



The relationships among the Big Five Personality factors, self-esteem, narcissism, and sensation-seeking to Chinese University students' uses of social networking sites (SNSs)

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ABSTRACT

It has been suggested that personality factors are related to an individuals' use of social networking sites (SNSs). The present research explores the relationships between the Big Five Personality factors, narcissism, self-esteem, and sensation seeking and individuals' use of *specific features* of SNS. Self-reports were collected from 265 SNS users from a university in China. Regression analyses revealed that personality factors play an important role in how SNS are used. Specifically, extraverts are more likely to use the communicative function of SNS including status update, comment, and adding more friends. Neurotic are more likely to use the feature of status update as a way of self-expression. Agreeable individuals tend to make more comments on others' profiles. Individuals with high self-esteem are more likely to comment on others' profiles. Users scoring high on openness and sensation seeking are more likely to play online games on SNS. Narcissistic users are more likely to upload their attractive photos on SNS and tend to use update status more frequently for self-presentation. Gender also played an important role in predicting types of SNS use. Males reported more SNS friends and were more likely to play online games than were females, who were more likely to upload self-photos and update their status.

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1. Introduction

As one of the most rapidly developed applications of the Internet, social networking sites (SNSs) have become prominent in young peoples' lives. Social networking sites, such as Facebook, Myspace, Twitter, LiveJournal, Renren (renren is translated as "people"), and QQpengyou (pengyou is translated as "friend"), are member-based Internet SNS. On these sites, users can post profile information, such as their name, phone number, and photographs, and communicate with others in a variety of ways, such as sending public or private online messages. All social networking sites promote online social interaction, but there are differences in the services they focus on and the populations they are designed to serve. For example, compared to other social networking sites such as Facebook, Twitter focuses on the sharing of opinion and information rather than reciprocal social interaction (Hughes, Rowe, Batey, & Lee, 2011). As the top two social networking sites in China, Renren is mostly attractive for white collar and university students, while

QQpengyou has a wider range of users (CNNIC, 2012). SNS are believed to potentially play both positive and negative roles in adolescents' and young adults' social, emotional, and cognitive development (Roberts, Foehr, & Rideout, 2005). For example, researchers have found that Facebook plays an important role in the process by which students form and maintain social capital (Ellison, Steinfield, & Lampe, 2007; Richardson & Hessey, 2009) and may alter the way in which users exchange information that can lead to dates or intimate relationships (Richardson & Hessey, 2009). In addition, Valkenburg, Peter, and Schouten (2006) found that the frequency with which adolescents used SNS had an indirect effect on their social self-esteem and well-being. Positive feedback on profiles can enhance adolescents' social self-esteem and well-being, whereas negative feedback can decrease both.

There is a small but growing body of evidence suggesting that personality is related to SNS behaviors (Baek, Holton, Harp, & Yaschur, 2011; Moore & McElroy, 2012; Ross et al., 2009; Ryan & Xenos, 2011; Smock, Ellison, Lampe, & Wohn, 2011). However, limited information is available about the association between personality factors and the use of specific features of SNS. Most previous studies used a simple measure of SNS activity – the overall time spent on the site. Considering the wide range of activities possible of SNS, such as sending messages, status updates, wall

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posts, and games, there is likely to be personality differences in the use of specific features of SNS as well. The present study explored the relationship between personality factors and the use of specific features of SNS. This examination is intended to provide a deeper understanding of the relationship between user characteristic and SNS use.

1.1. Renren website

Renren website, whose name was changed from Xiaonei (inside University) website in August 2009, is a SNS most popular among Chinese young adults. It is estimated that there are 140 million registered users on Renren, with each user having an average of 187 friends on the site. Similar to Facebook, its initial purpose was to allow university students to create and maintain social ties that were relevant to the university experience. Renren allows users to create a profile where they can post information about themselves, such as their college, company, occupation, phone number, email address, interests, and favorite music. Renren also provides functions such as public and private messaging among users, real-time instant messaging, online games, and video sharing. These functions can satisfy users' desire for socialization, information about current events, entertainment, and so forth. There is a 'Friends' box on Renren which displays the number of friends and a 'status updates' on the profile page where users can post short messages. Users can also upload their photos on their profile page, for friends and others to view. Users have access to all of this information about their friends, at least those who want to provide it. Users are expected to post only truthful information about themselves on their site. Renren friends are typically individuals known in the offline "real" world.

