Social Networking Addiction: An Overview of Preliminary Findings

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BRIEF HISTORY OF SOCIAL NETWORKING

Social networking sites (SNSs) are virtual communities where users can create individual public profiles, interact with real-life friends, and meet other people based on shared interests (Kuss & Griffiths, 2011). According to Boyd and Ellison (2008), SNSs are web-based services that allow individuals to (1) construct a public or semipublic profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system.

In terms of SNS history, the first social networking site (i.e., *SixDegrees*) was launched in 1997, based on the idea that everybody is linked with everybody else via six degrees of separation (Boyd & Ellison, 2008), and initially referred to as the "small world problem" (Milgram, 1967). In 2004, the most successful current SNS (i.e., Facebook) was established as a closed virtual community for Harvard students. The site expanded very quickly, and Facebook currently has more than 1.19 billion users, of whom 50% log on daily (Protalinski, 2013).

SNS usage patterns from both consumer research and empirical research indicate that overall, regular SNS use has increased substantially over the last few years (Kuss & Griffiths, 2011). This supports the availability hypothesis that where there is increased access and opportunity to engage in an activity (in this case SNSs), there is an increase in the numbers of people who engage in the activity (Griffiths, 2003). Research also indicates that compared to the general population, teenagers and students make the most use of SNSs (Kuss & Griffiths, 2011).

SNSs are predominantly used for social purposes, mostly related to the maintenance of established offline networks, relative to individual ones

(Kuss & Griffiths, 2011). However, recent evidence suggests that individuals may feel compelled to maintain their online social networks in a way that may, in some circumstances, lead to using SNSs excessively. The maintenance of already established offline networks itself can therefore be seen as an attraction factor, which according to Sussman et al. (2011) is related to the etiology of specific addictions. For instance, a number of addictive behaviors (e.g., alcoholism, video game addiction) may be maintained and hard to break because of the social ties that the addict has with others that engage in the activity (Griffiths, 1996).

In addition to presenting the risks and downsides of social networking, it should also be noted that the phenomenon itself might have developed along basic evolutionary drives. Humans as social beings have always lived in a community throughout evolution (i.e., a small and closed community offering security). However, with greater rates of migration to cities, these small, traditional communities declined, and in recent decades a whole new, more individualized way of life has been formed. However, the need for a secure and predictable community life that has evolved over millions of years has not changed. For this reason, human beings who have lost their traditional small communities make various attempts to compensate for this loss and among these (in addition to sports, hobbies, and many other social activities), one can find social networking activities. SNSs provide a means of secure and predictable communal space, which is in many aspects similar to the communal spaces of traditional communities (such as modern pubs or bars), where one can meet familiar faces with whom there is a possibility to share experiences as well as to live the experience of being a part of the community.

Many organizational employers have claimed that social networking addiction may be a concern, particularly among young people. For instance, in a survey of 120 youth work managers and practitioners, Davies and Cranston (2008) reported that their participants feared that use of online social networking displaces other activities and face-to-face social interaction. When asked to identify specific risks relating to online social networking, 23% reported addiction as being a concern, with other risks being bullying (53%), disclosing personal information (35%), and sexual predators (22%).

In many areas of behavioral addiction, there has been debate about whether some excessive behaviors should even be considered as genuine addictions (e.g., video games, Internet use, sex, exercise) and the same debate holds for addiction to social networking. Griffiths (2005) has operationally

defined addictive behavior as any behavior that features what he believes are the six core components of addiction (i.e., salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse). Griffiths argues that any behavior (e.g., social networking) that fulfills these six criteria can be operationally defined as an addiction. In relation to social networking, the six components are as follows:

- *Salience*—This occurs when social networking becomes the single most important activity in a person's life and dominates his or her thinking (preoccupations and cognitive distortions), feelings (cravings), and behavior (deterioration of socialized behavior). For instance, even if people are not actually engaged in social networking, they will be constantly thinking about the next time that they will be (i.e., a total preoccupation with social networking).
- *Mood modification*—This refers to the subjective experiences that people report as a consequence of social networking and can be seen as a coping strategy (i.e., they experience an arousing "buzz" or a "high" or, paradoxically, a tranquilizing feeling of "escape" or "numbing").
- *Tolerance*—This is the process whereby increasing amounts of social networking activity are required to achieve the former mood-modifying effects. This basically means that for people engaged in social networking, they gradually build up the amount of the time they spend social networking every day.
- *Withdrawal symptoms*—These are the unpleasant feeling states and/or physical effects (e.g., the shakes, moodiness, irritability) that occur when people are unable to engage in social networking because they are ill, on vacation, etc.
- *Conflict*—This refers to the conflicts between a person and those around that person (interpersonal conflict), conflicts with other activities (social life, hobbies, and interests), or from within the individual him- or herself (intrapsychic conflict and/or subjective feelings of loss of control) that are concerned with spending too much time social networking.
- *Relapse*—This is the tendency for repeated reversions to earlier patterns of excessive social networking to recur and for even the most extreme patterns typical of the height of excessive social networking to be quickly restored after periods of control.

It should also be noted that Griffiths (2010a) asserts that excessive use of an activity (e.g., social networking) does not necessarily equate with addiction, as he has published case studies of excessive Internet users (i.e., up to 14 hours a day) who have few negative consequences in their lives (i.e., the time

spent engaged in an activity does not always mean that it is problematic and/ or addictive). Furthermore, Griffiths has also pointed out on numerous occasions (e.g., 2000; Widyanto & Griffiths, 2006) that there is a fundamental difference between addictions *to* the Internet and addictions *on* the Internet.

ETIOLOGY AND THEORIES OF SOCIAL NETWORKING ADDICTION

Researchers have suggested that the excessive use of new technologies (and especially online social networking) may be particularly problematic to young people (Echeburua & de Corral, 2010). In accordance with the bio-psychosocial framework for the etiology of addictions (Griffiths, 2005) and the syndrome model of addiction (Shaffer, et al., 2004), it is claimed that those people addicted to using SNSs experience symptoms similar to those experienced by individuals who suffer from addictions to substances or other behaviors (Echeburua & de Corral, 2010). This has significant implications for clinical practice because unlike treatment for other addictions, the goal of SNS addiction treatment cannot be total abstinence from using the Internet *per se,* as it is an integral element of today's professional and leisure culture (Kuss & Griffiths, 2011). Instead, the ultimate therapy aim is controlled use of the Internet and its respective functions, particularly social networking applications, and relapse prevention using strategies developed within cognitive-behavioral therapies (Echeburua & de Corral, 2010). Additionally, some researchers have hypothesized that young vulnerable people with narcissistic tendencies are particularly prone to engaging with SNSs in an addictive way (La Barbera, La Paglia, & Valsavoia, 2009). More specifically, the structural characteristics of these Internet applications, (i.e., their egocentric construction) appear to allow favorable self-disclosure that draws narcissists to use it.

