

Who needs social networking? An empirical enquiry into the capability of Facebook to meet human needs and satisfaction with life

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Who Needs Social Networking?

An Empirical Enquiry into the Capability of Facebook to Meet Human Needs and Satisfaction with Life

Abstract

Social Network Sites (SNS) have been the topic of much scholarly and public debate for the most part of the 21st century. A number of studies have investigated the benefits and drawbacks to using SNS, with Facebook the largest example boasting billions of active monthly users. In recent months, media commentary has raised a number of concerning cases surrounding Facebook's use of data, its connection with other organizations and its legitimacy, making a number of open public calls to abandon the platform. However, active users still number in the billions, raising the question, "does Facebook achieve something on a fundamental human and social level that users are willing to overlook the potential drawback to its use?" Using Maslow's needs hierarchy, this study adopts a survey approach ($n=316$) and explores the capacity for Facebook to satisfy human needs. Findings identify Facebook as a useful tool to fulfil human needs, which predict continued Facebook use intentions of participants, and further, satisfaction with life. These findings offer a broad-based view of Facebook use and its resonance with key motivators of behavior, supporting both Maslow's needs hierarchy and highlighting the importance of need fulfilment for continued service use and satisfaction with life.

Key words: Social Media; Facebook, Abraham Maslow; Human Needs; Satisfaction with Life.

1. Introduction

“These days, insecure in our relationships and anxious about intimacy, we look to technology for ways to be in relationships and protect ourselves from them at the same time.”

Sherry Turkle (2011, p. xii)

Scholars (e.g., Boyd, 2004, Ellison, Steinfield and Lampe, 2007) and the wider media (see Murphy, 2014) were collectively swift in advancing their belief that social media and Social Networking Sites (SNS) would offer a brave new world capable of facilitating wider socialization practices, and affording vast connectedness among its users, when they were introduced in the early 2000s. Initially spread by word of mouth, sites such as Facebook – founded in 2004 – and MySpace – founded in 2003 – were pioneers in SNS, and within five years of inception, both websites were comfortably in the top ten most popular social media sites (Schonfeld, 2009). SNS have become highly diffused across society; in 2017 2.46 billion people globally were regular users of such sites (Statista, 2019a), 1.86 billion of which used Facebook (Statista, 2019a). Further, wider social media penetration reached 45% worldwide in January 2019, with estimates suggesting almost 1 in 2 people are social media users (Statista, 2019b). However, data from 2018 suggest that this popularity is waning, with social media use decreasing by 3% since 2017, and Facebook use decreasing by 6% (Baer, 2018).

Although research into the potential negative consequences of SNS use exists, including reductions in relationship quality (Houghton, Joinson, Marder, Caldwell and Collins, 2018), cyber-bullying (Whittaker and Kowalski, 2015), fear of missing out (Beyens, Frison and Eggermont, 2016), addiction (Ryan, Chester, Reece and Xenos, 2014), and narcissistic personality traits (Carpenter, 2012), a number of recent studies have found positive associations between digital media use and satisfaction with life (e.g., Ang, Talib, Tan, Tan, and Yaaco, 2015; Kang and Jung, 2014). Such platforms have also been identified as beneficial to the fulfilment of individual needs such as self-esteem (e.g., Toma, 2013; Wilcox and Stephen, 2013). If Facebook user numbers are

starting to decrease, it would seem timely to investigate the positive (or negative) impact its use may have on satisfaction with life, through the fulfilment of human needs.

This study responds to calls for a better understanding of core human needs, experiences and SNS usage (Karapanos *et al.*, 2016; Urista *et al.*, 2009), and addresses the impact of SNS on satisfaction with life, as well as the psychological implications of SNS usage (Karapanos *et al.*, 2016; Kross *et al.*, 2013). The contribution of the present study is twofold: first, in establishing the extent to which SNS facilitate basic and advanced human needs, offering further validation and credence for Maslow's needs theory; and second, establishing a connection between need fulfilment in SNS, continued SNS use and the role these both play in enhancing satisfaction with life for users.

1.1.SNS, Personal Freedom and Human Needs

One of the first applications of the web was individuals creating homepages with links to other users' pages online with similar interests in order to build relationships (Dominick, 1999). As this use of the web rapidly morphed into SNS platforms, early work claimed that such platforms had founded a new generation of individuals who would come to define their identities through the content they posted on SNS and their personal connections (Dye, 2007), manage and shape their social networks (Haythornthwaite, 2005; Boyd & Ellison, 2007), and increase their social capital as they expanded their online networks through bridging and bonding practices (Ellison *et al.*, 2007). It was also believed that SNS helped maintain weak ties within communities due to their ease of use and low cost (Donath & Boyd, 2004). In one of the earliest studies of SNS and personal needs, Ray (2007) found that these platforms help fulfil a variety of needs, including social utility needs, entertainment, diversion, and information seeking needs, while other studies have found that virtual communities can satisfy users' desires (Song, LaRose, Eastin & Lin, 2004). These aspects of SNS made them a popular destination for large numbers of Internet users, and the general consensus was that SNS helped satisfy people's needs:

“SNS provide members with an easy and convenient medium for communicating with family, friends, and others. Additionally, individual users’ needs and wants can be fulfilled constantly and instantaneously. In the past, people have used a combination of face-to-face human interaction as well as mass media such as television, radio, and movies to fulfil these needs and wants ... As the number of members of SNS increases, so does the popularity of using the sites for satisfying cognitive and affective needs” (Urista, Dong & Day, 2009, p. 217, 219).

Collectively, these early predictions were premised on the capability of SNS to empower individuals in creating and projecting an ‘ideal’ self and image across large communication networks to a greater extent than earlier forms of mass media. Unsurprisingly, there was much promise and positive outlook concerning the prospects of SNS that now stands in stark contrast to contemporary accounts of the negative effects of SNS use. Recently, a number of high-profile data security and privacy risks have highlighted the potential for misuse of data. In the 2016 US Presidential election campaign, allegations were made of data from such sites being used surreptitiously to benefit particular candidate(s) or nations, via third-party organizations like Cambridge Analytica performing analysis on millions of users (Cadwalladr and Graham-Harrison, 2018). This incident sparked a “#DeleteFacebook” campaign on Twitter, with hundreds of thousands of users calling on others to deactivate their Facebook accounts in protest to this data (mis)use, which made national and international news (see Gerken, 2018; Solon, 2018), and has seen millions of users abandon their accounts. More recently, concerns over the misuse of smartphone apps to collect data on users as young as 13 years of age (Hern and Wong, 2019), and the use of phone numbers for advertising and targeting rather than just security (Claburn, 2019), have continued to damage Facebook’s reputation. Moreover, social commentary is suggesting Facebook to have negative health consequences (Haig, 2017), make users feel bad about themselves (Sifferlin, 2013), or hamper real-life friendships (Knight, 2019), with the valence of Facebook’s

overall impact somewhat mixed (Illing, Wagner and Turner, 2019). Steven Pinker, Professor of Psychology at Harvard University, questioned the effect Facebook may be having on society:

“Has Facebook (together with other social media) been a net positive or net negative for humanity? It’s too soon to tell, for two reasons. One is that widespread adoption of social media is so recent that the world has not yet had time to adopt new norms and policies in response. The other is that the vast amount of recent commentary about social media has consisted of panic and hyperbole rather than balanced analysis”

(Pinker, cited in Illing *et al.*, 2019).