Previous research has suggested that personality may be related to the use and nature of use of the Internet (Amichai-Hamburger, 2002; Amiel & Sargent, 2004; Thayer & Ray, 2006). Most of the research has examined the effects of broad models of personality (i.e., Big Five) on Internet use. Several of the Big Five factors have been found to be related to behaviors on the Internet. The Big Five factors have also been used to investigate SNS use, as discussed next (Amichai-Hamburger & Vinitzky, 2010; Hughes, Bowe, Batey, & Lee, 2011; Ross et al., 2009; Ryan & Xenos, 2011).

1.2. The Big Five Model and SNS use

1.2.1. The Big Five Personality factors

The Big Five model is a broad classification of personality that proposes that personality is composed of five major factors: neuroticism, extraversion, agreeableness, openness to experience, and conscientiousness (Costa & McCrae, 1992). Within each of these five broad factors, a range of more specific personality traits are represented. Briefly, extraversion represents traits associated with activity and energy, dominance, sociability, expressiveness, and positive emotions. Agreeableness contrasts a prosocial orientation toward others with an antagonistic orientation. It consists of characteristics such as altruism, tender-mindedness, trust, and modesty. Conscientiousness represents socially prescribed impulse control that facilitates task- and goal-directed behavior. Neuroticism contrasts emotional stability with a broad range of characteristics, such as negative affect, anxiety, sadness, irritability, and nervous tension. Openness to experience describes the breadth, depth, and complexity of an individual's mental and experiential life.

1.2.2. Extraversion and SNS use

Extraversion has been shown to correlate with the communicative features of SNS (Correa, Hinsley, & de Zúñiga, 2010; Ryan & Xenos, 2011). For example, Correa et al. (2010) found that

extraversion was correlated with the use of instant messaging on SNS. In addition, extraverts belong to more 'groups' (Ross et al., 2009) and have significantly more SNS friends (Amichai-Hamburger & Vinitzky, 2010) than the less extraverted. This may be because extraverts utilize these sites as a supplementary way to communicate with friends. However, there also have been studies reporting no relationship or even a negative relationship between extraversion and the communicative features of SNS (Goby, 2006; Hughes et al., 2011). For instance, Goby (2006) found that extraverts were more likely to communicate with others in offline settings than online settings compared to introverts. Considering that recent research findings tend to support the rich-get-richer hypothesis in online communication settings, which holds that socially competent youth are more likely to use online communication to keep in contact with others than youth with high social anxiety (Kraut et al., 2002), it seems reasonable that extraverts would use the communicative features of SNS more than introverts. In the present study, we hypothesized that extraverts have more friends on SNS (**H1**), are more likely to make comments on SNS (**H2**), and tend to use more status updates (**H3**). Our hypotheses are based on research showing that in "real life" extraverts are sociable and talkative (Amiel & Sargent, 2004; Costa & McCrae, 1992), which should lead them to comment more and use status updates more frequently in the "virtual world" (i.e., SNS). Moreover, extraverts tend to make friends offline and then use online communication to keep in touch with these friends (Ross et al., 2009). Therefore, extraverts should have more friends on SNS than introverts.