To explain the formation of SNS addiction, Turel and Serenko (2012) summarized three overarching theoretical perspectives that may not be mutually exclusive:

- *Cognitive-behavioral model*—This model emphasizes that "abnormal" social networking arises from maladaptive cognitions and is amplified by various environmental factors, and eventually leads to compulsive and/ or addictive social networking.
- *Social skill model*—This model emphasizes that "abnormal" social networking arises because people lack self-presentational skills and prefer virtual communication to face-to-face interactions, and it eventually leads to compulsive and/or addictive use of social networking.

- *Socio-cognitive model*—This model emphasizes that "abnormal" social networking arises due to the expectation of positive outcomes, combined with Internet self-efficacy and deficient Internet self-regulation, and it eventually leads to compulsive and/or addictive social networking behavior.

Based on these three models, Xu and Tan (2012) suggest that the transition from normal to problematic social networking use occurs when social networking is viewed by the individual as an important (or even exclusive) mechanism to relieve stress, loneliness, or depression. They contend that those who frequently engage in social networking are poor at socializing in real life. For these people, social media use provides such people continuous rewards (e.g. self-efficacy, satisfaction), and they end up engaging in the activity more and more, eventually leading to many problems (e.g., ignoring real-life relationships, work/educational conflicts). The resulting problems may then exacerbate individuals' undesirable moods. This then leads such individuals to engage in the social networking behavior even more as a way of relieving dysphoric mood states. Consequently, when social network users repeat this cyclical pattern of relieving undesirable moods with social media use, the level of psychological dependency on social networking increases.

The rapid rise of online social networking—particularly in relation to the increasing amounts of time people spend online—has led some to claim that excessive SNS use may be addictive to some individuals (Kuss & Griffiths, 2011). Online, individuals engage in a variety of activities, some of which have the potential to be addictive, including the potentially excessive use of SNSs. Rather than becoming addicted to the medium *per se,* a minority of Internet users may develop an addiction to specific online activities (Griffiths, 2000). Young (1999) has argued that there are five different types of Internet addiction, namely *computer addiction* (i.e., computer game addiction), *information overload* (i.e., Web surfing addiction), *net compulsions* (i.e., online gambling or online shopping addiction), *cybersexual addiction* (i.e., online pornography or online sex addiction), and *cyber-relationship addiction* (i.e., an addiction to online relationships).

Social networking addiction arguably falls into the cyber-relationship addiction category of Young's typology given that the primary purpose and main motivation to use SNSs is to establish and maintain both online and offline relationships. However, it is worth noting that if social networking addiction is a cyber-relationship addiction, then it does not include activities such as playing *Farmville* on Facebook (Griffiths, 2012b). In such typologies, playing *Farmville* would be classed by Griffiths (2010b) as a gaming addiction rather than "Facebook addiction." Any further development of the Facebook addiction scales (discussed later) need to take this distinction into account.

Kuss and Griffiths (2011) argue that from a clinical psychologist's perspective, it may be plausible to speak specifically of "Facebook Addiction Disorder" (or more generally "SNS Addiction Disorder") because addiction criteria, such as neglect of personal life, mental preoccupation, escapism, mood-modifying experiences, tolerance, and concealment of the addictive behavior, appear to be present in some people who use SNSs excessively.

A behavioral addiction such as SNS addiction may thus be seen from a biopsychosocial perspective (Demetrovics & Griffiths, 2012; Griffiths, 2005). Just as with substance-related addictions, it would appear that in some individuals, SNS addiction incorporates the experience of the "classic" addiction symptoms, namely mood modification (i.e., engagement in SNSs leads to a favorable change in emotional states), salience (i.e., behavioral, cognitive, and emotional preoccupation with the SNS usage), tolerance (i.e., ever increasing use of SNSs over time), withdrawal symptoms (i.e., experiencing unpleasant physical and emotional symptoms when SNS use is restricted or stopped), conflict (i.e., interpersonal and intrapsychic problems ensue because of SNS usage), and relapse (i.e., addicts quickly revert back to their excessive SNS usage after an abstinence period).

It is generally accepted that a combination of biological, psychological, and social factors contributes to the etiology of addictions (Griffiths, 2005; Shaffer, LaPlante, LaBrie, et al., 2004) that may also hold true for SNS addiction. From this it follows that SNS addiction shares a common underlying etiological framework with other substance-related and behavioral addictions. However, due to the fact that the engagement in SNSs is different in terms of the actual expression of (Internet) addiction (i.e., pathological use of SNSs rather than other Internet applications), the phenomenon may be worthy of individual consideration, particularly when considering the potentially detrimental effects of both substance-related and behavioral addictions on individuals who experience a variety of negative consequences because of their addiction (American Psychiatric Association, 2000).

EPIDEMIOLOGY: EMPIRICAL STUDIES OF SOCIAL NETWORKING ADDICTION

To date, research into social networking addiction has been relatively sparse. Empirical studies into the behavior fall into one of four types: (1) self-perception studies of social networking addiction, (2) studies of social networking addiction utilizing a social networking addiction scale, (3) studies examining the relationship between social networking and other online

addictions, and (4) studies examining social networking addiction and interpersonal relationships. Each of these is very briefly examined in turn.

Self-Perception Studies of Social Networking Addiction

A study by Machold et al. (2012) examined general patterns of Internet usage among 474 young Irish teenagers (aged 11–16 years) and also attempted to identify potential online hazards, including overuse and addiction. Approximately three-quarters of the sample (72%) reported frequent social networking, with most of these being Facebook users (95%). A third of the sample (33%) felt they engaged in social networking too often.

Cha (2010) explored the factors that affect the use of SNSs and focused on two dimensions of SNS use: frequency (i.e., how often people use SNSs) and amount (i.e., how much time people spend on social networks). The study surveyed 251 college students (mean age 20.5 years) of which 98% used at least one SNS. Using regression analyses, Cha found that (1) sites with increased interpersonal utility, (2) perceived easy use, (3) having fewer privacy concerns, and (4) being a younger age predicted the frequency of SNS use. The time spent on SNSs was best predicted by (1) sites with increased interpersonal utility, (2) social networking as form of escape, and (3) having increased Internet experience. Therefore, the strongest determinant for both frequency and amount of SNS use was the interpersonal utility motive.