Beyond that of mainstream media coverage, a number of researchers have given cause for caution in the use of SNS, with concern over cyber-bullying (Dredge, Gleeson and Garcia, 2014), relationship quality issues from frequent sharing of day-to-day content (Houghton *et al.*, 2018), and the potential for SNS to reinforce and engage personality and behavioral characteristics, such as narcissism (Carpenter, 2012), obsession with others (Kopecky, 2016), social comparison, envy and depression (Appel, Gerlach and Crusius, 2016), and control over others (Sariyska *et al.*, 2018). While we acknowledge the risks associated with Facebook use in these problematic instances, Facebook ranked third for all web traffic globally in March 2019 (Alexa, 2019), suggesting users continue to access their accounts, and utilize the service. This poses the question, what function must Facebook be fulfilling for users in order to drive them to continue to use the service despite high profile concerns?

1.2.SNS as a social tool

Since their inception, almost every conceivable aspect of SNS and their impact on human experience has received academic scrutiny (e.g., Karapanos *et al.*, 2016; Beyens *et al.*, 2016; Burke, Marlow, & Lento, 2010; Ellison *et al.*, 2007; Hart, Ridley, Taher, Sas, & Dix, 2008; Joinson, 2008). For example, earlier work looking at needs and Facebook found that Facebook helps influence individuals’ self-esteem through image management and portrayal (Dunne, Lawlor & Rowley,

2010), is a key source of social browsing for gaining information on individuals and events (Dunne *et al.*, 2010; Urista *et al.*, 2009; Joinson, 2008), and a tool for maintaining friendship networks (Raacke and Bonds-Raacke, 2008; Joinson, 2008; Ellison *et al.*, 2007). Further, a heightened need for popularity (Beyens *et al.*, 2016), and a desire to increase self-esteem (Karapanos *et al.*, 2016), have been found to be key drivers in using Facebook. As sites such as Facebook approach the end of their second decade in existence, it would seem prudent to examine how capable SNSs are in facilitating the most important needs of all, namely, core human needs, both basic and advanced.

Over a decade ago, Urista *et al.* (2009: 217) posed the question: “how do members of these SNS [e.g., Facebook and MySpace] use the sites to fulfil their wants and needs?” What has been surprisingly overlooked a decade later, however, is an understanding of how SNS satisfy core human needs (or otherwise); to date, no prior study has attempted to measure the most popular and well-known conceptualization of human needs – Abraham Maslow’s Hierarchy of Needs – in a social network setting. Given that several SNS sites such as Facebook are experiencing considerable flux in their membership it would seem both timely and relevant to understand if SNS can fulfil basic and advanced human needs, and what impact this has on users’ overall satisfaction with their lives. The potential of SNS to fulfil multiple human needs, may explain the motivation of users to repeatedly visit such sites as they satisfy them at a fundamental human level.

2. Human Needs

When looking to understand human motivation, psychological growth and behavior, one of the most fundamental concepts is that of human needs (Deci & Ryan, 2000). Since Maslow’s (1943;1954) theory of human needs was published, there has been extensive research on human need fulfilment in a number of diverse contexts, including the development of health-related technologies (e.g., Thielke *et al.*, 2012), behavior change in relation to climate control (see Gough, 2015), the structure and rights of US Court systems (Pollock, 2013), and in lower socioeconomic status populations (Lollar, 1974), amongst others. Among the most popular studies of needs are

Sheldon, Elliot, Kim and Kasser's (2001) theory of universal human needs, and Deci and Ryan's (1985) Self-Determination Theory. Uses and Gratification Theory (Severin & Tankard, 1997) also formalizes how and why individuals seek out certain media in order to fulfil particular needs. However, while Maslow's theory has its critics, it is still widely cited, if at least in part due to its simplicity.

Maslow (1943) defined human needs as a prepotency, such that "the appearance of one need usually rests on the prior satisfaction of another, more pre-potent need" (p.370). In short, as one need transforms from being *in demand* to *having been met*, the next need becomes one's focus. Maslow (1943) identified five sequential needs: *physiological*, those relating to basic drives such as desire for food, conditions for homeostasis, or sleep; *safety*, needs relating to security and protection, both physically and mentally; *belonging*, which centers on the desire for affection, where deficiencies will motivate individuals to seek friends and companions, or family. The need of *esteem* represents the human desire to have a relatively good, pleasant self-evaluation, re-affirming their self with respect to their position amongst others. Finally, the need of *self-actualization* occurs once all other needs are satisfied, and refers to an individual's self-reflection to determine if they are all that they can, and should, be.

Although Maslow's needs have face validity, critics have focused on a number of different attributes of Maslow's theory. Maslow himself argued that his model "might give the false impression that a need must be satisfied 100 per cent before the next need emerges" (Maslow, 1943, p. 388), but it is not evident that needs can be fulfilled simultaneously, or out of sequence. Alderfer (1969) acknowledges the potential for needs to be fulfilled simultaneously, for example, when obtaining physical shelter, this may work to boost self-esteem, or belonging with others through the potential cohabitation with family or friends. Maslow's theoretical proposition also ignores situations whereby individuals regress as they are faced with new challenges (Alderfer, 1969). Take for example a job loss. This may require an individual to move back through the needs to find physiological satisfaction and safety, activated by a need to obtain physical shelter, food and

security - or at least the means to obtain them through employment. Therefore, contemporary work is needed to further examine sequential nature of Maslow's needs, particularly given the existence of two tiers, discussed below.

An often cited criticism of Maslow is that his theory is not empirically validated, that the needs were not empirically developed or tested (Gratton, 1980), or that while other people are needed in the progression of needs, the self remains the central tenet in the hierarchy (Rutledge, 2011). As Marion (2006, p.253) observed, "Clever [...] scholars make no reference to Maslow's scale. But they still take needs as a cornerstone. As they are aware of the controversy over whether needs can be created they argue that needs can be expressed and/or latent". The position on Maslow is akin to that of Sigmund Freud, or Carl Jung. Whilst their theories cannot be validated empirically, if they provide support and understanding in certain conditions or scenarios, they are by definition valid. Maslow benefits, however, from support in a number of empirical studies that show positive results, including his own (for examples see Maslow, Hirsh, Stein, and Honigmann, 1945; Gratton, 1980; Thielke *et al.*, 2012; Lester, 2013; Milheim, 2012), and the needs have been found to be reliable in a number of field studies (e.g., Oleson, 2004; Gratton, 1980). More poignantly to the present research, needs have been examined and found beneficial in the explanation of a number of computer-mediated-communication (CMC) contexts (Barnes & Pressey, 2011; Chen, 2012; Cao *et al.*, 2013; Kang and Jung, 2014). Combined with the sequential nature and structure of Maslow's need hierarchy, such support suggests need fulfilment in the context of Facebook use will progress from the basic needs to the advanced needs. Therefore, we hypothesize: -

- a) An increase in *Safety* is associated with an increase in *Belonging*.
- b) An increase in *Belonging* is associated with an increase in *Self-Esteem*.
- c) An increase in *Self-Esteem* is associated with an increase in *Self-Actualization*.