1.2.3. Neuroticism and SNS use

With regard to neuroticism and SNS technology use, early studies found that neuroticism was negatively related to amount of time spent on the Internet (Amichai-Hamburger, Wainapel, & Fox, 2002; Amiel & Sargent, 2004; Tuten & Bosnjak, 2001) and predicted the use of the Internet for seeking information (Tuten & Bosnjak, 2001). However, more recent research has reported that individuals high in neuroticism use the Internet more frequently to reduce loneliness (Amichai-Hamburger & Ben-Artzi, 2003) and are more likely to use it for instant messaging and SNS (Correa et al., 2010; Wolfradt & Doll, 2001). These recent studies suggest that compared with emotional stable users, neurotic users are more likely to use the Internet for social purposes. In addition, according to the evidence that neuroticism is related to loneliness (Correa et al., 2010), individuals high in neuroticism should use the Internet to decrease feelings of loneliness and to create a sense of belongingness. They should seek similar gratifications on SNS. Therefore, we hypothesized that neuroticism is positively related to status updates in SNS as a means of self-presentation aimed at encouraging the responses of others and thereby reducing loneliness (**H4**).

1.2.4. Conscientiousness, agreeableness and SNS Use

Little research exists on the relationship among conscientiousness, agreeableness, and SNS use. It has been suggested that conscientious individuals tend to avoid SNS because these sites promote procrastination and serve as a distraction from more important tasks (Butt & Phillips, 2008). Empirical studies have confirmed this hypothesis, finding that conscientiousness is negatively related to time spent on SNS (Ryan & Xenos, 2011) and that conscientious individuals upload significantly fewer pictures to SNS. In the present study, we hypothesized that conscientiousness will be negatively related to SNS use (**H5**).

With respect to the association between agreeableness and SNS use, several studies have found that agreeableness is related neither to overall Internet use nor to any form of social media use (Correa et al., 2010; Hughes et al., 2011; Ross et al., 2009).

However, considering that agreeableness reflects the extent to which people are friendly, and that individuals scoring high on agreeableness are inclined to be warm and sympathetic (Costa & McCrae, 1992), it would be seem that agreeable people should have more friends on SNS and be more likely to post friendly comments to others' status and photos. Hence, we hypothesized that agreeableness is positively related to number of friends (H6) and to favorably commenting on SNS (H7).

1.2.5. Openness to experience

Individuals with high scores on openness to experience are more likely to try new methods of communication, have broad interests, and seek out new and novel experiences, including the experiences available through SNS (Butt & Phillips, 2008; McCrae & Costa, 1987; Tuten & Bosnjak, 2001). Openness to experience has been correlated with the use of instant messaging and SNS (Correa et al., 2010) and the use of a wide variety of Facebook features (Amichai-Hamburger & Vinitzky, 2010). However, two studies found that, surprisingly, openness to experience was not related to SNS use (Hughes et al., 2011; Wilson, Fornasier & White, 2010). These inconsistencies may be attributable to the finding that Facebook has become a relatively mainstream communication tool for young adults (Wilson et al., 2010) and is no longer a "new experience". Therefore, we hypothesized that there will be no relationship between openness to experience and SNS use (H8).

Despite the expected relationship between the Big Five Personality factors and SNS use, previous studies have found only weak relationships between Big Five and SNS (Hughes et al., 2011; Ross et al., 2009). Researchers suggested that narrow personality facets may be better suited than broad, higher order factors for predicting online behavior (Ross et al., 2009). They further proposed that future research in this area should include a number of narrow personality traits within the Big Five broad categories such as narcissism and sensation-seeking. For instance, narcissistic individuals may be more likely to use the self-presentation features of SNS, such as post information about themselves and photos of themselves on their SNS. Additionally, self-esteem is also a personality trait which has also been found to be related to SNS use (Mehdizadeh, 2010), therefore, it also will be included in our study.

1.3. Narcissism, sensation-seeking, self-esteem, and SNS use

1.3.1. Narcissism and SNS use

Narcissism is a broad and pervasive pattern of grandiosity, desire for admiration, and an exaggerated sense of self-importance (Wilson et al., 2010). Narcissists are exhibitionistic, attention seeking, and are acutely concerned about physical appearance (Vazire, Naumann, Rentfrow, & Gosling, 2008). When using SNS, narcissists selectively upload attractive and self-promoting photos, and use status updates for self-presentation (Ong et al., 2011), which may satisfy their desire for others' admiration. Therefore, narcissistic users are more likely to post their photos on SNS (H9) and to use status update (H10). In addition, narcissists are also often skilled with dealing with new social settings and with starting new relationships (Foster & Campbell, 2007), which may lead them to have more friends on SNS (H11).