Cabral (2011) surveyed 313 social media users (most aged 16–30 years). Over 98% of the sample used Facebook and 34% used Twitter. Two-thirds of the sample (64%) spent between 30 and 90 minutes on social media a day (with 10% spending over 2 hours a day). Over half of the participants (59%) claimed they felt that they were addicted to social media. Other findings relating to potential indicators of addiction symptoms indicated that 39% spent more time on social media than intended (i.e., tolerance); 80% checked social media sites often/very often (i.e., salience); 23% claimed they sometimes felt stressed out, disconnected, or paranoid when unable to access social media sites (i.e., withdrawal); and 17% often tried to cut down the amount of social media use but failed (i.e., relapse).

Olowu and Seri (2012) carried out a study of social networking behavior among 884 Nigerian university students (aged 16–30 years). Results indicated that 304 participants (34%) claimed to use social networks very often. The majority (64%) strongly agreed that they had an inability to stop using social network sites, and 25% said they "very often" overspent time on SNSs. A significant minority (21%) said they were very often agitated if unable to use social networks, and a slightly larger number (27%) strongly

agreed that they were addicted to social networking. All of the studies in this section have severe methodological weaknesses particularly as they rely on self-report data, small sample sizes, and convenience sampling. Furthermore, none of these self-perception studies actually measured social networking addiction because no assessment scale was actually used. Additionally, some of the studies (e.g., Oluwu & Seri, 2012) did not even carry out basic statistical significance testing.

Studies of Social Networking Addiction Utilizing a Social Networking Addiction Scale

Pelling and White (2009) surveyed 233 undergraduate university students (64% females, mean age = 19 years) using a prospective design in order to predict high-level use intentions and actual high-level usage of SNSs via an extended model of the theory of planned behavior (TPB). High-level usage was defined as using SNSs at least four times per day. TPB variables included measures of intention for usage, attitude, subjective norm, and perceived behavioral control (PBC). Furthermore, self-identity, belongingness, and past and potential future usage of SNSs were investigated. Results indicated that past behavior, subjective norm, attitude, and self-identity significantly predicted both behavioral intention as well as actual behavior. Those who identified themselves as SNS users and those who looked for a sense of belongingness on SNSs appeared to be at risk for developing an addiction to SNSs.

Wan (2009) assessed SNS addiction in a sample of 335 Chinese college students aged 19–28 years also using the Internet Addiction Test (Young, 1998) modified to specifically assess the addiction to a common Chinese SNS, namely *Xiaonei.com*. Users were classified as addicted when they endorsed five or more of the eight IAT items. Wan assessed loneliness, user gratifications (based on the results of a previous focus group interview), usage attributes, and patterns of SNS website use. The results indicated that of the total sample, 34% were classified as addicted. Moreover, loneliness significantly and positively correlated with frequency and session length of using *Xiaonei.com* as well as SNS addiction. Social activities (such as having online conversations) and relationship building (i.e., making lots of friends online) were found to predict SNS addiction.

Wilson, Fornasier, and White (2010) surveyed an Australian university student sample of 201 participants (76% female, mean age = 19 years) to assess personality factors via the short version of the NEO Personality Inventory (Costa & McCrae, 1992), time spent using SNSs, and an Addictive Tendencies Scale (based on both Ehrenberg, et al., [2008] and Walsh,

White, & Young, [2007]). The Addictive Tendencies Scale included three items measuring salience, loss of control, and withdrawal. The results of a multiple regression analysis indicated that high extraversion and low conscientiousness scores significantly predicted both addictive tendencies and the time spent using an SNS. The researchers suggested that the relationship between extraversion and addictive tendencies could be explained by the fact that using SNSs satisfies the extraverts' need to socialize. The findings with regards to lack of conscientiousness appear to be in line with previous research on the frequency of general Internet use in that people who score low on conscientiousness tend to use the Internet more frequently than those who score high on this personality trait (Landers & Lounsbury, 2004).

Alabi (2012) surveyed Facebook addiction among 1,000 Nigerian University undergraduates using stratified and purposive sampling. The study used an instrument devised by the authors, the Facebook Addiction Symptoms Scale (FASS) with good internal consistency and a Cronbach's Alpha of 0.73. The FASS is a 15-item scale modeled on the content categories of Young's (1998) Internet Addiction Scale. Respondents answer the statements on a four-point Likert scale from 1 (Not at all) to 4 (Very regular). The FASS contains three items each under the following five categories: (1) preference for social network site, (2) loss of control, (3) preoccupation, (4) negative life consequences, and (5) withdrawal. Results showed that 31% of the sample accessed their Facebook account every hour. The study also revealed a relatively low level of Facebook addiction (1.6%). However, Alabi suggested that the low level of Internet access generally in Nigeria may have had an impact on the results.

A study by Cam and Isbulan (2012) examined gender differences in Facebook addiction in 1,257 Turkish university students (739 females and 518 males; aged 20–24 years). The authors adapted Young's (1998) Internet Addiction Test and named the new instrument the Facebook Addiction Scale (FAS). The survey items were answered using a Likert-type scale with six response choices (Does not apply, Rarely, Occasionally, Frequently, Often, and Always). The reliability of the scale was calculated with a very high Cronbach's alpha (0.92), although the authors made no reference to a cut-off score for what constituted Facebook addiction. Results showed males scored significantly higher than females on the FAS.

Those who scored high on the FAS were more likely to (1) prefer the excitement of Facebook to intimacy with their romantic partner; (2) have others in their life complain to them about the amount of time they spend on Facebook; (3) educationally suffer because of the amount of time they spend on Facebook; (4) check their Facebook messages before doing other things; (5)

occupationally suffer because of their Facebook use; (6) become defensive or secretive when anyone asks them what they do on Facebook; (7) find themselves anticipating going on Facebook again; (8) feel preoccupied with Facebook when offline or fantasize about being on Facebook; (9) try to cut down the amount of time they spend on Facebook and fail; (10) try to hide how long they have been on Facebook; (11) choose to spend more time on Facebook over going out with others; and (12) feel depressed, moody, or nervous when they are offline, which disappears once they are back on Facebook.

Andraessen, Tosheim, BrunBerg, and Pallesen (2012) developed the Bergen Facebook Addiction Scale (BFAS) based on Griffiths' (2005) six addiction components. The scale was constructed and administered to 423 students together with several other standardized self-report scales (e.g., including measures that assessed personality, attitudes toward Facebook, the Addictive Tendencies Scale). The scale positively related to various personality traits (e.g., neuroticism, extraversion), and negatively related to others (e.g., conscientiousness). High scores on the new scale were also associated with going to bed very late and getting up very late. Respondents are required to give one of five responses (Very Rarely, Rarely, Sometimes, Often, or Very Often) to six statements (e.g., "You feel an urge to use Facebook more and more" and "You use Facebook so much that it has had a negative impact on your job/studies"). The authors suggest that scoring Often or Very Often on at least four of the six items may suggest that the respondent is addicted to Facebook.