We note here that while Maslow's model starts with the need of physiology (i.e., biological functioning), physiological needs are not hypothesized herein. The concept of Facebook use satisfying the most fundamental needs of food and warmth provision is tenuous at best, as individuals with severe hunger or thirst - conditions which Maslow (1943 p. 375) suggests motivate physiological need fulfilment - are not likely to turn to Facebook for fulfilment.

2.1. The existence of two tiers of human needs

Although the original structure of Maslow's needs hierarchy has withstood the test of time (see Abulof, 2017), support is found for the existence of two tiers of human needs. Maslow himself identified needs within the hierarchy to exist on two tiers (Maslow, Hirsh, Stein and Honigmann, 1945): deficiency needs, encompassing physiological, safety and belonging; and growth needs, including self-esteem and self-actualization. Recent research has found support for the existence of two tiers (e.g., Barnes and Pressey, 2011; Noltemeyer, Bush, Patton and Bergen, 2012; Kang and Jung, 2014), which typically comprise lower order needs (physiological, safety, belonging) and higher order needs (self-esteem, self-actualization). Maslow suggested that the deficiency (lower order) needs must be met before the growth (higher order) needs could be fulfilled. However, as per early criticism of Maslow (e.g., Alderfer, 1969), classifying two groups of needs suggests they may be fulfilled simultaneously, or out of-sequence, within each tier, or may overlap (Kenrick, Griskevicius, Neuberg and Schaller, 2010). For example, fulfilment of the lower order need of safety may directly motivate belonging, i.e., in sequence, but also motivate self-esteem (higher order), i.e., simultaneously or out-of-sequence (see Barnes and Pressey, 2011; Kang and Jung, 2014).

We note here that debate exists for the placement of self-esteem as a deficiency need, rather than a growth need. For example, Goebel and Brown (1981) found belonging and self-esteem to be in reverse sequence dependent on age group, while Burton (2014) notes that self-esteem is an emotional appraisal of our self, indicating self-esteem to be a growth need. We situate self-esteem

as a higher order need. We argue here, that the functions of self-esteem for the necessity of connecting with others, and achieving a basic sense of oneself in group dynamics, would be fulfilled by the need of belonging. Whereas those functions of self-esteem that facilitate the reflection of one's self-worth in relation to others, form a growth beyond the basic needs to connect and belong.

If two tiers of needs exist and needs are fulfilled simultaneously, or out-of-sequence to that of the original needs hierarchy, then we expect relationships to exist between each of the lower order needs, and each of the higher order needs. Therefore, we further hypothesize: -

- d) Increases in the lower order need of *Safety* are associated with increases in the higher order need of *Self-Esteem*.
- e) Increases in the lower order need of *Safety* are associated with increases in the higher order need of *Self-Actualization*.
- f) Increases in the lower order need of *Belonging* are associated with increases in the higher order need of *Self-Actualization*.
- g) Increases in the lower order need of *Belonging* are associated with increases in the higher order need of *Self-Actualization*.

3. Human Needs and SNS use

Like needs, SNS have been investigated in a number of contexts including addiction (Andreassen, Torsheim, Brunborg and Pallesen, 2012), social connection (Ellison *et al.*, 2007), uses and gratifications (Joinson, 2008), identity (Walther, Van Der Heide, Kim, Westerman, and Tong, 2008; Hollenbeck and Kaikati, 2011) and the management of multiple audiences (Binder, 2009; Marder, Slade, Houghton and Archer-Brown, 2016), amongst others. However, such research seldom investigates that which is so fundamental to human behavior: the underlying needs humans seek to fulfil through their actions and connections with others. What research exists adopts a narrow focus

on how individual needs may be achieved, or how particular functions (e.g., photograph sharing) can facilitate needs and relationship quality (see Dunne *et al.*, 2010; Karapanos *et al.*, 2016; Houghton *et al.*, 2018). Focusing on a single human need, a concept related to human needs, or technological functions avoids the broader picture of hierarchical need fulfilment through technology. If Maslow's needs are fundamental in motivating human behavior - behavior that leads to the fulfilment of each need - then it stands to reason that such behavior can be observed in a number of contexts that contribute to the fulfilment of these needs, including Facebook.

3.1. Safety and SNS Use

In the context of the need of safety fulfilment in SNS, scant research exists. However, in a study of wider social media use at work, Hanna, Kee and Robertson (2017) found social media use to positively relate to job satisfaction, their operationalized proxy of Maslow's safety. More broadly, research on the use of smartphones found that device use aided in the achievement of personal restoration and a sense of comfort, which map to the physical and mental sense of protection and security. The functions of Facebook allow users to engage in online activities that help fulfil the need of safety. For example, having connections with a number of organizations for help in obtaining physical and mental support, feeling safe about the security of one's relationships with others, receiving information to help reassure oneself that nothing unpredicted may occur, or even on a practical level by maintaining communication with others to ensure one's safety (e.g., seeing a loved one is active and well, updating others as to one's arrival at particular locations). Therefore, in adopting a broader based research approach than previous SNS research, this paper is the first to investigate the use of SNS to fulfil the need of safety, and the role this plays in the wider context of need fulfilment and continued Facebook use.

3.2. Belonging and SNS Use

Prior research has also found that wider social media and smartphone use satisfies the human desire to belong to social groups. Kim, Wang and Oh (2016) found that the desire to belong motivated both social media and smartphone use, which in turn resulted in greater social activity engagement. However, lonely people, those without belonging, also have an increased use of smartphone communication (Oh, Ozkaya and LaRose, 2014), which suggests that need fulfilment motivates continued device use. Indeed, Cho (2015) found that social isolation may be reduced by smartphone use, while also increasing social capital. In the context of SNS, if Facebook can fulfil the need of belonging for users, and those with higher scores of belonging are more likely to continue Facebook use, then those with or without belonging may seek to continue using the platform to either fulfil the need, maintain the need or progress to the next need, should Facebook facilitate such.