1.3.2. Sensation-seeking and SNS use

Sensation-seeking is defined as "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences" (Zuckerman, 1979). Little research has been conducted to explore the relationship between sensation seeking and SNS use. However, related studies provide some insight into this relationship. Related research suggests that there is a close relationship between adolescents' sensation-seeking and Internet dependence (Lin & Tsai,

2002), especially the entertainment function of the Internet like game playing, which serves as a source of excitement for the sensation-seeker. In addition, sensation seekers have characteristics in common with extroverts, such as the need for stimulation and a large number of friends (Lin & Tsai, 2002). Hence, we hypothesized that there is a positive relationship between sensation-seeking and playing games on SNS (H12) and a positive relationship between sensation-seeking and number of friends (H13).

1.3.3. Self-esteem and SNS use

Self-esteem is defined as a person's overall self-evaluation of his or her worth (Weiten, 2004). Previous research has considered the relationship between self-esteem and using the Internet as a communication tool. For example, individuals with low self-esteem prefer e-mail communication (Joinson, 2004; Phillips, Butt, & Blaszczynski, 2006) and more frequent use of instant messaging (Phillips et al., 2006). Considering that the Internet has the potential to relieve the social anxiety that people with low self-esteem often experience in face-to-face interactions, we hypothesized that self-esteem is negatively related with use of SNS (H14).

1.4. Summary of hypotheses

- H1. Extraversion is positively related to number of friends on SNS.
- H2. Extraversion is positively related to making comments on SNS.
- H3. Extraversion is positively related to using status updates.
- H4. Neuroticism is positively related to status updates as a means of self-expression on SNS.
- H5. Conscientiousness is negatively related to the use of SNS.
- H6. Agreeableness is positively related to making comments on SNS.
- H7. Agreeableness is positively related to number of friends on SNS.
- H8. Openness is not related to SNS usage.
- H9. Narcissism is positively related to posting photos on SNSs.
- H10. Narcissism is positively related to using status update on SNSs.
- H11. Narcissism is positively related to number of friends on SNSs.
- H12. Sensation-seeking is positively related with playing games on SNSs.
- H13. Sensation-seeking is positively related with number of friends on SNSs.
- H14. Self-esteem is negatively related to SNSs usage.

2. Materials and methods

2.1. Participants

The sample consisted of 265 undergraduate students from psychology courses at a large university in southwestern China. Students were invited to participate in a survey about the use of SNS. For their participation, each student was offered ¥10 (about 1.5 US dollars). The participants ranged in age from 18 to 24 years old, with a mean age of 20.15 years old (SD = .90).

2.2. Measures

2.2.1. SNS use

The use of specific features of SNS was measured by asking participants how often they use a certain feature of the site. Participants evaluated each item on a 5-point Likert scale, ranging from "Strong Disagree" to "Strongly Agree". The items included "I play online games on Renren often", "I comment on Renren often", "I

update my status on Renren often”, “I post my attractive photos on Renren often”. The number of friends was measured by the item stating “How many friends are there on your list?” This single item measure of SNS use has been validated in previous research (Ross et al., 2009; Ryan & Xenos, 2011; Smock et al., 2011). In the present study, we had examined the measure’s item validity by computing the critical ratio (CR) of each item (Qiu, 2009). The results showed that all the CR values were over 2.58 ($p < .001$), suggesting that these items have good discriminate validity. The Cronbach’s coefficient α for all items was .76, indicating good reliability.

