Dr Mark D Griffiths is the Distinguished Professor of Behavioural Addiction at the International Gaming Research Unit, Psychology Department, Nottingham Trent University.

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

Mark D. Griffiths

Adolescent social networking: How do social media operators facilitate habitual use?

The UK government recently launched an enquiry into young people's social media use to understand the effect of social media on young people's mental health. I was asked to give oral evidence to the Science and Technology Committee following our written submission outlining the evidence concerning excessive social media use and social media addiction (Griffiths et al., 2018). Although there are some who will say that individuals cannot become addicted to social media (e.g., Billieux et al., 2015; Kardefelt-Winther et al., 2017), research suggests that a small minority of adolescents genuinely become addicted to social media in the same way that other individuals become addicted to activities such as drinking alcohol or gambling (Kuss & Griffiths, 2017). More specifically, such individuals experience what I consider to be the six core components of addiction (i.e., salience, conflict, mood modification, tolerance, withdrawal, and relapse) (Griffiths, 2005).

For these individuals, using social media becomes the single most important activity in their lives (salience), they engage in social media use to the neglect of everything else in their lives and compromises their social relationships and educational and/or occupational activities (conflict), they use social media as a way to modify their mood states (mood modification), they have built up the amount of time they spend every day on social media (tolerance), they experience unpleasant psychological and physical effects if they cannot engage in social media use (withdrawal effects), and they have trouble in trying to cut down and stop using social media (relapse).

I am the first to admit that the number of adolescents that would fulfil all of these criteria is small, but that does not mean social media addiction does not exist. Most adolescents who are heavy users of social media are what I would describe as habitual users (rather than addicted users). Some habitual users may experience problematic aspects to their social media use (such as decreased productivity at school or college, and/or not spending enough quality time with their family) but these individuals would not be classed as social media addicts using my own criteria.

However, there are many psychological 'hooks' that play a part in habitual social media use and why it is so prevalent. In this article I briefly outline some of the main factors facilitating habitual social media use among adolescents (i.e., unpredictable rewards, social affirmation and validation, FOMO [fear of missing out], smartphone sounds and vibrations, social connection, reciprocal liking, social competition, and psychological investment).

Unpredictable rewards

One of the key psychological characteristics in habitual social media use is the unpredictability and randomness of what happens within social media platforms (Griffiths & Nuyens, 2017). The rewards – which may be physiological, psychological and/or social – can be infrequent but even the anticipation of one of these rewards can be psychologically and/or physiologically pleasing. The rewards are what psychologists refer to as variable reinforcement schedules (Griffiths & Nuyens, 2017) and is one of the main reasons why social media users repeatedly check their screens. Social media sites are 'chock-a-block' with unpredictable rewards. Habitual social media users never know if their next message or notification will be the one that makes make them feel really good. In short, random rewards keep individuals responding for longer and has been found in other activities such

as the playing of slot machines and video games (Griffiths, 1991).

Social affirmation and validation

Another key ingredient that facilitates habitual social media use is the 'like' button. The feature was first introduced by *Facebook* back in February 2009, but such a simple characteristic has reaped huge rewards in terms of adolescents repeatedly coming back to check their social media platforms, and what some have described as a 'craving for validation' (Morgans, 2017). Some media reports (e.g., Brooks, 2017; Bullas, 2017; Morgans, 2017; Parkin, 2018) have described the use of 'like' buttons as 'hijacking' the social reward systems of a user's brain. While I have little doubt that such rewards (or the anticipation of such rewards) release dopamine, the idea that dopamine 'hijacks the brain' and leads to 'compulsive loops' are analogies used in the media rather than the phrases used by scientists (the word 'hijack' is emotionally-laden to say the least). It has also been claimed that the few seconds it takes for social media applications to open on mobile devices is a deliberate ploy to increase anticipatory feelings of the user (because the anticipation of a reward is almost as good as the reward itself in releasing dopamine) (Morgans, 2017). Justin Rosenstein, one of the designers of the 'like' button on *Facebook* said that:

"The main intention I had was to make positivity the path of least resistance, and I think it succeeded in its goals, but it also created large unintended negative side effects. In a way, it was too successful" (p.1; cited in Morgans, 2017).

Although teenagers do not use *Facebook* as much as other apps (Anderson & Jiang, 2018), other social media platforms use similar techniques.

Fear of missing out

Recent research has suggested that high engagement in social networking is partially due to what has been named the 'fear of missing out' (FOMO). According to Przybylski et al. (2013), FOMO is *"a pervasive apprehension that others might be having rewarding experiences from which one is absent"* (p. 1841). Higher levels of FOMO have been associated with greater engagement with *Facebook*, lower general mood, lower wellbeing, and lower life satisfaction, mixed feelings when using social media, as well as inappropriate and dangerous social networking site use (i.e., in university lectures, and whilst driving) (Buglass et al., 2017; Oberst et al., 2017). In addition to this, research suggests that FOMO predicts problematic SNS use and is associated with social media addiction (Kuss & Griffiths, 2017).