Research has found that social capital, which resonates with belonging, can be both built and maintained through ‘friend’ connections on Facebook (Ellison *et al.*, 2007). Facebook users were also found to be most likely to use the platform to maintain connections or find people from their offline networks (Joinson, 2008). Although distinct from the need of belonging, this research suggests Facebook can benefit users through creating and maintaining their social connections, with Ellison and colleagues (2007) also suggesting Facebook can partially fulfil the need of self-esteem.

3.3. Self-esteem and SNS Use

Self-esteem (*esteem* in Maslow’s hierarchy) has been shown to increase when users engage in a number of tasks related to social connections in Facebook (Toma, 2013), as well as when users engage in tasks updating their own profile (Gonzales and Hancock, 2011). One of the earliest studies on Facebook use found the platform to facilitate increases in self-esteem as it allowed users to project a positive self-image (Donath and Boyd, 2004). More recently, Wilcox and Stephen (2013) established that close relationship connections in Facebook benefit from higher self-esteem, and greater levels of self-esteem can reduce the extent to which Facebook users will engage in reciprocity to anti-social behavior (Carpenter, 2012). Moreover, those with lower self-esteem have

been shown to engage in greater active use of Facebook, (Mehdizadeh, 2010). That Facebook can benefit those with both lower and higher self-esteem suggests its use may help users fulfil this need, either by allowing the development or maintenance of self-esteem through increased social activity. Although these authors have established a link between self-esteem and Facebook use, the findings offer a somewhat narrow view of human need fulfilment in Facebook, and do not suggest whether this is likely to generate continued use of the platform, or a broader psychological benefit such as satisfaction with life.

3.4. Self-actualization and SNS Use

For the need of self-actualization, research in the context of SNS use is again scant. That which exists shows a positive correlation between the frequency at which individuals use Facebook and their potential for self-actualization (Whitman and Gottdiener, 2016). Earlier research found SNS use to aid in the process of self-actualization amongst teenagers through mechanisms of self-presentation and self-disclosure; allowing users to realize their potential in a way they choose (Livingstone, 2008), similar to early work on Internet fora (e.g., McKenna & Bargh, 1998), or that of self-esteem, above. Thus, while debate and depth of research is scarce in relation to the fulfilment of self-actualization through Facebook, or SNS more widely, the present research aims to contribute to this knowledge, expecting that Facebook use will facilitate fulfilment of self-actualization. More poignantly, the present research will investigate the relationship between this fulfilment and the intention to keep using Facebook.

3.5. Needs and Facebook Use Intention

The desire for human needs motivates behavior that fulfils these needs (Deci and Ryan, 2000). If, as the literature above suggests, the use of Facebook fulfils multiple human needs, then we suggest that Facebook will be revisited more willingly, or at least more frequently, than if it fulfils fewer needs. Although evidence suggests need fulfilment may occur, it is not evident from prior research,

nor is it inferable from Maslow's original work, at which point in the need hierarchy continued Facebook use is most likely to result. That is, whether Facebook use continuance results directly from each need, or indirectly through higher order needs. Therefore, we propose: -

- h) Increases in *Safety* are associated with increases in *Facebook Use Intention*.
- i) Increases in *Belonging* are associated with increases in *Facebook Use Intention*.
- j) Increases in *Self-Esteem* are associated with increases in *Facebook Use Intention*.
- k) Increases in *Self-Actualization* are associated with increases in *Facebook Use Intention*.

4. Satisfaction with Life

Satisfaction with life is the process of the "comparison of one's circumstances with what is thought to be an appropriate standard" (Diener, Emmons, Larsen, and Griffin, 1985, p. 71). Satisfaction with life is considered to be a global, cognitive judgement, and scholars have investigated its connection with the entire spectrum of human needs, which arguably form the basis of a global needs theory, as well as narrower constructs such as technology use.

An often cited outcome for the fulfilment of needs is that of satisfaction with life. Oishi, Diener, Lucas and Suh (1985) found self-esteem need fulfilment to be related to satisfaction with life, and in developing their Satisfaction with Life Scale (SWLS), Diener and colleagues (1985) found self-esteem to be one of the most strongly associated variables with higher scores of satisfaction with life. More recently, Brandberry, Li and Lin (2010), and Soliman and Lapointe (2009) identified technology adoption and perceived usefulness as being motivated by human needs, and Cao *et al.* (2013) found social and actualization needs to relate to satisfaction with, and continued use of, SNS. Continued, or intense use of Facebook has also been found to relate to increased satisfaction with life (Valenzuela, Park and Kee, 2009), and in the wider context of smartphone use, Kang and Jung (2014) identified the use of smartphones to be driven by Maslow's needs, and the continued use of smartphones to relate to greater levels of satisfaction with life.

These studies suggest an interaction between need fulfilment, continued service use and satisfaction with life.

Research has also examined the negative associations of smartphone and Internet use, finding problematic use to be associated with lower satisfaction with life. Lachmann *et al.* (2018) identified this pattern with low satisfaction with life in problematic smartphone use of their Chinese sample. Extending early work by Kraut *et al.* (1998), Banjanin, Banjanin, Dimitrijevic, and Pantic (2015) found problematic Internet use to be indicative of depression symptoms, but not the use of SNS, again suggesting SNS use may positively benefit users' satisfaction with life.

That needs have been found to drive satisfaction with life, and subsequently motivate technology use suggests technology use occurs as a consequence, rather than an antecedent. However, Kang and Jung (2014) found continued use of smartphones was a sufficient link *between* need fulfilment and satisfaction with life. To this end, Ellison and colleagues (2007) found Facebook use drives satisfaction with life based on connections with other users – akin to the need of belonging – again suggesting that satisfaction is achieved subsequently to the fulfilment of needs. If Facebook use benefits one's satisfaction with life, could deactivating one's Facebook account and avoiding its inherent social connections be 'cutting one's nose off, to spite one's face'? While we hypothesized earlier that the use of Facebook to fulfil human needs motivates continued use of Facebook, we suggest here that such continued use, if not problematic, will result in greater satisfaction with life. Therefore, we hypothesize: -

- 1) Increases in *Facebook Use Intention* are associated with increases in *Satisfaction with Life*.

5. Research Model

We have derived a number of hypotheses (a-1) from the above research. These formulate our research model (Figure 1), and ultimately the basis of our empirical investigation. We specify both

Maslow’s original hierarchical structure (hypotheses a, b and c) and that of lower order (*Safety, Belonging*) and higher order (*Self-Esteem, Self-Actualization*) needs (hypotheses d, e, f and g). We examine users’ intended Facebook use continuation on the basis of need fulfilment (hypotheses h, I, j, and k), and the relationship between use intention and satisfaction with life (hypothesis k).