2.2.2. The Big Five Personality Inventory (BFPI)

The BFPI (John et al., 1991) is a 44-item measure that consists of the following five personality factors: extraversion (e.g., “I see myself as someone who is talkative”), agreeableness (e.g., “I see myself as someone who likes to cooperate with others”), conscientiousness (e.g., “I see myself as someone who does a thorough job”), neuroticism (e.g., “I see myself as someone who can be moody”), and openness to experience (e.g., “I see myself as someone who is inventive”). Each item was evaluated on a 5-point Likert scale, ranging from “Strongly Disagree” to “Strongly Agree”. The BFPI has been shown to have satisfactory reliability and validity (Srivastava, John, Gosling, & Potter, 2003). The internal consistency coefficient for each of the subscales is good: extraversion ($\alpha = .86$), agreeableness ($\alpha = .79$), conscientiousness ($\alpha = .82$), neuroticism ($\alpha = .84$), and openness to experience ($\alpha = .80$) (Srivastava et al., 2003).

2.2.3. Self-esteem

The Rosenberg Self-Esteem Scale was used to measure participants’ self-esteem. This 10-item measure uses a 5-point Likert scale, ranging from “Strongly Disagree” to “Strongly Agree”. Example items include “On the whole, I am satisfied with myself” and “I take a positive attitude toward myself”. The reliability of this scale was .72. It has well-demonstrated internal consistency, test–retest reliability and convergent and discriminant validity (Krämer and Winter, 2008).

2.2.4. Narcissism

Narcissism was assessed using the Narcissism Personality Inventory (NPI)-16, which has acceptable face, internal, discriminant, and predictive validity (Ames, Rose, & Anderson, 2006). Example items include “I am more capable than other people” and “There is a lot that I can learn from other people.” Higher scores on the NPI indicate a more narcissistic personality. Overall, the NPI-16 is both a valid and reliable measure that captures a range of facets of this construct, particularly in situations in which the use of a longer measure is impractical.

2.2.5. Sensation seeking

The Sensation Seeking Scale developed by Zhao (2004) was used to measure sensation seeking. The scale is composed of two subscales, the Thrill and Adventure Seeking (TAS) subscale and Disinhibition subscale. The split-half reliability and Cronbach α coefficient of the total scale and the two subscales are all over .80. Example items include “To climb steep mountains” and “To gamble regardless of the consequences” (Zhao, 2004).

3. Results

We examined the fit of a model in which all indicators loaded on one factor, partly addressing common method variance concerns regarding the measures used in this study. The logic underlying the “single factor procedure” (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) is that if method variance is largely responsible

for the covariation among measures, a confirmatory factor analysis should indicate that a single (method) factor fits the data. A one factor model did not fit well in our sample (GFI = .64, NFI = .56, RFI = .56), indicating that there is no common-method variance in the measures.

With gender, age, the Big Five Personality factors, self-esteem, narcissism, and sensation seeking as the independent variables and the number of friends on SNS as the dependent variable, a standard multiple regression analysis was conducted (see Table 1). As a group, the independent variables significantly predicted participants’ number of friends, $F(10, 254) = 3.00$, $p < .001$, accounting for 10.6% of the variance. The significant predictors were gender ($\beta = .19$) and extraversion ($\beta = .17$). Therefore, in support of **H1**, extraversion is positively related to number of friends on SNS. In addition, females had more friends than did males on SNS.

A second standard multiple regression analysis was performed to test the predictive effects of Big Five Personality factors, self-esteem, narcissism, and sensation seeking on playing online games. As a group, these variables significantly predicted playing online games, $F(8, 256) = 2.86$, $p < .01$, accounting for 11.0% of the variance. Gender ($\beta = .18$), sensation-seeking ($\beta = .11$) and openness to experience ($\beta = .17$) were positively related with playing online games, whereas extraversion ($\beta = -.15$) was negatively related to playing online games. These results provided support for **H12** that sensation seeking is positively related to playing games on SNS.

