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Impacts of the Use of Social Network Sites on Users'

Psychological Well-being: A Systematic Review

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Abstract

As Social Network Sites (SNSs) are increasingly becoming part of people's everyday lives, the implications of their use need to be investigated and understood. We conducted a systematic literature review to lay the groundwork for understanding the relationship between SNS use and users' psychological well-being and for devising strategies for taking advantage of this relationship. The review included articles published between 2003 and 2016, extracted from major academic databases. Findings revealed that the use of SNSs is both positively and negatively related to users' psychological well-being. We discuss the factors that moderate this relationship and their implications on users' psychological well-being. Many of the studies we reviewed lacked a sound theoretical justification for their findings and most involved young and healthy students, leaving other cohorts of SNS users neglected. The paper concludes with the presentation of a platform for future investigation.

Keywords: Systematic literature review, social network sites, psychological well-being

INTRODUCTION

Social Network Sites (SNSs) have become an important part of millions of people's daily practice (Abedin, 2016; Dang-Pham et al., 2015; Erfani et al., 2016; Li et al., 2010) and gained prominence as avenues for interactive communication, information searching, and community links (Abedin & Jafarzadeh, 2015; Durst et al., 2013; Hu et al., 2011; Ku et al., 2013; Scott et al., 2015). Many users spend hours using SNSs each week or even each day (Junglas et al., 2013). Naturally, such extensive use of a social tool has implications for psychological well-being (Erfani et al., 2017; Reinecke & Trepte, 2014), and understanding the relationship between SNSs use and users' psychological well-being is therefore very important (Guo et al., 2014).

The importance of understanding the relationship between Internet use and users' psychological well-being has long been recognised (Nabi et al., 2013); researchers have studied this relationship since the Internet was introduced to the public in 1993 (Ellison et al., 2007). However, our understanding of the relationship between the use of SNSs and psychological well-being of users remains partial (Erfani et al., 2013b; Reinecke & Trepte, 2014). Therefore a review of the literature in this field, to identify current research gaps and inform future research on SNS use and the psychological well-being of users, is timely.

The research presented in this paper aimed to determine what is already known about the relationship between the use of SNSs and psychological well-being of users, synthesize the current research evidence, and propose an agenda for future studies. In particular, our systematic literature review was designed to answer the question: (i) How does SNS use affect users' psychological well-being? Subsequently, this review also aimed to identify (ii) which variables have been used to measure the use of SNSs and users' psychological well-being, (iii) what SNS platforms have been studied, and (iv) what research methods and theories were used in the reviewed studies.

The remainder of this article is organized as follows. Section two presents definition of key terms, section three describes our methods, results are outlined in section four, section five contains recommendations for future studies, and our conclusions are presented in section six.

CONTEXT

Social Network Sites

The general idea of social networks is not new. Social networks have been established since human being began living together. The Greek philosopher Aristotle described human beings as “Zoon Politikon”, characters with an essential need to build communities (Heidemann et al., 2012). The emergence of the World Wide Web (WWW) and development of Web 2.0 marked the beginning of a new era for social networking (Zhang et al., 2015). With the advent of Web 2.0, a more personalized and communicative form of the WWW (Huang & Güney, 2012; Kim et al., 2009; Sykes et al., 2013), SNSs became popular channels for online interactions (Chen & Sharma, 2013).

Social Network Sites are user-oriented websites and are arranged around users and their interests (Probst et al., 2013; Smith et al., 2012); after joining, SNS users create profiles and content, and establish links to other users in the network – usually called “friends”. SNSs, as networked communication platforms, enable people to maintain two-way connections and interactions with friends, develop audio and video communications, share content and consume content provided by their connections (Berger et al., 2014; Ellison & Boyd, 2013). In our analysis, we define the term SNSs as *networked communication platforms in which users can create profiles and content, establish connections, develop audio and video interactions with their connections, and exchange user-generated content* (Berger et al., 2014; Ellison & Boyd, 2013; Erfani et al., 2016). These user-oriented sites (Probst et al., 2013) “where, to a certain extent, networking is the main preoccupation” (Beer, 2008, p. 518), differ from content-oriented sites such as Twitter, YouTube, and Flickr that have inherited some features of SNS

but are actually microblogging sites or content communities (Berger et al., 2014, p. 147). Content-oriented sites such as Twitter do “not conform to the usual characteristics of social networks, which exhibit much higher reciprocity” (Wu et al., 2011, p. 707).