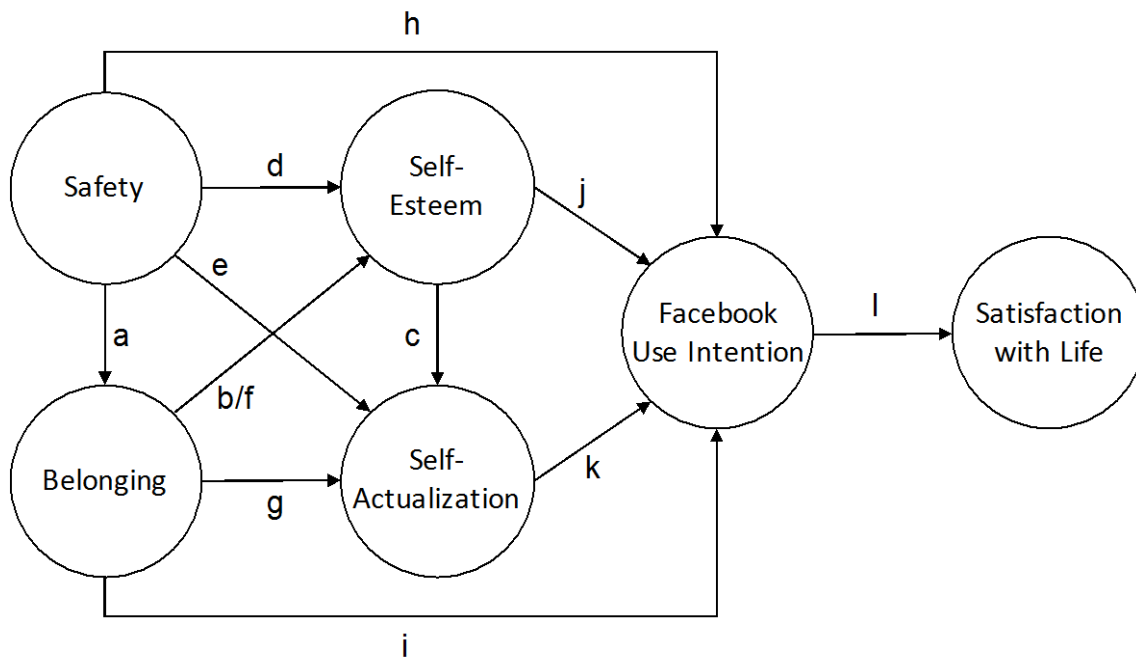


Figure 1: Human Needs, Facebook Use and Satisfaction with Life

6. Methods

In order to test the specified model, a self-report survey was designed to capture measurements of need fulfilment by Facebook use, participant intentions to continue using Facebook, and satisfaction with life, each of which are detailed in *measures*, below. Basic demographic and current Facebook use intensity were also measured. The survey formed a ‘single-shot’, cross-sectional design whereby participants completed several items for each scale. The study was approved by an ethical review committee at [Institution here].

6.1. Participants

Participants were recruited through Qualtrics' online panel, with a target population of individuals in the UK and Ireland who have a Facebook account and are 18 years or over. After cleaning the sample for incomplete responses, 316 participants remained, with age group details given in Table 1. While the youngest group represent 33.5% of the sample, the remaining age groups are somewhat evenly distributed. In terms of their highest achieved education level, 188 (59.5%) participants reported having achieved a High School education, 89 (28.2%) a Bachelors degree, 31 (9.8%) a Masters degree, and 8 (2.5%) a Doctoral degree.

Table 1: Sample age distribution

Age Group (Years)	<i>n</i> (%)
18-24	106 (33.5)
25-34	43 (13.6)
35-44	40 (12.7)
45-54	46 (14.6)
55-64	48 (15.2)
65+	33 (10.4)
TOTAL	316 (100.0)

Using an adapted Facebook Intensity Scale (see Ellison *et al.*, 2007) participants reported having 343.48 ± 546.00 (mean \pm S.D.) Facebook friends (range=1-4,978), with mean scale values for “How long have you been using Facebook?” of 5.37 ± 1.12 (representing 3-5 years), “In an average week, how much time would you say you spend on Facebook?” of 2.49 ± 1.31 (representing 1-5 hours a week), and “How often do you check Facebook?” of 4.58 ± 1.52 (representing 3-5 times per day).

6.2. Measures

Human needs were measured using an adapted scale of four of Maslow's needs hierarchy (Maslow, 1954). In Study 1 of Kang and Jung (2014), a number of measures were developed and tested for validity in application to the context of smartphone use, from which we drew inspiration in adapting Gratton's (1980) items for Maslow's hierarchy in the context of need fulfilment through Facebook

use. Gratton's (1980) need measurement scales, and indeed Kang and Jung's (2014) smartphone needs, contained five prescribed needs (physiological, safety, belonging, self-esteem, and self-actualization). However, while smartphones can arguably help to provide physiological needs through application and web-based connections to services that can fulfil such needs (e.g., food, water, shelter), in the context of Facebook, the premise that Facebook could help achieve physiological needs is tenuous at best. Using early items from the need hierarchy prescribed by Gratton (1980), good examples of the questionable nature of Facebook to fulfil physiological needs are the items, "being warm enough", and "having good skin" to which participants should rate the extent to which they believe they achieve this because of Facebook use. Indeed, even Kang and Jung's (2014) adapted and reduced scale for smartphone fulfilment of physiological needs was ultimately merged with safety needs in their USA sample (also see Barnes & Pressey, 2011). It was decided that the remaining needs would be utilized as they fit logically with the Facebook use context. The needs of *Safety*, *Belonging*, *Self-Esteem*, and *Self-Actualization* were measured using multiple item scales in the context of Facebook. Responses were given on a seven-point Likert scale (1=strongly disagree; 7=strongly agree). Participants were asked specifically, "Please indicate the extent to which you agree with the following statements. By using Facebook, I...", followed by a matrix of items (see Appendix A).

The extent to which participants intended to continue using Facebook (termed herein as *Facebook Use Intention*; see Appendix B), was measured using an adapted three-item measure of behavioral use intention for eBay (Turel, Serenko, and Giles, 2011). Each item was responded to using a seven-point Likert scale (1=strongly disagree; 7=strongly agree), with participants having been asked to "Please indicate the extent to which you agree with the following statements".

Participants were asked to indicate their general satisfaction with life using the five-item *Satisfaction with Life* scale (Appendix B) developed by Diener *et al.* (1985). Participants were asked to indicate the extent to which they agreed with the items, and responded on a seven-point

Likert scale (1=strongly disagree; 7=strongly agree). Cronbach's α values for all scales are given in the *Validity and Reliability* section, Table 3.

6.3.Procedure

Before starting the survey, participants were given full details as to the nature of the study, the expected duration of the survey, the low perceived risk involved, assurance that their data would remain anonymous, and informed that they could withdraw from participation at any point. Participants confirmed their understanding and consent through a number of tick boxes, which used forced validation to ensure that consent could not be bypassed. A small cash honorarium was paid to each participant, as approved by the ethical review committee.