A third standard multiple regression analysis was performed to test the predictive effects of the Big Five Personality factors, self-esteem, narcissism, and sensation seeking on making comments on SNS. As a group, these variables significantly predicted making comments on SNS, $F(8, 256) = 2.86$, $p < .01$, accounting for 11.0% of the variance. Extraversion ($\beta = .16$), agreeableness ($\beta = .24$), narcissism ($\beta = .15$) and self-esteem ($\beta = .22$) were positively related to making comments. Thus, the results support **H2** and **H6** that extraversion and agreeableness are positively related to making comments on SNS.

A fourth standard multiple regression analysis was performed to test the predictive effects of the Big Five Personality factors, self-esteem, narcissism, and sensation seeking on posting photos on SNS. As a group, these variables predicted participants’ photo posting on SNS, $F(8, 256) = 2.21$, $p < .05$, accounting for 8.0% of the variance. The results showed that narcissism ($\beta = .15$) and extraversion ($\beta = .15$) were positively related to posting photos on SNS, and that females were more likely to post photos than

Table 1

Regression analyses of gender, age, Big Five Personality factors, self-esteem, narcissism, and sensation seeking on SNS usage.

	NF	PLA	COM	SP	STA
Gen	.190***	.180**	.087	-.140*	-.133*
Age	-.054	-.043	-.058	.088	-.100
SAS	.045	.105*	-.050	.021	-.004
NAR	-.085	.041	.152*	.154*	.151*
SES	.003	.026	.221**	.056	.018
EXT	.173*	-.149*	.158*	.146*	.201**
AGR	-.082	-.036	.238***	.009	.011
CON	.115	-.104	-.089	.062	-.050
NEU	-.035	-.090	.058	.031	.182*
OPE	.072	.165*	.033	.064	.073
R ²	10.6	11.0	11.0	8.0	15.5

Note: GEN = Gender; SAS = Sensation seeking; NAR = narcissism; SES = Self-esteem; EXT = Extraversion; AGR = Agreeableness; CON = consciousness; NEU = neuroticism; OPE = openness; NF = Number of friends; SP = Self-photos; PLA = play games; STA = status; COM = comment.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

were male, supporting **H9** that narcissism is positively related to posting photos on SNS.

A fifth standard multiple regression analysis was used to investigate the influence of the Big Five Personality factors, self-esteem, narcissism, and sensation seeking on status updates. As a group, these variables significantly predicted participant's status updates, $F(8, 256) = 4.65$, $p < .001$, accounting for 15.5% of the variance. Extraversion ($\beta = .20$), neuroticism ($\beta = .18$), and narcissism ($\beta = .15$) were positively related with status updates, supporting **H3**, **H4**, and **H10**, respectively. In addition, females were more likely to update their status than were males.

4. Discussion

The purpose of this study was to examine the relationships among the Big Five Personality factors, self-esteem, narcissism and sensation-seeking to Chinese University students' uses of SNS. Findings indicated that these individual differences characteristics had significant effects on the use of SNS. Specifically, extraversion was positively related to number of friends, posting comments, posting self-photos, and updating status, but negatively related to playing online games. These findings support **H1** that extraverts have more friends on SNS, **H2** that extraverts are more likely to make comments on SNS, and **H3** that extraverts tend to use more status updates. These findings are also consistent with previous studies that reported significant relationships between extraversion and using SNS for communication (Amichai-Hamburger, Kaplan, & Dorpatcheon, 2008; Amiel & Sargent, 2004; Ross et al., 2009; Ryan & Xenos, 2011). Extraverts are fond of expanding and strengthening their social networks and use SNS as a supplementary tool for communicating with friends, which may explain the link between extraversion and number of friends on SNS. The positive association between extraversion and comments and using status updates on SNS may be explained by the fact that extraversion represents traits associated with dominance, expressiveness, talkativeness, and sociability (Costa & McCrae, 1992), and extraverts may display this combination of traits by posting comments on SNS (Amiel & Sargent, 2004) and using status updates for self-promotion. The current study found a negative relationship between extraversion and playing online games. This result may be due to extraverts' greater attraction to the communication functions SNS compared to their other functions, like entertainment (e.g., game-playing) (Ryan & Xenos, 2011). Overall, our findings regarding the relationship between extraversion and how SNS are used SNS strengthens Tosun and Lajunen's (2010) argument that extraverted people use SNS primarily to strengthen and extend their social networks.