A study by Cheak, Goh, and Chin (2012) examined the relationship between social networking dependency and mood modification among 343 Malaysian undergraduates (mainly aged between 20 and 24 years). Social networking addiction was measured using an adaptation of 19 items from the Internet-Related Problem Scale (Armstrong, Phillips, & Saling, 2000). Social networking dependency was assessed with 12 items modified from Morahan–Martin and Schumacher's (2000) Pathological Internet Use Scale. Results showed that 46% engaged in social networking on a daily basis. The top activities engaged in on SNSs were checking messages (68%), checking comments/testimonies (54%), and playing games (52%). Predictably, there was a large positive correlation between social networking dependency and social networking addiction (0.68). Mood modification also correlated positively with social networking addiction (0.56).

Floros and Siomos (2013) reported a cross-sectional study examining the relationship between adolescent social networking (SN) motives, parenting styles, and cognitions related to Internet Addiction Disorder (IAD) in a Greek high-school student sample (n = 1971; aged 12–19 years). Based on Davis's

(2001) model of IAD, the Online Cognitions Scale (OCS) was devised and shown to provide an accurate estimate of Internet addiction (Davis et al., 2002). The OCS contains 36 items on a seven-point Likert scale with results grouped in four factors: (1) social comfort, (2) loneliness/depression, (3) diminished impulse control, and (4) distraction. Results demonstrated SN participation was the most frequent online activity among the sample, and that keeping in touch with friends was the strongest reason for frequent SN participation. Results also included a validated model of a negative correlation between optimal parenting, motives for SN participation, and IAD. Results also showed that frequent adolescent SN users were older, started using the Internet before their peer group, used the Internet to escape from everyday life, and used the Internet impulsively. This combination of variables explained over a third of the variance (35%) in their theoretical model.

Turel and Serenko (2012) tested and validated the dual effect of enjoyment, with a data set of 194 American students (19–40 years of age [mean age 23 years] and all of whom were social networking website users) analyzed with structural equation modeling techniques. They hypothesized that Information Systems (IS) use habit is positively related to addiction to social networking websites. Facebook addiction was assessed using an adapted version of Charlton and Danforth's (2007) online gaming addiction scale. The addiction statements included such items as "I sometimes neglect important things because of my interest in this social networking website," "When I am not using this social networking website, I often feel agitated". Perceived enjoyment was found to be the key antecedent of habit. The results of the study provide support for the authors' hypothesis that perceived enjoyment is linked with two potentially diverging outcomes (i.e., a habit that can facilitate increased addiction levels on one hand, but high engagement on the other).

Sofiah, Zobidah, Bolong, and Osman (2011) examined Facebook addiction among 380 Malaysian female university students (aged 19–28 years). Facebook addiction was assessed using a self-devised 11-item scale. The higher the overall score, the more addicted the person is deemed to be. No cut-off scores were provided by the authors to determine classification as a Facebook addict. The results of the 11 statements in terms of those who answered Strongly Agree (followed by the mean score of the sample out of 7, and standard deviation) are presented here:

- "Facebook has become part of my daily routine." (19%; 5.5; 1.0)
- "I find that I stay on Facebook longer than I intended." (16%; 5.2; 1.2)
- "I feel out of touch when I haven't logged onto Facebook for a while." (13%; 5.0; 1.4)
- "I think life without Facebook would be boring." (14%; 4.7; 1.5)

- "I tend to spend more time on Facebook over going out with others." (5.5%; 4.0; 1.6)
- "I often spend time playing games with friends through Facebook." (5.5%; 3.7; 1.7)
- "I often think about Facebook when I am not using it." (4%; 3.5; 1.7)
- "I often lose sleep due to late-night login to Facebook." (4%; 3.4; 1.7)
- "I neglect everyday responsibilities to spend more time on Facebook." (3%; 3.3; 1.5)
- "My priority is to log on to Facebook rather than do other things." (3%; 3.1; 1.7)
- "My grades are getting lower because of the amount of time I spend on Facebook." (3%; 3.0; 1.6)

Based on the results, the authors identified five motives for Facebook use (i.e., social interaction, passing time, entertainment, companionship, and communication) and found that there was a significant relationship between these five motives for Facebook use and Facebook addiction. Through use of regression analyses, the most significant motivational predictor of Facebook addiction was using Facebook as a way of passing time, followed by using Facebook for entertainment and communication. The combination of these three motivational variables accounted for 24% of the variance.

A study by Wolniczak et al. (2013) examined the association between Facebook dependence and poor sleep quality in a sample of 418 undergraduate university students in Peru (mean age = 20 years). The authors assessed Facebook dependence by adapting the Internet Addiction Questionnaire (Echeburua, 1999). The adapted instrument comprised eight yes/no questions and focuses on worries, concerns, satisfaction, time of use and efforts to reduce Facebook use, control, and other activities due to Facebook use. The authors used a cut-off of 5 or more to establish the presence of dependence as previously reported by Echeburua (1999). They reported Facebook dependence in 8.6% of the sample, whereas poor sleep quality was present in 55%. The study reported a significant association between Facebook dependence and poor sleep quality, mainly explained by daytime dysfunction after adjusting for age, gender, and year of study.

Koc and Gulyagci (2013) explored Facebook addiction among 447 Turkish college students and examined associated behavioral, demographic, and psychological health predictors. A Facebook Addiction Scale (FAS) was developed to assess addictive Facebook usage comprising eight items related to the core components of addiction (e.g., cognitive and behavioral salience, conflict with other activities, euphoria, loss of control, withdrawal, and

relapse/reinstatement). Results indicated that time spent on Facebook varied between 10 minutes and 70 hours a week with a mean of 7 hours a week. The mean FAS score was only 13.66 (SD = 5.92; range 8–37). This indicates that reported levels of Facebook addiction were low among Turkish students. Those with high FAS scores reported a negative impact on their education, and students who frequently used Facebook for social interaction reported higher levels of addiction. Through use of regression analysis, 22% of the variance in Facebook addiction was explained by four significant predictors (i.e., weekly time commitment, social motives, anxiety and insomnia, and severe depression), and all were positively associated with addictive usage. The results support a cognitive-behavioral model, which assumes the necessity of a pre-existing psychopathology as a source of online addiction.

These quantitative studies suffer from a variety of methodological limitations. They attempted to assess SNS addiction, but mere assessment of addiction tendencies does not suffice to demarcate real pathology. Most of the samples were generally small, specific, self-selected, convenient, and skewed with regards to young adults and female gender. This may have led to the very high addiction prevalence rates (up to 34%) reported in some studies because individuals from these sociodemographic groups are likely to be more heavy social networking users. Empirical studies need to ensure that they are assessing addiction rather than excessive use and/or preoccupation.