Participants were asked to complete the survey beginning with basic demographic information, followed by the adapted Facebook Intensity scale (Ellison *et al.*, 2007). Participants then completed the more general measure of *Satisfaction with Life*, before the measures related specifically to the context of Facebook: hierarchy of Facebook needs, and *Behavioral Use Intention*. Participants were then presented with a debrief page, before the survey completed.

6.4.Statistical Analyses

The model was constructed and analyzed using SmartPLS (v3.2.7). After initial model evaluation, one of the items for the factor of *Safety* (item 1) was removed as its outer loading weight was below an acceptable value of .6 (see Garson, 2016). Four loadings were between .6 and .7 (.644, .679, .686, .697) but remained in the model, with all remaining loadings $\geq .7$ (see Appendices A and B for outer loading weights of each item in the final model). The removal of this single item reduced the standardized root mean square residual (SRMR) value from .066 to .060, which meets even the strictest criteria for model fit (SRMR $<.08$; Hu & Bentler, 1999; Kenny, 2015), but is certainly below the moderate criteria of SRMR $<.10$ (Garson, 2016). Therefore, the latter refined model was

considered an appropriate fit for the data, with the data reported throughout reflecting this model (see Figure 1).

6.5. Validity and reliability

Common method bias was tested using the Harman Common Factor test. A single factor explained 43.71%, which is below the accepted cut-off value of 50.00% (Marder, Archer-Brown, Colliander, and Lambert, 2018). Discriminant validity results using the Fornell-Larcker criteria are shown in Table 2, with all reported values below the square root of AVE (as per Garson, 2016, p. 67). All AVE values exceeded the accepted cut-off value of .5, with composite reliability and Cronbach's α values exceeding the required level of $\alpha = .7$ (see Table 3).

Table 2: Model discriminant validity using the Fornell-Larcker Criteria

	Self-actualization	Belonging	Self-esteem	Facebook Use Intention	Satisfaction with Life	Safety
Self-actualization	.759					
Belonging	.703	.814				
Self-esteem	.757	.807	.867			
Facebook Use Intention	.408	.395	.392	.917		
Satisfaction with Life	.345	.346	.394	.203	.845	
Safety	.557	.570	.591	.243	.348	.777

NB: Diagonal values (bold) represent the square root of AVE, values below for each column (correlations) should be smaller than the diagonal.

Table 3: Cronbach's α , Composite Reliability and AVE values for all factors in the model.

	Cronbach's α	Composite Reliability	Average Variance Extracted (AVE)
Safety	.891	.914	.604
Belonging	.942	.951	.662
Self-esteem	.963	.968	.752

Self-actualization	.917	.931	.575
Facebook Use Intention	.907	.941	.842
Satisfaction with Life	.904	.925	.714

Discriminant validity is confirmed using the Heterotrait-Monotrait Ratio, which is established between two constructs if the ratio value is $<.9$ (Henseler, Ringle & Sarstedt, 2015; Garson, 2016, p. 69). All values were found to be below this limit, ranging from .191-.847, and alongside the measures above, demonstrate the model to have sufficient discriminant validity. The issue of multicollinearity is moot for reflective models such as the one examined (Garson, 2016), however, all inner Variance Inflation Factor (VIF) loadings were <5.0 , an accepted value (see Hair, Hult, Ringle, and Sarstedt, 2016; values given in Appendix C).

7. Results

7.1. Model Fit

SRMR is reported as .060. As noted earlier, several criteria exist for this value with scholars arguing for values below .10, or even .08 (Garson, 2016). Thus, overall the given model provides a robust, reliable and valid interpretation of the relationships between need fulfilment on Facebook, Facebook Use Intention and Satisfaction with Life.

7.2. Path Coefficients

The path coefficients were assessed to determine the significance of the relationships between variables within the model. SmartPLS does not provide significance levels for model evaluation without conducting bootstrapping, and so the model was re-evaluated with bootstrapping set to 10,000 samples. The adjusted model is presented in Figure 2, with the pathway coefficients in Table 4.

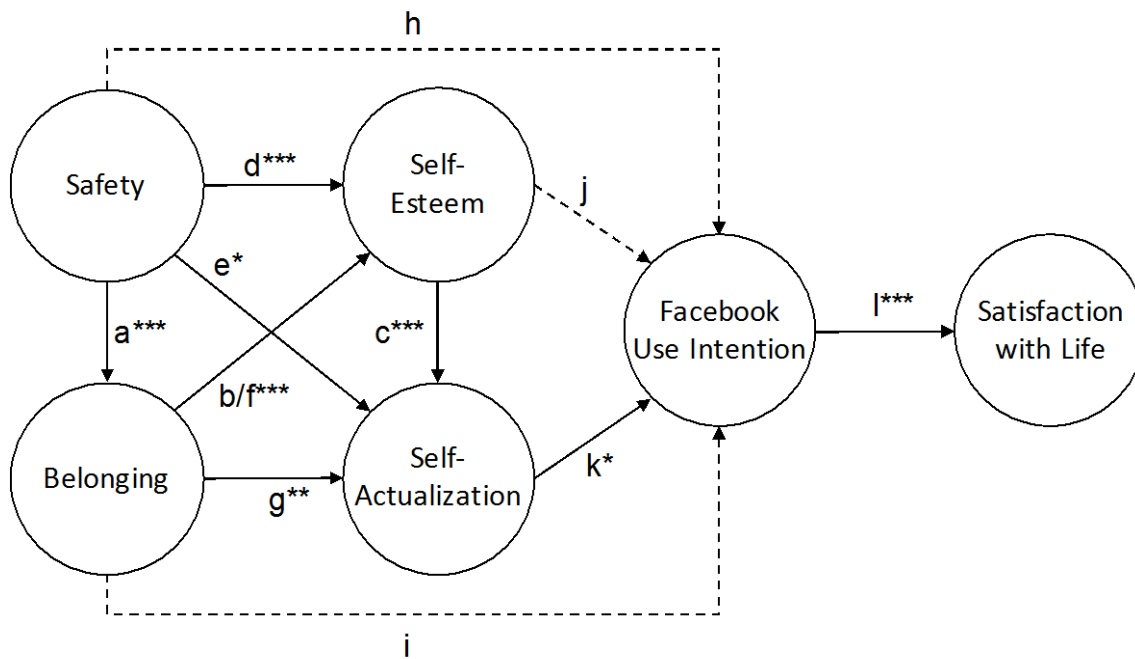


Figure 2: Final model of Facebook need fulfilment, Facebook Use Intention and Satisfaction with Life

Table 4: Path coefficients and significance of hypotheses

Path	Hypothesis ^{sig.}	T Statistic
Safety -> Belonging	a***	11.574
Belonging -> Self-Esteem	b/f***	15.655
Self-Esteem -> Self-Actualization	c***	6.243
Safety -> Self-Esteem	d***	3.584
Safety -> Self-Actualization	e*	2.254
Belonging -> Self-Actualization	g**	2.572
Safety -> Facebook Use Intention	h	0.600
Belonging -> Facebook Use Intention	i	1.554
Self-Esteem -> Facebook Use Intention	j	0.838
Self-Actualization -> Facebook Use Intention	k*	2.317
Facebook Use Intention -> Satisfaction with Life	l***	3.496

8. Discussion

The hypothesized pathways *a-g*, *k* and *l* were established to be significant, and positive, within a robust and reliable model. The specified model contributes three key findings to contemporary knowledge: 1) the use of Facebook can satisfy the human needs of *safety*, *belonging*, *self-esteem* and *self-actualization*; 2) only once the highest order need of *self-actualization* is increased do users

intend to continue using Facebook; and 3) the intention to keep using Facebook is associated with increases in *satisfaction with life*.