Concerning the relationship between neuroticism and SNS use, our findings indicate that neuroticism is positively related to updating one's status. This result supports **H4** that neurotics use status updates on SNS as a means of self-expression and prefer asynchronous forms of online communication. Butt and Phillips (2008) found that neuroticism plays a role in information control; those who are high in neuroticism are more likely to control shared information than those who are low in neuroticism. SNS give the user a great deal of time to consider what he/she wants to include in his/her SNS profile. Highly neurotic users may include status information because status is important to their self-definitions. They can also limit the amount of extraneous information (Ross et al., 2009) and focus instead on text information about status.

The positive relationship between neuroticism and status updates may also be explained by the fact that the status function on Renren provides a safe outlet for users' self-expression. Updating status, which is in some ways similar to blogging, may be particularly attractive to neurotic individuals because the event is unidirectional, allowing for the expression of both positive and

negative opinions without concern about negative reactions from others that may occur in real social settings. In addition, friends on Renren are mainly those known from the offline world rendering it less likely that negative opinions will be expressed on the SNS.

Contrary to **H5**, conscientiousness was not negatively related to SNS use. **H5** was based on previous research that found a negative relationship between conscientiousness and SNS use (Ryan & Xenos, 2011; Wilson et al., 2010). This inconsistency with previous research may be due to differences in research methods. In Wilson et al.'s research SNS use was measured as the overall amount of time spent on SNS. In contrast, in the present research we measured specific types of SNS use. Ryan and Xenos (2011) reported a negative relationship between conscientiousness and uploading photos. Again the seeming inconsistency with the present research findings may be attributable to the measures used to assess the relationship between conscientiousness and SNS use.

We found support for **H6** that agreeableness will be positively related to making comments on SNS. In research by Ross and colleagues (Ross et al., 2009), agreeableness was not related to online contact, contrary to support for **H6** in this research. **H6** was based on the definition of agreeableness. Agreeable individuals are, by definition, friendly, warm and sympathetic (Costa & McCrae, 1992). Therefore they should be more likely to post friendly and positive comments (e.g., "like") to other users status updates and photos.

H7 predicted that agreeableness is positively related to the number of friends on SNS. This hypothesis was not supported. Although previous studies reported a positive relationship between agreeableness and time spent on communication types of SNS use (Ryan & Xenos, 2011; Wilson et al., 2010), there is no previous research indicating explicitly that there is a positive relationship between agreeableness and number of friends on SNS.

Our results showed that openness to experience was positively related to playing online games, contrary to **H8** which predicts no relationship between openness to experience and SNS use. Some recent studies have also found no relationship between openness to experience and SNS use. It may be that the options available on SNS are not perceived by individuals high in openness to experience as new and/or interesting and/or challenging experiences. However, playing online games may satisfy these needs of individuals high in openness to new, interesting and challenging experiences.

There are studies reporting a positive relationship between openness to experience and the use of a variety of Facebook features (Amichai-Hamburger & Vinitzky, 2010; Correa et al., 2010). In a study by Tuten and Bosnjak (2001), openness to experience was positively related to the entertainment features of the Internet. The inconsistent findings may again be attributable to differences in measures. We focused on specific features of SNS, not specific options on the Internet. Our **H9** and **H10** predicted that narcissism would be positively related to posting photos (**H9**) and positively related to updating status (**H10**). Results supported both hypotheses and are consistent with previous research (Mehdizadeh, 2010; Ong et al., 2011; Ryan & Xenos, 2011). The link between narcissism and posting photos may exist because SNS encourage users to engage in self-promoting behaviors (Buffardi & Campbell, 2008; Mehdizadeh, 2010), which may satisfy the narcissists' desire for self-promotion (Mehdizadeh, 2010). As Buffardi and Campbell (2008) indicated, the prevalence of narcissistic individuals on Facebook may lead to an increase in narcissistic behaviors among all users as such behaviors may come to be viewed as acceptable online behaviors. The positive relationship between narcissism and updating status might be attributable to the fact that narcissistic individuals' desire for admiration is often satisfied through self-presentation, frequently functions of status updates

and posting comments. Both satisfy the narcissistic individuals' desire to express a high sense of self-importance.

