors into consideration.

### **Weibo Addiction and Deficient Self-regulation**

Though deficient self-regulation and Weibo

addiction were closely related in this study, it should be noted that researchers have not achieved consensus on the relationship between deficient self-regulation and media addiction. Some research suggests that deficient self-regulation can be redefined as media addiction both empirically and conceptually (LaRose et al., 2003), while other researchers view deficient self-regulation as an antecedent of media addiction (Liu & Peng, 2008).

In this paper, results suggested that expected self-reactive outcome and Weibo usage positively predicted both deficient self-regulation and Weibo addiction. However, expected novelty outcome positively predicted the attachment dimension of Weibo addiction, but did not significantly predict deficient self-regulation. Therefore, at least in this study, deficient self-regulation is different from Weibo addiction.

The difference between deficient self-regulation and Weibo addiction may be due to their different conceptualizations and operationalization. The conceptualization of Weibo addiction, originating from DSM-IV and Young’s (1996a) study, involves withdrawal, tolerance, preoccupation with the substance, heavy use, centralized activities to procure the substance, loss of interest in other activities, and disregard for the physical or psychological consequences (APA, 1994; Young, 1996b). Deficient self-regulation, however, only refers to people’s failure to monitor their behaviors or to judge their behaviors. It is evident that some diagnostic criteria in DSM-IV such as preoccupation with the substance are not included in the conceptualization of deficient self-regulation, which differentiates media addiction from deficient self-regulation.

In addition, the operationalization of Weibo addiction and deficient self-regulation is different. The measure of Weibo addiction assessed people’s affinity for the medium, whereas the measure of deficient self-regulation did not include the items about people’s emotional connection to Weibo.

Despite the differences of Weibo addiction and deficient self-regulation, it should be noticed that the operationalization of deficient self-regulation may need further refinement. Because deficient self-regulation was previously operationalized in the context of people’s Internet use (LaRose et al., 2003), some items in the measure of deficient self-regulation have the same meaning as the ones in Weibo addiction (e.g., “I often spend longer time on Weibo than I intend to”). That could be the reason why deficient self-regulation and Weibo addiction are predicted by same variables (expected self-reactive outcome and Weibo usage). Therefore, it would be more meaningful to operationalize deficient self-regulation based on people’s general loss of control of behavior rather than on the specific loss of control in the context of Internet use. It would be more valid and weighty to examine the

relationship between general loss of control and media addiction than to compare deficient self-regulation of media use with media addiction.

### **Conclusions, Limitations, and Future Research Directions**

This study focused on people's addictive use of Weibo in China. The study suggested that people have expected self-reactive outcome, status outcome, and novelty outcome in Weibo use. This study further suggested that expected self-reactive outcome predicted both deficient self-regulation and Weibo addiction. Weibo usage positively predicted deficient self-regulation and Weibo addiction.

This study can contribute to media addiction research in several ways. First, it focused on a particular SNS site in China rather than general Internet use. As researchers often focus on general Internet addiction, it is hard to know what people are exactly addicted to. Second, this study applied social cognitive theory as a guiding theoretical framework and corroborated the basic tenets of the theory that people's expected outcomes of media use have effects on people's media consumption. This study also demonstrated that expected self-reactive outcome contribute to people's deficient self-regulation through conditioning process.

Whereas this study produced a number of findings with implications for the effects of people's expected outcomes, it is not without limitations. First, it may be overhasty to conclude that all Weibo users in China have expected status outcome based on the sample characteristics in this study. As the respondents were all college students with a future career to plan, their expected outcomes of Weibo use could lean towards professional development. Weibo, as a dominating SNS in China, enables them to find jobs and share professional resources. The results can be different if I take other walks of people into consideration. Future research can be conducted to confirm the effects of expected status outcome on people's Weibo use. Respondents from more diversified social backgrounds should be recruited.

