Dr Mark D. Griffiths is Distinguished Professor of Behavioural Addiction and Dr Daria Kuss is a Chartered Psychologist and Senior Lecturer in Psychology. Both are based at the International Gaming Research Unit, Psychology Department, Nottingham Trent University.

For communication, please email: mark.griffiths@ntu.ac.uk or daria.kuss@ntu.ac.uk

Mark D Griffiths and Daria J Kuss

Adolescent social media addiction (revisited)

In 2011, we published two articles in 'Education and Health' looking at the new research area of adolescent social networking and whether excessive use of social media could lead to addiction (Griffiths and Kuss, 2011; Kuss and Griffiths, 2011a). At that time, only three studies examining social networking addiction had been published (Kuss and Griffiths, 2011b). Since then, there have been hundreds of studies examining many different aspects of adolescent social media use and their use of social networking sites (SNSs). Much of the earlier research tended to concentrate on use of one particular social networking site (i.e., *Facebook*), but social media use now has many platforms, and adolescents are far more likely to be using platforms such as *Snapchat* and *Instagram* than *Facebook*. In this article, we briefly overview some of the major issues surrounding adolescent social media use based on a review we recently published (Kuss and Griffiths, 2017). More specifically, we examine: (i) social networking as a way of being, (ii) excessive social networking as an addiction, (iii) fear of missing out (FOMO) and SNS addiction, (iv) smartphone addiction and SNS addiction, and (v) nomophobia and SNS addiction.

Social networking as a way of being

Teenagers are living increasingly mediated lives. Nowadays, social networking does not necessarily refer to what we do, but who we are. Social networking can arguably be considered a way of being. Children born since the late 1990s have grown up in a world that has been reliant on technology as integral part of their lives, making it impossible to imagine life without being connected. This has been referred to as an 'always on' lifestyle and being 'on' has become the *status quo* (Kuss and Griffiths, 2017). There also appears to be an inherent understanding or requirement in today's technology loving culture that teenagers need to engage in online social networking in order not to miss out, to stay up to date, and to connect (Kuss and Griffiths, 2015).

Teenagers particularly appear to have subscribed to the cultural norm of continual online networking. They create virtual spaces which serve their need to belong, as there appear to be increasingly limited options of analogous physical spaces due to parents' safety concerns (Boyd, 2014). Being online is viewed as safer than roaming the streets, and parents often assume using technology in the home is normal and healthy. Recent research has demonstrated that sharing information on social media increases life satisfaction and loneliness for emerging adults, whereas the opposite was true for older adults (Teo and Lee, 2016), suggesting that social media and social networking are used and perceived differently across generations. This has implications for social networking addiction because the context of excessive social networking is critical in defining someone as an addict, and habitual use by teenagers might be pathologized using current screening instruments, when in fact the activity – even when categorized as 'excessive' – does not result in significant detriment to the individual's life (Griffiths, 2010).

Social networking taps into very fundamental human needs by offering the possibilities of social support and self-expression (Riva, Wiederhold and Cipresso, 2016). This may offer an explanation for the popularity of and relatively high engagement with SNSs in today's society. However, the downside is that high engagement and being always 'on' or engaged with technology has been considered problematic and potentially addictive, but if being 'always on' can be considered the *status quo* and most individuals are 'on' most of the time, where does this leave

problematic use or addiction? The next section considers this question.

Excessive social networking as an addiction

There is a growing scientific evidence base to suggest excessive SNS use may lead to symptoms traditionally associated with substance-related addictions (Andreassen, 2015). As we have previously outlined (Kuss and Griffiths, 2017), for a small minority of individuals, their use of social networking sites may become the single most important activity that they engage in, leading to a preoccupation with SNS use (salience). The activities on these sites are then being used in order to induce mood alterations, pleasurable feelings or a numbing effect (mood modification). Increased amounts of time and energy are required to be put into engaging with SNS activities in order to achieve the same feelings and state of mind that occurred in the initial phases of usage (tolerance). When SNS use is discontinued, addicted individuals will experience negative psychological and sometimes physiological symptoms (withdrawal), often leading to a reinstatement of their SNS use (relapse). Problems arise as a consequence of the engagement in the problematic SNS use, leading to intrapsychic conflicts (within the individual often including a subjective loss of control) and interpersonal conflicts (i.e., problems with the immediate social environment, including relationship problems and work and/or education being compromised).