We did not find a positive relationship between narcissism and number of friends on the Renren, contrary to **H11**. It may be that although narcissists are skilled at starting new relationships, they are not interested in forming strong interpersonal relationships (Foster & Campbell, 2007). Because they cannot control a potential increase in relationship strength they avoid having too many on-line friends.

H12 which predicts that sensation seeking will be positively related to playing online games was supported. This support is consistent with previous research indicating a close relationship between sensation seeking and Internet dependence (Lin & Tsai, 2002). The relationship between sensation seeking and playing games may exist because, whether on the Internet or within SNS satisfies the sensation seekers' need to have varied and novel experiences (Lin & Tsai, 2002).

H13, which predicts that sensation-seeking will be positively related to number of SNS friends was not supported. This may be attributable to the fact that SNS friends are individuals known from the offline world, undermining the satisfaction that sensation seekers experience in situations that are socially risky as well as stimulating. Self-esteem was positively related to making comments on SNS, contrary to **H14** that predicted a negative relationship. This positive relationship may be attributable to the fact that individuals with high self-esteem consider themselves and their opinions to be valuable and, therefore, are more likely to post comments (e.g., their valuable opinions) on SNS.

In the present study gender was also related to SNS use. Males reported more SNS friends and were more likely to play online games than were females, who were more likely to upload self-photos and update their status. These findings are consistent with previous research that found gender differences in motivations for Internet use and how the genders spend their time online. Specifically, women tend to use the Internet for social interaction and are more likely to engage in behaviors that promote relationship strengthening and, at the very least, relationship maintenance. Moreover, men are more likely to spend their online time engaged in task-focused activities (Muscanell & Guadagno, 2012) and to use social networking sites for dating (Raacke & Bonds-Raacke, 2008).

5. Limitations and future research

The present study examined the relationship between Big Five Personality factors and specific activities on SNS. Eight out of 14 hypotheses about personality factors were supported, although personality factors accounted for only a small percentage of the variance in SNS activities. Some of the personality factors that were unrelated to any type of SNS activity in this research were also unrelated to SNS activities in previous research (Hughes et al., 2011; Ross et al., 2009; Swickert, Hittner, Harris, & Herring, 2002). Although one must always be cautious in interpreting confirmation for the null hypothesis, it may simple be that these personality factors do not play a role in directing SNS activities (Ross et al., 2009).

Future research may resolve some of the issues raised in the present research by examining other personal and interpersonal characteristics that may have a stronger relationship to SNS use. Some possibilities are motivation (e.g., motivation for communication, social support, and looking for entertainment), self-efficacy, attitudinal factors regarding the virtual world and perhaps more narrowly specified personality characteristics (Ross et al., 2009). For example, Smock and his colleagues (2011) reported significant differences between motivations for both general Facebook use and use of specific features of Facebook. Hughes and his colleagues (2011) found that narrow personality facets of sociability and need

for cognition showed larger correlations with Facebook and Twitter use than did the Big Five factors.

Second, future research should take age of the SNS user into account in identifying precursors of types of SNS use. One study (Hughes et al., 2011) found that age accounted for a further 4.6% of the variance in Facebook use, making age the most predictive variable measured thus far, but still not very predictive.

6. Conclusion

The present study examined the influences of the Big Five Personality factors, self-esteem, narcissism, sensation seeking and gender on types of SNS use. The findings are a first step toward developing a model of SNS use that will include the personal characteristics identified as important in this research and other characteristics that prove important in future research.

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