The first SNSs were launched in the late 1990s (e.g., SixDegrees, MiGente, AsianAvenue), but their popularity began with the launch of MySpace in 2003, followed by Facebook in 2004 (Heidemann et al., 2012). The most popular SNS is currently Facebook, which was launched in February 2004 and had more than 1.1 billion active users in 2016 (eBizMBA, 2016). SNSs have the capacity to facilitate communication, information distribution and sharing of knowledge (Berger et al., 2014; Ellison & Boyd, 2013; Lin et al., 2015; Pan et al., 2015; Utz, 2015) through services such as private messaging audio and video chat, message boards, content sharing, and tagging. To facilitate communication among users, SNSs such as Facebook offer various messaging services, including private and public messaging. In the course of information dissemination, SNSs allow users to create content on their own message board, called a “wall”, or post content to another user’s wall. Users can spread wall posts to their networks via information distribution functionalities – such as “sharing”, “liking”, and “tagging” – with only a single click (Erfani et al., 2016). The rapid growth in the number of SNS users makes it important to understand the impact of SNSs use on the psychological well-being of users (Guo et al., 2014).

Psychological Well-Being

Psychological well-being is operationalised and explained as a mixture of moods (such as happiness, positive affect, low negative affect), an individual’s judgment about the meaning and purpose of their life and social functioning; and an individual’s thoughts about the goodness of their life (Stephoe, 2015). As explained by Huppert (2009, p.137), “Psychological well-being is about lives going well and the combination of feeling good and functioning effectively”.

Research on psychological wellbeing has been aligned with three general perspectives: the hedonic view, the eudemonic view and the evaluation wellbeing view (life satisfaction). According to the hedonic view, psychological wellbeing refers to subjective feelings of happiness, positive affect and low negative affect (Bradburn, 1969; Diener, 1984), and the eudemonic highlights positive psychological functioning and human development, functioning with optimal effectiveness in individual and social life (Ryff, 1995, 1989; Waterman, 1993). The evaluation of wellbeing view refers to how people evaluate their lives and peoples' judgements about their satisfaction with life as a whole. (Ryan & Deci, 2008).

While psychological wellbeing has been traditionally defined as a lack of depression, anxiety and stress over time, the concept has now become more than just an absence of distress indicators. Psychological wellbeing has taken on a positive definition, and Winefield et al (2012) found that people with high psychological wellbeing report feeling happy, capable, well-supported and satisfied with life. The measures used by Xu and Roberts (2010) were life satisfaction and positive affect. Ryff's (1989) psychological wellbeing scales offer a multidimensional view including self-acceptance, positive relationships with others, autonomy, environmental mastery, purpose in life, personal growth, self-acceptance and life purpose. Self-acceptance means holding positive attitudes toward oneself; acknowledging and accepting multiple aspects of oneself, including good and bad qualities; and feeling positive about one's past life. Positive relations with others refers to having warm, satisfying, trusting relationships with others, and being capable of strong empathy, affection, and intimacy. Autonomy refers to self-determination and independence, being able to resist social pressures to think and act in certain ways. Environmental mastery is having a sense of mastery and competence in managing the environment and everyday affairs, and being able to choose or create contexts suitable to personal needs and values. Purpose in life refers to having goals in life and a sense of directedness; holding beliefs that give life purpose; having aims and

objectives for living. Personal growth refers to having a feeling of continued development; seeing oneself as growing and expanding; a sense of realizing potential; and seeing improvement (Ryff & Keyes, 1995).

METHOD

Standard Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to guide our systematic review of relevant peer-reviewed literature (Moher et. al. 2009).