Studies Examining the Relationship between Social Networking and Other Online Addictions

Kittinger, Correia, and Irons (2012) examined how the use of Facebook relates to problematic Internet use among 281 American undergraduate students (mean age of 20 years). The authors used the 20-item Internet Addiction Test (IAT) (Young, 1998) to assess Internet addiction (see the Appendix in Chapter 5). Respondents rate each of the items on a 5-point Likert-type scale, ranging from 1 (rarely) to 5 (always). Scores ranging from 50 to 79 are considered as indicative of occasional or frequent problems due to Internet use, whereas scores at or above 80 are indicative of more significant problems. The authors reported that most of their participants fell below the recommended cut-off for problematic Internet use, although a sizable minority (15%) reported scores above 50. Those scoring above 50 on the IAT were significantly more likely to report specific problems related to their use of Facebook. IAT scores were significantly correlated with both daily use of

Facebook, and self-reports by participants that they felt addicted. Using regression analyses, including age, gender, amount of time spent online per day (including use of Facebook), the number of times Facebook accounts were accessed per day, and the minutes spent on Facebook per day accounted for 34% of the variance in IAT scores. Time spent online and the daily frequency of Facebook use were the most significant predictors. The authors concluded that the use of Facebook contributes to IAT scores, even after accounting for demographic variables and general patterns of Internet use.

Zhou (2010) assessed SNS game addiction via the IAT (Young, 1998) in 342 Chinese college students aged 18–22 years. In this study, SNS game addiction referred specifically to being addicted to the SNS game *Happy Farm*. Students were defined as addicted to using this SNS game when they endorsed a minimum of five (out of eight) items of the IAT. Using this cut-off, Zhou classified 24% of the participants as addicted. Zhou also investigated rewards of SNS game use, loneliness, leisure boredom, and self-esteem. The findings indicated that there was a weak positive correlation between loneliness and SNS game addiction and a moderate positive correlation between leisure boredom and SNS game addiction. The rewards of "inclusion" (in a social group) and "achievement" (in game), leisure boredom, and being male significantly predicted SNS game addiction.

Karaiskos, Tzavellas, Balta, and Paparrigopoulos (2010) reported the case of a 24-year old female who used SNSs to such an extent that her behavior significantly interfered with her professional and private life. Consequently, she was referred to a psychiatric clinic. She used Facebook excessively for at least 5 hours a day and was dismissed from her job because she continuously checked her SNS instead of working. Even during the clinical interview, she used her mobile phone to access Facebook. In addition to excessive use that led to significant impairment in a variety of areas in the woman's life, she developed anxiety symptoms as well as insomnia, which suggestively points to the clinical relevance of SNS addiction. Such extreme cases have led some researchers to conceptualize SNS addiction as Internet spectrum addiction disorder. This indicates that first, SNS addiction can be classified within the larger framework of Internet addictions, and second, that it is a specific Internet addiction, alongside other addictive Internet applications such as Internet gaming addiction (Kuss & Griffiths, 2012a), Internet gambling addiction (Kuss & Griffiths, 2012b), and Internet sex addiction (Griffiths, 2012a).

This particular qualitative case study illustrates that from a clinical perspective, SNS addiction is a mental health problem that may require

professional treatment. Unlike the other quantitative studies outlined in this chapter, the case study emphasizes the significant individual impairment that is experienced by individuals that spans a variety of life domains, including their professional life as well as their psychosomatic condition. Future researchers are therefore advised not only to investigate SNS addiction in a quantitative way, but also to further our understanding of this new mental health problem by analyzing cases of individuals who suffer from excessive SNS usage.

Studies Examining Social Networking Addiction and Interpersonal Relationships

Elphinston and Noller (2011) carried out a study examining the relationship between Facebook intrusion, jealousy in romantic relationships, and relationship outcomes among 342 Australian undergraduate students (aged 18–25 years) involved in a romantic relationship. The authors' self-constructed measure—the eight-item Facebook Intrusion Questionnaire (FIQ)—was to all intents and purposes a measure of "Facebook addiction" because the eight statements were based on the core components of addiction (Griffiths, 2005). The authors claimed that a single-factor structure for the FIQ was supported (i.e., it was a uni-dimensional scale) and that the internal consistency of the measure was high. Results showed that Facebook intrusion was associated with relationship dissatisfaction (via jealous cognitions and surveillance behaviors), although time spent on Facebook was not. The authors argued that their findings highlighted the possibility of high levels of Facebook intrusion "spilling over" into romantic relationships and leading to jealousy and relationship dissatisfaction. Facebook intrusion was only moderately associated with time spent on Facebook and supports Griffiths' (2010a) assertions that online excessive use does not necessarily equate with addiction.

Porter, Mitchell, and Grace (2012) also examined the relationship between social media use, interpersonal relationship satisfaction, and addiction in 219 young adult social media users aged 18–25 years. They used Mitchell and Beard's (2010) Internet Dependency Scale (IDS) to measure time spent using social media and social media withdrawal. Results showed that participants would feel some withdrawal from social media after a certain period of time. The results did not support their hypothesis that there would be a negative correlation between social media use and relationship

satisfaction. As with other survey studies highlighted in this chapter, the sample sizes for these two studies were small, specific, and they used self-selected convenience samples.

Social Networking Addiction versus Facebook Addiction

Griffiths (2012b) recently noted that for many researchers, Facebook addiction has become almost synonymous with social networking addiction. Facebook is just one of many websites where social networking can take place. Therefore, scales such as the BFAS (Andraessen et al., 2012), FAS (Cam & Isbulan, 2012), and the FIQ (Elphinston & Noller, 2011) have been developed relating to addiction to one particular commercial company's service (i.e., Facebook) rather than the whole activity itself (i.e., social networking). Griffiths argues that the real issue here concerns what people are actually addicted to and what the new Facebook addiction tools are measuring. These arguments are almost identical to those in areas such as Internet addiction (Widyanto & Griffiths, 2006) and mobile phone addiction (Choliz, 2010).

For instance, Facebook users can play games like *Farmville* (Griffiths, 2010b), can gamble on games like poker (Griffiths & Parke, 2010), can watch videos and films, and can engage in activities such as swapping photos or constantly updating their profile and/or messaging friends on the minutiae of their life (Griffiths, 2012b; Kuss & Griffiths, 2011). Therefore, "Facebook addiction" is not synonymous with "social networking addiction"; they are two fundamentally different things because Facebook has become a specific website where many different online activities can take place—and may serve different purposes to various users.