Second, the results suggest that the mean values of intrusion ( $M = 2.82$ ), escaping reality ( $M = 2.30$ ), and attachment ( $M = 2.06$ ) are below the midpoints. It may reflect that the sample students are not typical addictive Weibo users. It is a major limitation of this study. It would be better if addictive Weibo users were used in this study. Though the definition of Weibo addiction or Internet addiction is still vague, to better confirm the findings of this study, it is strongly recommended that scholars in future research should locate populations who score high on this measure of Weibo addiction.

Meanwhile, this study applied self-reported surveys to examine participants' Weibo use. A potential problem with the self-reported survey is that participants may

underreport their media addiction behavior due to their concerns about the social desirability bias (Horvath, 2004). Therefore, the mean values of intrusion, escaping reality, and attachment may also reflect participants' tendency to underreport their Weibo addiction. Therefore, it is recommended that other research methods be used in order to gain a better understanding of media addiction. Perhaps diary and tape recording can be used to monitor people's addictive use of media. Also, long-term studies can be conducted to observe people's behavioral changes in the process of media addiction.

Third, the operationalization of Weibo addiction is worth exploring in future research. In this study, Weibo addiction was operationalized into three dimensions: intrusion, escaping reality, and attachment. Though the measure of Weibo addiction reflects the criteria in DSM-IV (e.g., loss of interest in other activities, withdrawal), the measure was originally used to test general Internet addiction (Kim & Haridakis, 2009). It is possible that people's SNS use is different from people's Internet use. Therefore, in order to be more precise in assessing people's addictive use of SNS, future researchers can develop a specific measure of SNS addiction.

Fourth, some other variables could be considered in future research. For example, in the current study, though expected monetary outcomes did not play a role in Weibo use, future researchers can continue focusing on the role of people's expectations for materials rewards. As online shopping (e.g., using eBay and purchasing electronic books) and online news subscriptions (e.g., reading *New York Times* online) are becoming prevalent in people's daily lives, expectations for monetary outcomes will gradually become an important factor in people's media use.

In addition, researchers can consider about the roles of unexpected outcomes and self-efficacy in people's SNS use. These factors may well prevent people from being addicted to media. For example, Weibo users may receive malignant advertisements or messages. Will people change their behaviors due to unexpected outcomes of Weibo use? In addition, factors such as tolerance for uncertainty and individualism versus collectivism can also influence people's SNS use (Jorge & Anu, 2010).

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Table 1  
*Factor Loadings of the Expected Outcomes*

Factors	Factor loadings		
	Self-reactive outcome	Status outcome	Novelty outcome
<b>Self-reactive outcome</b>			
Get away from what I am doing	<b>.68</b>	-.10	.04
Forget about school, work, or other things	<b>.64</b>	-.06	.09
Feel less lonely	<b>.60</b>	.13	.30
Use Weibo to occupy my time	<b>.58</b>	-.11	.28
Forget my problems	<b>.57</b>	.12	.03
Feel relaxed	<b>.51</b>	.09	.25
<b>Status outcome</b>			
Get a job	.11	<b>.66</b>	.07
Put my professional resource on Weibo	.15	<b>.63</b>	.14

Improve my future prospects in life	.12	<b>.60</b>	.27
<b>Novelty outcome</b>			
Find a wealth of information	-.03	.18	<b>.76</b>
Get immediate knowledge of big news events	.14	.03	<b>.72</b>
Obtain information that I can't find elsewhere	.02	.26	<b>.58</b>
Find new interactive features	.10	.22	<b>.53</b>
<b>Eigenvalue</b>	6.25	4.73	3.45
<b>Variance Explained</b>	16.46	12.45	9.07
<b>Cronbach Alpha</b>	.80	.73	.73
<b>Mean</b>	2.95	2.50	3.98
<b>Standard Deviation</b>	0.76	0.86	0.70