Regarding our first contribution, employing the scales that were adapted to Facebook use suggests that Facebook fulfils the human needs of *safety*, *belonging*, *self-esteem* and *self-actualization*, and that these needs follow the direction of Maslow's original proposed hierarchy safety→belonging→self-esteem→self-actualization (Maslow *et al.*, 1945; Thielke *et al.*, 2012; Lester, 2013). These findings are consistent with those of prior work adopting Maslow's hierarchy of needs (Gratton, 1980; Oleson, 2004; Chen, 2012; Cao *et al.*, 2013), suggesting that the needs are valid in this format and provide support to the structure and direction of the fulfilment of human needs. Further, the model herein establishes the relevance of a broader spectrum of needs than has previously been examined in SNS use (Toma, 2013; Gonzales and Hancock, 2011; Donath and Boyd, 2004). Moreover, we provide some of the first evidence of Facebook satisfying the need of *safety*, and support the utility of *belonging* (Cho, 2015; Kim *et al.*, 2016), *self-esteem* (Ellison *et al.*, 2007; Toma, 2013; Wilcox and Stephen, 2013) and *self-actualization* (Whitman and Gottdiener, 2016) needs through Facebook.

However, the significance of hypotheses *d*, *e*, *f* and *g* also demonstrates a two tier grouping of needs, and further support criticism of Maslow's model in so much as the needs are demonstrated to drive higher needs in alternative sequences, perhaps simultaneously (Alderfer, 1969, Kenrick *et al.*, 2010; Barnes and Pressey, 2011; Kang and Jung, 2014). This suggests that once a need lower down the hierarchy is fulfilled it can directly motivate other, higher needs, but out of sequence. For example, once the need of *safety* is increasingly satisfied, it can motive the need of *belonging*, as per the original model, but also that of *self-esteem* and *self-actualization*, suggesting the hierarchy to be somewhat more flexible than originally proposed. Through this structure, support is found for prior studies that suggested the social connections in Facebook, i.e., those which contribute to safety and belonging, are valuable to users and help develop self-esteem (Ellison *et al.*, 2007; Joinson,

2008; Wilcox and Stephen, 2013), but further contributes the knowledge that these can also develop self-actualization.

Concerning our second key contribution, through the fulfilment of *self-actualization* users are motivated to continue their Facebook use in future (hypothesis *k*). The non-significant finding of hypotheses *h*, *i* and *j*, contributes to the literature in finding that it is only at the apex of the need hierarchy that Facebook use continuance is motivated, which was previously unknown. This finding further emphasizes the importance of the model's structure in our first contribution; that while there may exist a two tier structure, or that groups of needs are fulfilled simultaneously or in alternative configurations, it is the progression from lower towards higher order needs that Facebook facilitates, and which motivates continued Facebook use. While it is recognized that a number of concerning issues may also further motivate Facebook use, such as addiction problems (Ryan *et al.*, 2014), obsession with others (Kopecky, 2016), narcissism (Carpenter, 2012), and social comparison, envy and depression (Appel *et al.*, 2016), our contribution suggests that a positive set of circumstances can also play a role. However, such variables were exogenous to the model investigated herein as we set out to understand what may motivate continued use outside of these concerns and propose that our model can help understand the persistence of Facebook use in instances where these factors are either not present to an individual, or not yet realized. Such debate, leads to our final contribution.

Our final key contribution to knowledge is that the intention to continue using Facebook is positively associated with increased *satisfaction with life* (hypothesis *l*), through the fulfilment of human needs. Part of our motivation for inquiry was to determine if there were positive outcomes of continued Facebook use, which we have found, and to open the debate as to whether #DeleteFacebook may be self-defeating. Credence is given to the positive side of this debate, as we found Facebook played a significant, albeit small (adj.-R²=.039), role in the general satisfaction with life of its users. Given the broad, more general operationalization of satisfaction with life in our model, a stronger observed variance in satisfaction with life might indicate a theoretically

inviability conceptualization: that Facebook makes a greater contribution to people's satisfaction with life than other variables such as well-being, quality of life or happiness. Alternatively, if satisfaction with life *outside* of Facebook use represents a smaller proportion of satisfaction with life than Facebook use, it might suggest an over-reliance on the SNS platform, potentially symptomatic of problematic use.

Overall, the present research contributes to knowledge by establishing self-actualization as a motivator for continued Facebook use. This may at least partially explain why users continue to use Facebook despite widespread criticism of its data policies and wider security issues: because Facebook fulfills advanced human needs, thus reinforcing the behavior. This continued Facebook use intention was also found to be positively related to satisfaction with life, suggesting that Facebook may not only be used as it provides need fulfilment, but that its continued use is responsible, in part at least, for users' broader satisfaction with life. Being satisfied with one's Facebook connections through self-reflection, conversation, common events and a comparison of one's standing with other users, may lead to this consideration of satisfaction with life. Kang and Jung (2014) found a similar pattern for satisfaction with life with continued smartphone use. While their study suggests that a broader spectrum of uses (e.g., 'apps' other than Facebook) may be beneficial to human needs and satisfaction with life, the findings herein begin to deconstruct their findings to identify the role a single 'app' can play in this process.

As touched upon above, previous literature has at times produced conflicting findings regarding the beneficial use of Facebook. For example, some studies have found that self-esteem is positively related to Facebook use (e.g., Carpenter, 2012; Wilcox and Stephen, 2013), whereas others have shown that those with low self-esteem actively engage with Facebook (e.g., Mehdizadeh, 2010), or that Facebook can benefit those with lower self-esteem (e.g., Ellison *et al.*, 2007). In addition, contemporary reports suggest an exodus of users from Facebook (e.g., Gerken, 2018; Solon, 2018), as it causes negative health consequences (Haig, 2017), users to feel bad about themselves (Sifferlin, 2013), or barriers to real-life friendships (Knight, 2019). However, the

present research stands as a counterpoint to such studies, finding a positive outcome of Facebook use. Facebook use can fulfil human needs, needs fundamental to motivating behavior (Deci and Ryan, 2000), and users intend to continue using the service because of this. The intention to continue using Facebook also drives satisfaction with life. Such a contribution resonates with Facebook usage statistics, that despite recent issues (e.g., Cadwalladr and Graham-Harrison, 2018; Hern and Wong, 2019) billions of users continue using Facebook.