What this suggests is that the field needs a psychometrically validated scale that specifically assesses "social networking addiction" rather than Facebook use. In scales like the BFAS, social networking as an activity is not mentioned; therefore, the scale does not differentiate between someone addicted to *Farmville* or someone addicted to constantly messaging Facebook friends. However, the BFAS is arguably the most psychometrically robust scale, and it is based on the components model of addiction (Brown, 1993; Griffiths, 2005) that has been used to develop many other psychometrically valid scales to assess other behavioral addictions (e.g., online gaming addiction, exercise addiction, work addiction). Revalidation of the BFAS using the term *social networking* instead of *Facebook use* may prove worthwhile to researchers.

Case Vignette: Marina

Marina is a 19-year-old British woman. Till recently, she was a university student until she failed all her coursework and exams and was asked by her university to repeat the year with attendance. Her mother claims she is "addicted to Face-book" and that the reason she failed everything on her modern languages degree was that she spent all her time chatting with friends online via Facebook. She spends most of her waking day checking her Facebook account using her phone that she carries around all the time. She cannot get to sleep unless her phone is on her bedside table. She cannot leave the house without her mobile phone. Her mother claims "she seems to spend her whole life online" and that even when she is eating a meal with her family, she is constantly checking her phone to see what messages she has received. Marina has more than 1,000 "friends," the vast majority of which she has either never met or had only the briefest of social contact with.

Her mother claims that all of Marina's conversation is related to information and gossip on Facebook. She claims Marina's mood is "totally dictated" by whether people are commenting on her status updates and/or dependent on how people react to the things she says online. Marina first set up a Facebook account when she was 16 years old and only ever accessed her account on the family computer in her father's study. Over the next 2 years, the number of hours she spent on Facebook gradually increased to the extent that almost all her time after school was spent on the computer. There was one period when she was 17 years of age when her Facebook usage was at a minimum, and this was a 6-week period when both her parents made her review for her A-level exams. During this period, her mother said Marina was very frustrated, irritating, and moody. The mother thought this was because of the stress of Marina's exams but now thinks it was because her daughter's access to the computer was denied. As soon as the exams were over (and Marina was allowed back on the family PC), her Facebook usage increased greatly (with her mother claiming that she was on Facebook "all the time"). The end of the exam period coincided with Marina's 18th birthday, when she was given a smartphone. This was the point at which her Facebook usage escalated to the point at which she was on Facebook for hours and hours at a time.

At university, Marina's Facebook use appears to have taken up most of the day. Even when attending lectures, she would be on Facebook. The few relation-ships she had with boys at university fizzled out because she would rather spend time on Facebook than with the person she was supposed to be dating. After Marina failed all her exams, the only way she could console herself was by chat-ting with her friends on Facebook.

Marina appears to display the core components of addiction. Facebook appears to be the most important thing in Marina's life, and she is totally

> **Case Vignette: Marina—cont'd**
>
> preoccupied with it. She uses it as a way of modifying her mood, and her use appears to conflict with everything in her life (relationships, education, family life). She also appears to have displayed withdrawal symptoms during her exam revision period. Marina's parents were so worried about her constant Facebook use that they sought professional advice (including contacting the first author for help). Marina refuses to see a psychologist and says she is doing what her friends do. Should her parents ever manage to get her into treatment, interventions such as cognitive-behavioral therapy (along with motivational interviewing) would perhaps be the most effective treatment approach.

PREVENTION AND TREATMENT OF SOCIAL NETWORKING ADDICTION

To date, there have been no papers published on the treatment of addiction to social networking, although the treatment studies relating to Internet addiction would appear to be applicable. Echeburua and de Corral (2010) noted that in relation to social networking, prevention strategies in both home and school settings should be implemented on the basis of behavioral risk factors and demographic characteristics. They also noted that the goal of treatment for this type of addiction (unlike the case of other addictions) should be controlled use rather than total abstinence because it is not particularly feasible to stop people from accessing devices that have Internet access (i.e., their computer or mobile phone) in today's culture. They assert that the psychological treatment of choice would appear to be stimulus control and gradual exposure to the Internet, followed by a cognitive-behavioral intervention in relapse prevention. However, it is possible to cease engaging in social networking on the Internet while still engaging in other Internet-related activities (e.g., playing online games). Gupta, Arora, and Gupta (2013) claim that in relation to SNS addiction, corrective strategies include but are not limited to (1) content-control software, (2) counseling, and (3) cognitive-behavioral therapy. They advise treatment practitioners get their clients to follow these strategies to manage and treat SNS addiction:

- Recognize the signs of a Facebook addiction.
- Start questioning what you are doing on Facebook.
- Write down exactly how much time you spend on each site.
- Decide what is of value on Facebook.
- Give yourself a set time of the day to visit.

- Try giving up Facebook for a specific event to see how you fare.
- Turn off e-mail notifications.
- Target solutions to enable smarter, brighter usage of Facebook in the future.
- Be careful of the race to have as many friends as possible.
- Avoid being a Facebook automaton. Every time you feel like saying "I'll Facebook you," check yourself and rephrase that with "I'll see you" or "I'll call you." And mean it; doing so settles the catch-up time straightaway.
- Meditate as soon as the thought of Facebook arises.

There is a clear need for more and better information about social networking addiction and the most appropriate and effective treatment programs. Echeburua and de Corral (2010) also note that more research is required on the motivational enhancement for treatment and the types of brief intervention available in relation to the problematic use of the Internet (including social networking among young people).

CONCLUSIONS

The aim of this chapter was to present an overview of the emergent empirical research relating to social networking addiction. The scientific literature addressing the addictive qualities of social networks on the Internet is scarce, but an increasing number of studies of variable quality have been published over the last few years. It is recommended that researchers assess factors that are specific to SNS addiction, including the pragmatics, attraction, communication, and expectations of SNS use because they may predict the etiology of SNS addiction as based on the addiction specificity etiology framework (Sussman, et al., 2011). Due to the scarcity of research in this domain with a specific focus on SNS addiction specificity and comorbidity, further empirical research is necessary.

Whether social networking addiction exists is debatable depending on the definition of addiction used, but there is clearly evidence that a minority of social network users experience addiction-like symptoms as a consequence of their excessive use. Studies endorsing only a few potential addiction criteria are not sufficient for establishing clinically significant addiction status. Similarly, significant impairment and negative consequences that discriminate addiction from mere abuse were generally not assessed. Thus, future studies have great potential in addressing the emergent phenomenon of SNS addiction by means of applying better methodological designs,

including more representative samples, and using more reliable and valid addiction scales so that current gaps in empirical knowledge can be filled.