Table 2  
*Summary of the Results of Multiple Regression Analyses*

	Intrusion	Escaping reality	Attachment	Deficient Self-regulation
Predictor	$\beta$	$\beta$	$\beta$	$\beta$
<b>Step 1</b> (Expected outcomes)				
Self-reactive outcome	.35***	.44***	.28***	.41***
Status outcome	-.05	.06	.03	.10
Novelty outcome	.09	.09	.17*	.02
R <sup>2</sup>	.13***	.23***	.14***	.20***
<b>Step 2</b> (Weibo usage)	.23**	.28***	.20**	.33***
$\Delta R^2$	.05**	.07***	.04**	.10***
<b>Step 3</b> (Deficient self-regulation)	.65***	.65***	.62***	-
$\Delta R^2$	.29***	.30***	.27***	-
Total R <sup>2</sup>	.47***	.60***	.45***	.30***
Mean	2.82	2.30	2.06	3.14
SD	0.84	0.67	1.02	1.21

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001,  $\beta$  means standardized coefficient, N = 211.

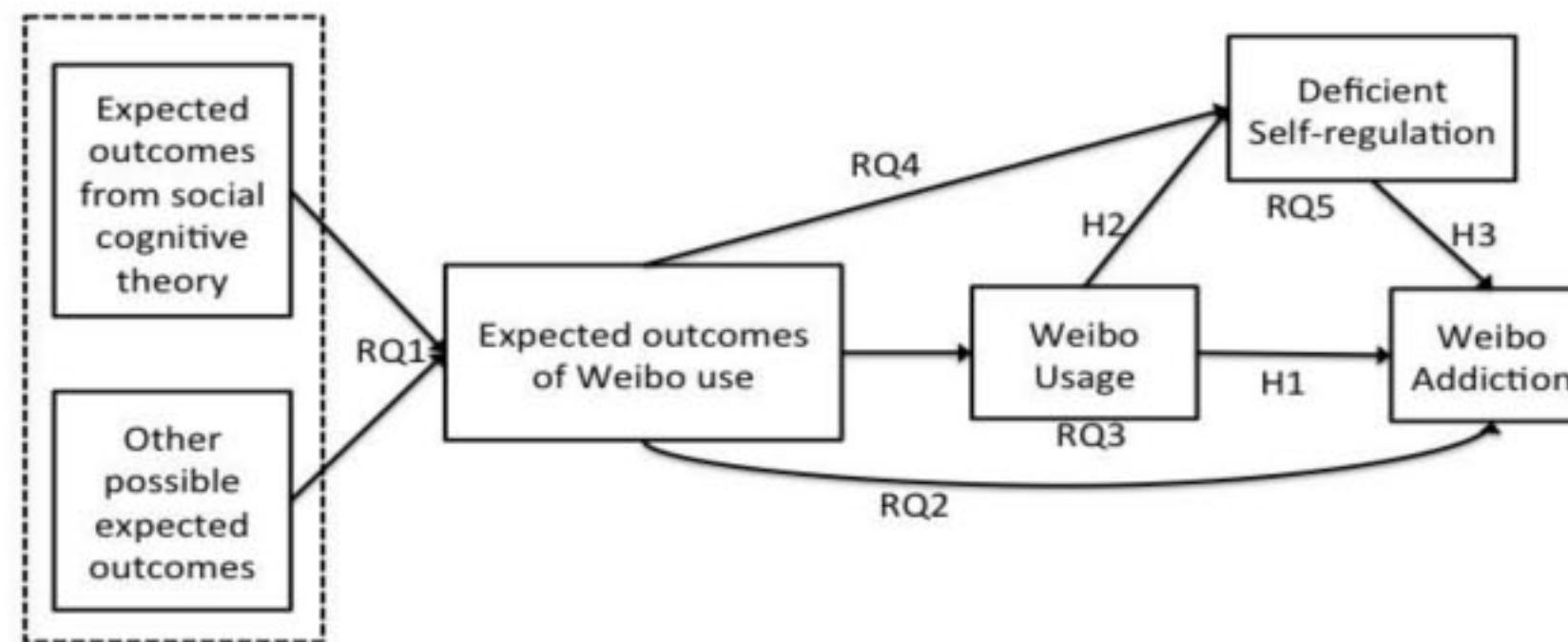


Figure 1. Research Model

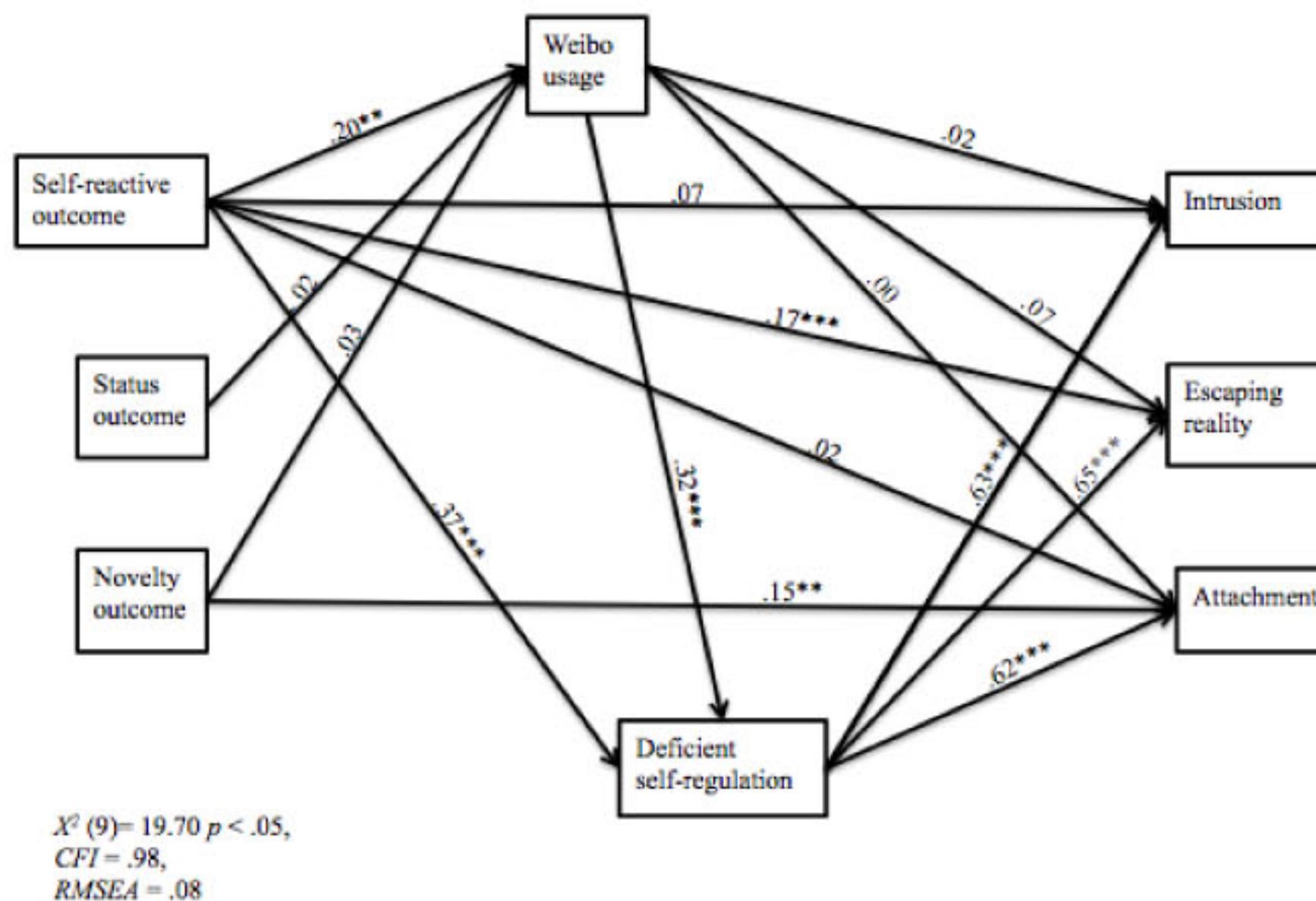


Figure 2. Final path model.

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