Smartphone sounds and vibrations

What do most adolescents do when they hear the ring, ping, buzz, or vibration (if the smartphone is on 'silent' mode) of an incoming message or notification? For the overwhelming majority of them, they react to this stimulus by looking at the screens on their mobile devices and checking out what was sent. This creates a trigger for a routine and is exactly what social media operators want you to do. Morgans (2017) described the 'attention economy' referring to the demand of individuals' attention, with attention being the commodity that is traded online. He also noted: *"The business model is simple: the more attention a platform can pull, the more effective its advertising space becomes, allowing it to charge advertisers more"* (p.1). Sounds and vibrations are deliberately designed and distracting technologies that facilitate users' attentions away from the offline world and back to life online – pulling individuals 'out of the moment' (Morgans, 2017) and is arguably an example of 'persuasive technology' (Alter, 2017). All online commercial operators are competing for an individual's time and attention. First, they have to get an individual's attention (using every method at their disposal) and when they have got the person's attention, they have to try and make the experience on their website as engaging as possible. Sean Parker (founding president of *Facebook*) recently acknowledged that the company was formed to distract individuals rather than unite them (Parkin, 2018). More specifically he said that *Facebook's* thought process was simple: *"How do we consume as much of your time and conscious attention as possible? [Facebook's architects exploited a] vulnerability in human psychology. Whenever someone likes or comments on a post or photograph we give you a little dopamine hit"* (p.1; cited in Parkin, 2018).

Social connection

Human beings have been described as 'social animals' (Aronson, 2011; Tomasello, 2014) and as such most individuals want to be connected with

other like-minded individuals. Social networks provide the medium for adolescents to connect in an instantaneous way (and is another key ingredient in repetitive use).

Reciprocal liking

Reciprocal liking is tendency for individuals to like others who express a liking for themselves ('I like you because you like me') (Eastwick & Finkel, 2009). Social relationships online are often facilitated by simple forms of social reciprocity. For instance, when an individual presses the 'like' button on a selfie* that has been uploaded onto a social networking site, the individual receiving the 'like' is more likely to reciprocate if the other individual posts an online selfie (Balakrishnan & Griffiths, 2018). Social media operators can exploit this human condition of reciprocal liking by alerting individuals when another person has read something posted or communicated online. Such alerts encourage the receiving individuals to respond.

Social competition

In addition to the human need to connect and reciprocate, individuals also like to be socially competitive. This can also be a driving force in repeated and habitual social media use (Griffiths & Balakrishnan, 2018). As soon as the 'like' button was introduced on *Facebook*, it also meant that individuals could keep count of the number of 'likes' they received in relation to the content posted. 'Likes' have a numerical value and users use such statistics as a way of raising or boosting self-esteem (Kuss & Griffiths, 2011). This make social media users create a routine and habitually check their social media. Numerical indicators keep individuals coming back for more likes and individuals also want to beat their own numerical scores as well as those of others. In some recent research we did on obsessive selfie-taking, social competition (i.e., getting the most 'likes' for selfies posted online) was one of the major reasons for posting selfies in the first place (Balakrishnan & Griffiths, 2018; Griffiths & Balakrishnan, 2018).

Psychological investment

The more that an individual invests in something (whether it is time, money and/or effort), the more they tend to persist in the behaviour. This is sometimes referred to as the 'sunk cost' bias referring to a cost that has already been incurred and cannot be recovered (Arkes & Blumer, 1985). Such behaviour helps explain why individuals carry on playing a national lottery game despite never winning large jackpots (Griffiths & Wood, 2001). It can also help explain why some individuals carry on investing large amounts of time in social media. Individuals have spent so much time psychologically invested that to stop doing it would mean that all their previous time spent on social media sites has been a complete waste of their time. The introduction of streaks on *Snapchat* are a good example (Foley, 2016). An individual's streak number is simply the number of consecutive days that they have been 'snapping' with another individual (e.g., a score of 100 would mean that one individual has sent photos to another individual on *Snapchat* for 100 consecutive days). The whole point of a *Snapchat* streak is to see how long an individual can keep it going. The higher the streak score, the longer an individual is likely to persist in sending photos every day to the other person. The more friends that an individual has on *Snapchat*, the greater the number of different streak scores and the more time they spend on *Snapchat*.

Conclusion

Scholars such as Alter (2017) do not believe that social media platforms are designed to be addictive *per se*. However, they are certainly designed to get users (many of which are adolescents) coming back again and again (so-called 'stickiness' that relies on the unpredictable and random rewards). Habitual behaviour is a powerful reinforcer. It is about using daily routines to create habits (turning on a video game console as soon as a teenager enters their bedroom, or making a drink as soon as you get back home from school). The more an individual invests in carrying out a behaviour, the more they will persist in repeating it. Social media operators are trying to grab adolescents' attention and can do it through sounds, vibrations and/or notifications. Other psychosocial factors are also involved in habitual social media use such as fear of missing out (FOMO), social connection, reciprocal liking, and social competition.