Furthermore, research must address the presence of specific addiction symptoms beyond negative consequences. These should be based on the *DSM-5* criteria for substance dependence and/or pathological gambling (American Psychiatric Association, 2013) and the *ICD-10* criteria for a dependence syndrome (World Health Organization, 1992), including (1) tolerance; (2) withdrawal; (3) increased use; (4) loss of control; (5) extended recovery periods; (6) sacrificing social, occupational, and recreational activities; and (7) continued use despite negative consequences. These have been found to be adequate criteria for diagnosing behavioral addictions (Griffiths, 2005) and thus appear sufficient to be applied to SNS addiction. To be diagnosed with SNS addiction, at least three (but preferably more) of the aforementioned criteria should be met in the same 12-month period, and they must cause significant impairment to the individual.

In addition, specific attention needs to be paid to selecting larger samples that are representative of a broader population to increase the respective study's external validity. The generalizability of results is essential to demarcate populations at risk for developing addiction to SNSs. Similarly, it appears necessary to conduct further psychophysiological studies to assess the phenomenon from a biological perspective. Furthermore, clear-cut and validated addiction criteria need to be assessed. It is insufficient to limit studies into addiction to assessing just a few criteria. The differentiation of pathology from high frequency and problematic usage necessitates adopting frameworks that have been established by the international classification manuals. Moreover, in light of clinical evidence and practice, it appears essential to pay attention to the significant impairment that SNS addicts experience in a variety of life domains as a consequence of their abusive and/or addictive behaviors.

Similarly, the results of data based on self-reports are not sufficient for diagnosis because research suggests that they may be inaccurate (Bhandari & Wagner, 2004). Conceivably, self-reports may be supplemented with structured clinical interviews, and further case study evidence as well as supplementary reports from the users' significant others. Research into social networking addiction is needed specifically in relation to clinical applicability and criteria for diagnosis. Furthermore, research is needed to examine gender differences because there appears to be a higher prevalence of problems among females (as opposed to other problematic online behaviors such as gaming addiction, which is more prevalent among males; Kuss

& Griffiths, 2012a). Such observations strengthen the rationale for a clear-cut social networking addiction classification rather than an umbrella term of *Internet addiction*.

REFERENCES

Alabi, O. F. (2012). A survey of Facebook addiction level among selected Nigerian university undergraduates. *New Media and Mass Communication*, *10*, 70–80.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders—Text revision* (4th ed.). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders—Text revision* (5th ed.). Washington, DC: Author.

Andraessen, C. S., Tosheim, T., BrunBerg, G. S., & Pallesen, S. (2012). Development of a Face-book addiction scale. *Psychological Reports*, *110*, 501–517.

Armstrong, L., Phillips, J. G., & Saling, L. L. (2000). Potential determinants of heavier Internet usage. *International Journal of Human-Computer Studies*, *53*, 537–550.

Bhandari, A., & Wagner, T. H. (2004). *Self-report utilization: Improving measurement and accuracy*. San Diego: US National Institutes of Health.

Boyd, D. M, & Ellison, N. B. (2008). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, *13*, 210–230.

Cabral, J. (2011). Is Generation Y addicted to social media? *Elon Journal of Undergraduate Research in Communications*, *2*(1), 5–13.

Cam, E., & Isbulan, O. (2012). A new addiction for teacher candidates: Social networks. *Turkish Online Journal of Educational Technology*, *11*(3), 14–19.

Cha, J. (2010). Factors affecting the frequency and amount of social networking site use: Motivations, perceptions, and privacy concerns. *First Monday*, *15*(12). Located at http://firstmonday.org/ojs/index.php/fm/article/viewArticle/2889/2685.

Charlton, J. P., & Danforth, I. D. W. (2007). Distinguishing addiction and high engagement in the context of online game playing. *Computers in Human Behavior*, *23*, 1531–1548.

Cheak, A. P. C., Goh, G. G. G., & Chin, T. S. (2012). Online social networking addiction: Exploring its relationship with social networking dependency and mood modification among undergraduates in Malaysia. *Proceedings of the International Conference on Management, Economics and Finance*, 247–262. Sarawak, Malaysia: Global Research.

Choliz, M. (2010). Mobile phone addiction: A point of issue. *Addiction*, *105*, 373–374.

Costa, P. T., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PI-R) and the NEO Five-Factor inventory (NEO-FFI): Professional manual*. Odessa, FL: Psychological Assessment Resources.

Davies, T., & Cranston, P. (2008). *Youth work and social networking: Interim report*. Leicester: National Youth Agency.

Davis, R. (2001). A cognitive–behavioral model of pathological Internet use. *Computers in Human Behavior*, *17*, 187–195.

Davis, R.A., Flett, G.L., & Besser, A. (2002). Validation of a new scale for measuring problematic internet use: implications for pre-employment screening. *CyberPsychology and Behavior*, *5*, 331–345.

Echeburua, E. (1999). *Adicciones…Sin drogas? Las nuevas adicciones: Juego, sexo, comida, compras, trabajo, Internet; Desclee-de-Brouwer, editor*. Bilbao, Espana.

Echeburua, E., & de Corral, P. (2010). Addiction to new technologies and to online social networking in young people: A new challenge. *Adicciones*, *22*(2), 91–95.

Ehrenberg, A., Juckes, S., White, K. M., & Walsh, S. P. (2008). Personality and self–esteem as predictors of young people's technology use. *CyberPsychology & Behavior*, *11*, 739–741.

Elphinston, R. A., & Noller, P. (2011). Time to face it! Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychology, Behavior, and Social Networking, 14,* 631–635.

Floros, G., & Siomos, K. (2013). The relationship between optimal parenting, Internet addiction and motives for social networking in adolescence. *Psychiatry Research.* http://dx.doi.org/10.1016/j.psychres.2013.01.010.

Griffiths, M. D. (1996). Behavioural addictions: An issue for everybody? *Journal of Workplace Learning, 8*(3), 19–25.

Griffiths, M. D. (2000). Internet addiction—Time to be taken seriously? *Addiction Research, 8,* 413–418.

Griffiths, M. D. (2003). Internet gambling: Issues, concerns, and recommendations. *CyberPsychology & Behavior, 6,* 557–568.

Griffiths, M. D. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance Use, 10,* 191–197.

Griffiths, M. D. (2010a). The role of context in online gaming excess and addiction: Some case study evidence. *International Journal of Mental Health and Addiction, 8,* 119–125.

Griffiths, M. D. (2010b). Gaming in social networking sites: A growing concern? *World Online Gambling Law Report, 9,* 12–13.