To date, only one study has examined SNS addiction among adolescents using a nationally representative sample. Bányai *et al.* (2017) reported that 4.5% of 5,961 Hungarian adolescents (mean age 16 years old) were categorized as 'at-risk' of social networking addiction. Cross-cultural research including 10,930 adolescents from six European countries (Greece, Spain, Poland, the Netherlands, Romania, and Iceland) showed that using SNSs for two or more hours a day was related to internalizing problems and decreased academic performance and activity (Tsitsika *et al.,* 2014). In addition, a study using a sample of 920 secondary school students in China indicated that the personality traits neuroticism and extraversion predicted SNS addiction, clearly differentiating individuals who experience problems as a consequence of their excessive SNS use from those individuals who used games or the Internet in general excessively (Wang *et al.,* 2015), further contributing to the contention that SNS addiction appears to be a behavioural problem separate from the more commonly researched gaming addiction.

Fear of missing out (FOMO) and SNS addiction

Recent research (Buglass, Binder, Betts, and Underwood, 2017; Oberst, Wegmann, Stodt, Brand, and Chamarro, 2017) has suggested that high engagement in social networking is partially due to what has been named the 'fear of missing out' (FOMO). FOMO is *"a pervasive apprehension that others might be having rewarding experiences from which one is absent"* (Przybylski, Murayama, DeHaan, and Gladwell, 2013, p. 1841). Higher levels of FOMO have been associated with greater engagement with *Facebook*, lower general mood, lower wellbeing, and lower life satisfaction (Przybylski *et al.,* 2013). In addition to this, research suggests that FOMO predicts problematic SNS use and is associated with social media addiction (Al-Menayes, 2016; Gil, Chamarro, and Oberst, 2016). In one study using 5,280 social media users from several Spanish-speaking Latin-American countries (Oberst *et al.,* 2017), it was found that FOMO predicts negative consequences of maladaptive SNS use. Other research using 506 UK *Facebook* users found that FOMO mediates the relationship between high SNS use and decreased self-esteem (Buglass *et al.,* 2017). Taken together, these findings suggest FOMO may be a significant predictor or possible component of potential SNS addiction.

Smartphone addiction and SNS addiction

Over the last decade, research assessing problematic and possibly addictive mobile phone use (including smartphones) has proliferated (Lopez-Fernandez, Kuss, Griffiths, and Billieux, 2015), suggesting some individuals may develop addiction-related problems as a consequence of their mobile phone use. Recent research has suggested problematic mobile phone use is a multi-faceted condition, with dependent use being one possible consequence (Billieux, Maurage, Lopez-Fernandez, Kuss, and Griffiths, 2015). An addictive pattern of mobile phone use is characterized by the use of specific applications, including calls, instant messaging, and the use of social networks. This suggests that rather than

being an addictive medium *per se*, mobile technologies including smartphones and tablets are simply media that enable the engagement in potentially addictive activities, including SNS use. Put another way, it could be argued that mobile phone addicts are no more addicted to their phones than alcoholics are addicted to bottles.

Similarly, it has been argued previously that individuals do not become addicted to the Internet *per se*, but to the activities they engage in on the Internet, such as SNS use (Kuss and Griffiths, 2011). With the advent and ubiquity of mobile technologies, this supposition is more pertinent than ever. Using social networking sites is a particularly popular activity on smartphones, with around 80% of social media used via mobile technologies (Marketing Land, 2017). For instance, approximately 75% of *Facebook* users access the SNS via their mobile phones (Statista, 2017). Therefore, it can be suggested that smartphone addiction may be part of SNS addiction. Previous research on a sample of over 23,000 Norwegians (Andreassen *et al.,* 2016) supported this supposition by specifically indicating that social networking is often engaged in via phones, which may contribute to its addictive potential.