*According to the *Oxford English Dictionary*, a 'selfie' is a *"photograph that one has taken of oneself, typically one taken with a smartphone or webcam and shared via social media"*.

References

Alter, A. (2017). *Irresistible: The rise of addictive technology and the business of keeping us hooked*. London: Penguin.

Anderson, M. & Jiang, J. (2018). *Teens, social media & technology 2018*. Washington, D.C.: Pew Research Center. Available at: http://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018/ (Accessed 30th July 2018).

Arkes, H.R. & Blumer, C. (1985). The psychology of sunk cost. *Organizational Behavior and Human Decision Processes*, 35(1), 124-140.

Aronson, E. (2011). *The social animal (11th edition)*. London: Palgrave Macmillan.

Balakrishnan, J. & Griffiths, M.D. (2018). An exploratory study of 'selfitis' and the development of the Selfitis Behavior Scale. International Journal of Mental Health and Addiction, Epub ahead of print. https://doi.org/10.1007/s11469-017-9844-x

Bányai, F., Zsila, A., Király, O., Maraz, A., Elekes, Z., Griffiths, M.D., Andreassen, C.S. & Demetrovics, Z. (2017). Problematic social media use: Results from a large-scale nationally representative adolescent sample. *PLoS ONE*, 12(1): e0169839. doi:10.1371/journal. pone.0169839.

Billieux, J., Schimmenti, A., Khazaal, Y., Maurage, P., & Heeren, A. (2015). Are we overpathologizing everyday life? A tenable blueprint for behavioral addiction research. *Journal of Behavioral Addictions,* 4, 142–144

Brooks. D. (2017). How evil is tech? *New York Times*, November 20. Available at: https://www.nytimes.com/2017/11/20/opinion/how-evil-is-tech.html (Accessed 30th July 2018).

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.

Bullas, J. (2017). *7 ways Facebook keeps you addicted*. Available at: http://www.jeffbullas.com/facebook-creates-addiction/

(Accessed 30th July 2018).

Eastwick, P. W. & Finkel, E. J. (2009). Reciprocity of liking. In *Encyclopedia of human relationships*. London: Sage.

Foley, M. (2016). What is a Snapchat streak? Here's everything you need to know about Snapstreaks. *Bustle*, May 24. Available at: https://www.bustle.com/articles/162803-what-is-a-snapchat-streak-heres-everything-you-need-to-know-about-snapstreaks

(Accessed 30th July 2018).

Griffiths, M.D. (1991). Amusement machine playing in childhood and adolescence: A comparative analysis of video games and fruit machines. *Journal of Adolescence,* 14, 53-73.

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

Griffiths, M.D. & Balakrishnan, J. (2018). The psychosocial impact of excessive selfie-taking in youth: A brief overview. *Education and Health*, 36(1), 3-5. Available at: http://sheu.org.uk/sheux/EH/eh361mdg.pdf (Accessed 30th July 2018).

Griffiths, M.D., Lopez-Fernandez, O., Throuvala, M., Pontes, H. & Kuss, D. (2018). *Excessive and problematic use of social media in adolescence: A brief overview*. Report submitted to the UK Parliament Science and Technology Committee Nottingham: Nottingham Trent University. Available at: http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/science-and-technology-committee/social-media-and-mental-health/written/81105.pdf (Accessed 30th July 2018).

Griffiths, M.D. & Nuyens, F. (2017). An overview of structural characteristics in problematic videogame playing. *Current Addiction Reports*, 4, 272-283.

Griffiths, M.D. & Wood, R.T.A. (2001). The psychology of lottery gambling. *International Gambling Studies*, 1, 27-44.

Kardefelt-Winther, D., Heeren, A., Schimmenti, A., van Rooij, A., Maurage, P., Carras, M., Edman, J., Blaszczynski, A., Khazaal, Y. & Billieux, J. (2017). How can we conceptualize behavioural addiction without pathologizing common behaviours? *Addiction*, *112*, 1709-1715.

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

Morgans, J. (2017). The secret ways social media is built for addiction. *Vice*, May 21. Available at: https://www.vice.com/en_uk/article/vv5jkb/the-secret-ways-social-media-is-built-for-addiction (Accessed 30th July 2018).

Parkin, S. (2018). Has dopamine got us hooked on tech? *The Guardian*, March 4. Available at: https://www.theguardian.com/technology/2018/mar/04/has-dopamine-got-us-hooked-on-tech-facebook-apps-addiction#img-1 (Accessed 30th July 2018).

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, 1841-1848.

Tomasello, M. (2014). The ultra-social animal. *European Journal of Social Psychology*, 44(3), 187-194.