Griffiths, M. D. (2012a). Internet sex addiction: A review of empirical research. *Addiction Research and Theory, 20,* 111–124.

Griffiths, M. D. (2012b). Facebook addiction: Concerns, criticisms and recommendations. *Psychological Reports, 110*(2), 518–520.

Griffiths, M. D., & Parke, J. (2010). Adolescent gambling on the Internet: A review. *International Journal of Adolescent Medicine and Health, 22,* 58–75.

Gupta, V. K., Arora, S., & Gupta, M. (2013). Computer-related illnesses and Facebook syndrome: What are they and how do we tackle them? *Medicine Update, 23,* 676–679.

Karaiskos, D., Tzavellas, E., Balta, G., & Paparrigopoulos, T. (2010). Social network addiction: A new clinical disorder? *European Psychiatry, 25,* 855.

Kittinger, R., Correia, C. J., & Irons, J. G. (2012). Relationship between Facebook use and problematic Internet use among college students. *Cyberpsychology, Behavior, and Social Networking, 15,* 324–327.

Koc, M., & Gulyagci, S. (2013). Facebook addiction among Turkish college students: The role of psychological health, demographic, and usage characteristics. *Cyberpsychology, Behavior, and Social Networking.* http://dx.doi.org/10.1089/cyber.2012.0249.

Kuss, D. J., & Griffiths, M. D. (2011). Addiction to social networks on the Internet: A literature review of empirical research. *International Journal of Environment and Public Health, 8,* 3528–3552.

Kuss, D. J., & Griffiths, M. D. (2012a). Online gaming addiction: A systematic review. *International Journal of Mental Health and Addiction, 10,* 278–296.

Kuss, D., & Griffiths, M. D. (2012b). Internet gambling behavior. In Z. Yan (Ed.), *Encyclopedia of Cyber Behavior* (pp. 735–753). Pennsylvania: IGI Global.

Landers, R. N., & Lounsbury, J. W. (2004). An investigation of Big Five and narrow personality traits in relation to Internet usage. *Computers in Human Behavior, 22,* 283–293.

Mitchell, K., & Beard, F. (2010). Measuring Internet dependence among college students: A replication and confirmatory analysis. *Southwestern Mass Communication Journal, 25*(2), 15–28.

Machold, C., Judge, G., Mavrinac, A., Elliott, J., Murphy, A. M., & Roche, E. (2012). Social networking patterns/hazards among teenagers. *Irish Medical Journal, 105,* 151–152.

Milgram, S. (1967). The small world problem. *Psychology Today, 2,* 60–67.

Morahan-Martin, J., & Schumacher, P. (2000). Incidence and the correlates of pathological Internet use among college students. *Computers in Human Behavior, 16,* 13–29.

Olowu, A. O., & Seri, F. O. (2012). A study of social network addiction among youths in Nigeria. *Journal of Social Science and Policy Review, 4,* 62–71.

Pelling, E. L., & White, K. M. (2009). The theory of planned behavior applied to young people's use of social networkting web sites. *CyberPsychology & Behavior, 12,* 755–759.

Porter, K., Mitchell, J., Grace, M., Shinosky, S., & Gordon, V. (2012). A study of the effects of social media use and addiction on relationship satisfaction. *Meta-Communicate, 2*(1). Located at http://journals.chapman.edu/ojs/index.php/mc/article/view/340.

Protalinski, E. (2013). Facebook passes 1.19 billion monthly active users, 874 million mobile users, and 728 million daily users. *The Next Web,* October 30. Located at http://the nextweb.com/facebook/2013/10/30/facebook-passes-1-19-billion-monthly-active-users-874-million-mobile-users-728-million-daily-users/

Shaffer, H. J., LaPlante, D. A., LaBrie, R. A., Kidman, R. C., Donato, A. N., & Stanton, M. V. (2004). Toward a syndrome model of addiction: Multiple expressions, common etiology. *Harvard Review of Psychiatry, 12,* 367–374.

Sofiah, S., Zobidah, O. S., Bolong, J. N., & Osman, M. (2011). Facebook addiction among female university students. *Public Administration and Social Policy Review, 2,* 95–109.

Sussman, S., Leventhal, A., Bluthenthal, R. N., Freimuth, M., Forster, M., & Ames, S. L. (2011). A framework for specificity of the addictions. *International Journal of Environmental Research and Public Health, 8,* 3399–3415.

Turel, O., & Serenko, A. (2012). The benefits and dangers of enjoyment with social network-ing websites. *European Journal of Information Systems, 21,* 512–528.

Walsh, S. P., White, K. M., & Young, R. M. (2007). In G. Goggin & L. Hjorth (Eds.), *Young and connected: Psychological influences of mobile phone use amongst Australian youth, Mobile Media 2007. Proceedings of an International Conference on Social and Cultural Aspects of Mobile Phones, Media, and Wireless Technologies, Sydney, 2007* (pp. 125–134). Sydney: University of Sydney.

Wan, C. (2009). *Gratifications & loneliness as predictors of campus-SNS websites addiction & usage pattern among Chinese college students.* Hong Kong: Chinese University of Hong Kong.

Widyanto, L., & Griffiths, M. D. (2006). Internet addiction: A critical review. *International Journal of Mental Health and Addiction, 4,* 31–51.

Wilson, K., Fornasier, S., & White, K. M. (2010). Psychological predictors of young adults' use of social networking sites. *Cyberpsychology, Behavior and Social Networking, 13,* 173–177.

Wolniczak, I., Caceres-DelAguila, J. A., Palma-Ardiles, G., Arroyo, K. J., Solıs-Visscher, R., et al. (2013). Association between Facebook dependence and poor sleep quality: A study in a sample of undergraduate students in Peru. *PLoS ONE 8(3),* e59087. http://dx.doi.org/10.1371/journal.pone.0059087.

World Health Organization. (1992). *The ICD-10 classification of mental and behavioral disorders: Clinical descriptions and diagnostic guidelines.* Geneva, Switzerland: World Health Organization.

Xu, H., & Tan, B. C.Y. (2012). *Why do i keep checking Facebook: Effects of message characteristics on the formation of social network services addiction.* Located at http://elibrary.aisnet.org/Default.aspx?url=http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1216&context=icis2012.

Young, K. S. (1998). Internet addiction: The emergence of a new clinical disorder. *CyberPsychology & Behavior, 3,* 237–244.

Young, K. S. (1999). Internet addiction: Evaluation and treatment. *Student British Medical Journal, 7,* 351–352.

Zhou, S. X. (2010). *Gratifications, loneliness, leisure boredom and self-esteem as predictors of SNS-game addiction and usage pattern among Chinese college students.* Hong Kong: Chinese University of Hong Kong.