Nomophobia and SNS addiction

Related to both FOMO and mobile phone addiction is the construct of nomophobia. Nomophobia is shorthand for "*no mobile phone phobia*", i.e., the fear of being without one's mobile phone (Bragazzi and Del Puente, 2014). The criteria for nomophobia include: regular and time-consuming use of mobile phones, feelings of anxiety when the phone is not available, "ringxiety" (i.e., repeatedly checking one's phone for messages, sometimes leading to phantom ring tones), constant availability, preference for mobile communication over face-to-face communication, and financial problems as a consequence of use (Bragazzi and Del Puente, 2014). Nomophobia is inherently related to a fear of not being able to engage in social connections, and a preference for online social interaction (which is the key usage motivation for SNS use [Kuss and Griffiths, 2011]), and has been linked to problematic Internet use and negative consequence of technology use (Caplan, 2003), further pointing to a strong association between nomophobia and SNS addiction symptoms.

Using mobile phones is understood as leading to alterations in everyday life habits and perceptions of reality, which can be associated with negative outcomes, such as impaired social interactions, social isolation, as well as both somatic and mental health problems, including anxiety, depression and stress (Bragazzi and Del Puente, 2014). Consequently, nomophobia can lead to using the mobile phone in an impulsive way (Bragazzi and Del Puente, 2014), and may thus be a contributing factor to SNS addiction as it can facilitate and enhance the repeated use of social networking sites, forming habits that may increase the general vulnerability for the experience of addiction-related symptoms as a consequence of problematic SNS use.

Conclusions

To date, research has shown that there is a fine line between frequent non-problematic habitual use and problematic and possibly addictive use of SNSs, suggesting that users who experience symptoms and consequences traditionally associated with substance-related addictions (i.e., salience, mood modification, tolerance, withdrawal, relapse, and conflict) may be addicted to using SNSs. Research has also indicated that a fear of missing out (FOMO) may contribute to SNS addiction, because individuals who worry about being unable to connect to their networks may develop impulsive checking habits that over time may develop into an addiction. The same thing appears to hold true for mobile phone use and a fear of being without one's mobile phone (i.e., nomophobia), which may be viewed as a medium that enables the engagement in SNSs (rather than being addictive *per se*). Given that engaging in social networking is a key activity engaged in using mobile technologies, FOMO, nomophobia, and mobile phone addiction appear to be associated with SNS addiction.

Research suggests younger generations may be more at risk for developing addictive symptoms as a consequence of their SNS use, whilst perceptions of SNS addiction appear to differ across generations. Younger individuals tend to view their SNS use as less problematic than their parents might, further contributing to the contention that SNS use has become a way of being and is contextual, which must be separated from the experience of actual psychopathological symptoms. The ultimate aim of research must be not to overpathologize everyday behaviours, but

to carry out better quality research as this will help facilitate treatment efforts in order to provide support for those who may need it.

References

Al-Menayes, J. (2016). The Fear of Missing out Scale: Validation of the Arabic version and correlation with social media addiction. *International Journal of Applied Psychology*, 6(2), 41-46.

Andreassen, C. S. (2015). Online social network site addiction: A comprehensive review. *Current Addiction Reports*, 2(2), 175-184.

Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., *et al*. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors*, 30(2), 252-262.

Billieux, J., Maurage, P., Lopez-Fernandez, O., Kuss, D. J., & Griffiths, M. D. (2015). Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research *Current Addiction Reports*, 2(2), 156-162.

Boyd, d. (2014). *It's complicated: The social lives of networked teens*. Yale: Yale University Press.

Bragazzi, N. L., & Del Puente, G. (2014). A proposal for including nomophobia in the new DSM-V. *Psychology Research and Behavior Management*, 7, 155-160.

Buglass, S. L., Binder, J. F., Betts, L. R., & Underwood, J. D. M. (2017). Motivators of online vulnerability: The impact of social network site use and FOMO. *Computers in Human Behavior*, 66, 248-255.

Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication Research*, 30(6), 625-648.

Gil, F., Chamarro, A., & Oberst, U. (2016). Addiction to online social networks: A question of "Fear of Missing Out"? *Journal of Behavioral Addictions*, 4(Suppl. 1), 51.

Griffiths, M. D. (2010). 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. & Kuss, D.J. (2011). Adolescent social networking: Should parents and teachers be worried? *Education and Health*, 29, 23-25. (Accessed 15th August 2017). Available at: http://sheu.org.uk/sites/sheu.org.uk/files/imagepicker/1/eh292mg.pdf

Kuss, D.J. & Griffiths, M.D. (2011). Excessive online social networking: Can adolescents become addicted to Facebook? *Education and Health*, 29, 63-66. (Accessed 15th August 2017). Available at:
http://sheu.org.uk/sites/sheu.org.uk/files/imagepicker/1/eh294mg.pdf

Kuss, D.J. & Griffiths, M.D. (2011). Online social networking and addiction: A literature review of empirical research. *International Journal of Environmental Research and Public Health*, 8, 3528-3552.

Kuss, D. J., & Griffiths, M. D. (2015). *Internet addiction in psychotherapy*. London: Palgrave.

Kuss, D.J. & Griffiths, M.D. (2017). Social networking sites and addiction: Ten lessons learned. *International Journal of Environmental Research and Public Health*, 14, 311; doi:10.3390/ijerph14030311

Lopez-Fernandez, O., Kuss, D. J., Griffiths, M. D., & Billieux, J. (2015). The conceptualization and assessment of problematic mobile phone use. In Z. Yan (Ed.), *Encyclopedia of Mobile Phone Behavior* (Vol. 1, 2 & 3, pp. 591-606). Hershey, PA: IGI Global.

Marketing Land. (2017). Nearly 80 percent of social media time now spent on mobile devices. (Accessed 15th August 2017). Available at: http://marketingland.com/facebook-usage-accounts-1-5-minutes-spent-mobile-171561

Oberst, U., Wegmann, E., Stodt, B., Brand, M., & Chamarro, A. (2017). Negative consequences from heavy social networking in adolescents: The mediating role of fear of missing out. *Journal of Adolescence*, 55, 51-60.

Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, 29(4), 1841-1848.

Riva, G., Wiederhold, B. K., & Cipresso, P. (2016). Psychology of social media: From technology to identity. In G. Riva, B. K. Wiederhold & P. Cipresso (Eds.), *The psychology of social Networking: Personal experience in online communities* (pp. 1-11). Warsaw, Poland: De Gruyter Open.

Statista (2017). Share of Facebook users worldwide who accessed Facebook via mobile from 2013 to 2018. (Accessed 15th August 2017). Available at: https://www.statista.com/statistics/380550/share-of-global-mobile-facebook-users/

Teo, W. J. S., & Lee, C. S. (2016). Sharing brings happiness? Effects of sharing in social media among adult users. In A. Morishima, A. Rauber & C. L. Liew (Eds.), *Digital Libraries: Knowledge, Information, and Data in an Open Access Society: 18th International Conference on Asia-Pacific Digital Libraries, ICADL 2016, Tsukuba, Japan, December 7–9, 2016, Proceedings* (pp. 351-365). Cham: Springer International Publishing.

Tsitsika, A.K., Tzavela, E.C., Janikian, M., Ólafsson, K., Iordache, A., Schoenmakers, T.M., Tzavara, C., & Richardson, C. (2014). Online social networking in adolescence: Patterns of use in six European countries and links with psychosocial functioning. *Journal of Adolescent Health*, 55, 141–147.

Wang, C.-W., Ho, R.T.H., Chan, C.L.W., & Tse, S. (2015). Exploring personality characteristics of Chinese adolescents with internet-related addictive behaviors: Trait differences for gaming addiction and social networking addiction. *Addictive Behaviors*, 42, 32–35.