8.1. Strengths and Limitations

Our study has a number of strengths. First, we adopt a broad perspective on the potential for Facebook to fulfil human needs, rather than examining individual needs (e.g., Gonzales and Hancock, 2011) or specific platform functions (e.g., Houghton *et al.*, 2018), which is the first in the field to do so. Second, our findings both support and adapt Maslow's original needs hierarchy, and provide evidence for its validity in the wider context of social media use. Third, the study utilizes the strengths of PLS Structural Equation Modelling to examine multiple factors and relationships in the model to understanding how satisfaction with life is impacted by Facebook need fulfilment through user intentions to continue using Facebook. Fourth, we utilized a sample of users from the wider population, with the only selection criteria being that they use Facebook, marking a significant contribution over studies utilizing university or workplace participants when examining broad effects of Internet use. Last, our use of the Satisfaction with Life scale as a measure of general satisfaction with life, rather than a measure specifically as a result of Facebook use, we argue is a stronger approach to take. To do so demonstrates that Facebook use plays a role in satisfaction with life, but reduces the likelihood of artificially inflating the accounted variance of the variable ($\text{adj-R}^2=.039$). A greater R^2 value for satisfaction with life is likely to overstate the importance Facebook's role.

As with any research, our study also has a number of limitations. First, although we utilize a sample of general public participants, they represent Western cultural values, where studies utilizing

different samples, may find different paths of interaction. For example, Kang and Jung (2014) find self-esteem is not related to continued use intention (for smartphones) in a Western sample (USA), which we support in our model, but that self-esteem is related to continued Facebook use in a non-Western sample (South Korea). Second, our findings may only be generalizable to that of Facebook. Other social media platforms, which may utilize different functions and perform different key purposes, may not adhere to the same model structure. Third, although our model demonstrates robustness, we have not examined problematic use of Facebook. In situations where users are using Facebook and similar technologies to excess, it has been found to be associated with smartphone or Internet use disorders (Lachmann *et al.*, 2018; Sha, Sariyska, Riedl, Lachmann, and Montag, 2018), and potentially depressive symptoms (Banjanin *et al.*, 2015). We propose that our model demonstrates the ability for Facebook to result in positive outcomes, but suggest the fine line between continued use and problematic use warrants consideration.

9. Conclusions and Future Research

The present research contributes to knowledge in finding that Facebook can fulfil basic and advanced human needs, which in turn drive users' intentions to continue using the platform, which can partially explain an increase in satisfaction with life for those users. A contribution is also made to support the structure, direction and validity of a flexible needs hierarchy, but one that can also be applied to the context of SNS use. While there are widespread calls for users to #DeleteFacebook, secure their data and move away from Facebook, billions of users continue to login regularly to connect with other people. The model herein provides some explanation as to why this pattern may continue, at least until another broad-based, social network platform with critical mass can satisfy the needs of users to at least a similar level. With Facebook well into its second decade of existence, it is prudent to continue to examine the way in which it services users, to ensure that these users benefit on some level, at least enough to outweigh the privacy, security and problematic use risks salient with Facebook use.

A critical next step is to examine the balance between healthy, continued use of Facebook in meeting human needs and driving satisfaction with life, with further factors that may impact continued Facebook use but result in more detrimental outcomes. For example, considering the effects of anxiety, addiction, fear of missing out and social support, may help understand further interactions within the model of need fulfilment and well-being. Further research should also attempt to validate our model using alternative SNS and social media platforms (e.g., Instagram, Twitter), also considering the effects of the culture and geodemographics of users that typically comprise these platforms.

Appendix A: Facebook needs scale items and outer loading weights.

“By using Facebook I...”	Safety	Belonging	Self-esteem	Self-actualization
1) [removed from final model]	---			
2) <i>Feel free from threat</i>	.780			
3) <i>Feel protected</i>	.850			
4) <i>Feel safe</i>	.864			
5) <i>Know nothing unexpected will occur</i>	.821			
6) <i>Know life is predictable</i>	.714			
7) <i>Know what will happen each day</i>	.705			
8) <i>Am able to predict what will happen</i>	.686			
1) <i>Feel someone cares for me</i>		.766		
2) <i>Get on well with my family</i>		.759		
3) <i>Am surrounded by friends</i>		.831		
4) <i>Have someone who is very close</i>		.861		
5) <i>Feel someone needs me</i>		.839		
6) <i>Have special relationships</i>		.865		
7) <i>Know I am loved</i>		.892		
8) <i>Feel part of a caring community</i>		.828		
9) <i>Know my parents love me</i>		.706		
10) <i>Have strong attachments to a home</i>		.770		
1) <i>Am held in esteem</i>			.770	
2) <i>Achieve something</i>			.810	
3) <i>Feel Confident</i>			.867	
4) <i>Know I am of worth</i>			.897	
5) <i>Have pride in my accomplishments</i>			.855	
6) <i>Am respected</i>			.891	
7) <i>Am well thought of</i>			.871	
8) <i>Have confidence in my abilities</i>			.902	
9) <i>Know I am capable of doing things well</i>			.901	
10) <i>Know I can accomplish what I set out to achieve</i>			.896	
1) <i>Do and see new things</i>				.697
2) <i>Look objectively at life</i>				.814
3) <i>Have autonomy</i>				.726
4) <i>Experience mystical thoughts</i>				.644
5) <i>Have sympathy for others</i>				.759
6) <i>Have an efficient perception of reality</i>				.804
7) <i>Am spontaneous</i>				.792
8) <i>Have a freshness of perception</i>				.814
9) <i>Have a sense of humor</i>				.749
10) <i>Have free will</i>				.768

Appendix B: Facebook use Intentions and Satisfaction with Life scale items and outer loading weights.

	<i>FB use Intentions</i>	<i>Satisfaction with Life</i>
1) Assuming I have access to Facebook, I intend to use it in future	.921	
2) Given that I have access to Facebook, I predict that I would use it in future	.929	
3) If I have access to Facebook, I predict that I would use it frequently in the future	.903	
1) In most ways, my life is close to my ideal		.883
2) The conditions of my life are excellent		.898
3) I am satisfied with my life		.908
4) So far, I have gotten important things I want in life		.836
5) If I could live my life over, I would change almost nothing		.679

Appendix C: Inner Variance Inflation Factor loadings

	Self-Actualization	Belonging	Self-Esteem	FB Use	Safety	Satisfaction with Life
Self-Actualization				2.559		
Belonging	2.977		1.481	3.108		
Self-Esteem	3.092			3.718		
FB Use						1.000
Safety	1.598	1.000	1.481	1.645		
Satisfaction with Life						

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