Eligibility criteria

We applied a set of inclusion and exclusion criteria for identifying studies that provide direct and clear evidence about the relationship between the use of SNSs and users' psychological well-being. To reduce the likelihood of bias, selection criteria were identified on the basis of our research questions (see Introduction section). The inclusion criteria were that papers must be: (i) published in peer-reviewed journals, (ii) written in English, (iii) published between 2003 and 2016, and (iv) related to the research questions. Exclusion criteria ensured that selected articles would not be: (i) clinical studies with a focus on physical well-being, (ii) studies limited to general use of the Internet or Web 2.0 applications other than SNSs, such as content-oriented sites (e.g., Twitter) and (iii) non-academic studies .

Search strategy

In April 2016 a keyword search spanning the period between 2003 and 2016 was executed in major databases (Scopus, Web of Science, PsycInfo and HMIC) to capture published research related to SNSs and psychological well-being. Our search period started from 2003 as major SNSs were launched after this date. In addition, we looked at controlled vocabularies (Subject heading/Thesaurus) in databases for more complete search. The combination of terms “psychological well-being” OR “well-being” OR “satisfaction with life” OR “happiness” “OR” “positive /negative affect” AND “online social network” OR “social network sites” OR “social

networking sites” OR “Facebook” was used to search titles and abstracts. Scopus and Web of Science were used as they are multidisciplinary databases and cover all the subject areas. PsycInfo and HMIC were used because they cover specialized studies in psychology and behavioural sciences as well as health service policy, management, and administration disciplines. Furthermore, we included major conference proceedings as well as Information Systems journals. Table 1 shows the specific journals and conference proceedings included in our literature search.

TABLE 1. Journals and conferences selected for the review

Journals	ACM Transactions on Computer-Human Interactions, Computers in Human Behavior, Decision Support Systems, Journal of the Association for Information Science and Technology, European Journal of Information Systems, Information and Management, Information and Organization, Information Systems Research, MIS Quarterly, Communications of the Association for Information Systems, Information Systems Frontiers, Journal of the American Medical Informatics Association, The Information Society, Australasian Journal of Information Systems.
Conferences	Americas Conference on Information Systems, European Conference on Information Systems, Hawaii International Conference on System Sciences, International Conference on Information Systems, International Conference on Information Systems Development, Pacific Asia Conference on Information, Australasian Conference on Information Systems.

Study Selection

The search identified 278 articles; the removal of duplicates left 176. Papers’ titles, abstracts and keywords were screened by both authors, which resulted in the exclusion of 111 articles which were not clearly pertinent : they did not match the research questions, and were focused on general internet use. Both authors assessed the 65 remaining independently and identified potentially relevant papers, with any disagreements resolved by discussion. In all, 43 articles were excluded for the following reasons: no focus on SNSs (e.g., focus was on blogs or micro-

blogging sites like Twitter), no focus on psychological well-being (i.e., focus was on physical well-being), and being basic or laboratory science. This process resulted in 22 papers for final assessment.

Figure 1 illustrates the procedure of literature search and selection. We measured the reliability of agreement between ourselves with Krippendorff's alpha (Krippendorff, 2004), a well-suited measure of reliability in content analysis. A Krippendorff's alpha of 0.890 was achieved, reflecting high reliability of agreement (Krippendorff (2004) suggests that this value should be 0.800 or higher).

Next, each article was independently assessed by both authors for quality assessment. Criteria for quantitative studies were (appendix 1)

- Question/objective sufficiently described?
- Study design evident and appropriate?
- Method of subject/comparison group selection or source of information/input variables described and appropriate?
- Subject (and comparison group, if applicable) characteristics sufficiently described?
- Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?
- Sample size appropriate?
- Analytic methods described/justified and appropriate?
- Some estimate of variance is reported for the main results?
- Controlled for confounding?
- Results reported in sufficient detail?
- Conclusions supported by the results?

Criteria for qualitative studies were

- Question/objective sufficiently described?
- Study design evident and appropriate?

- Context for the study clear?
- Connection to a theoretical framework/wider body of knowledge?
- Sampling strategy described, relevant and justified?
- Data collection methods clearly described and systematic?
- Data analysis clearly described and systematic?
- Use of verification procedure(s) to establish credibility?
- Conclusions supported by the results?
- Reflexivity of the account?

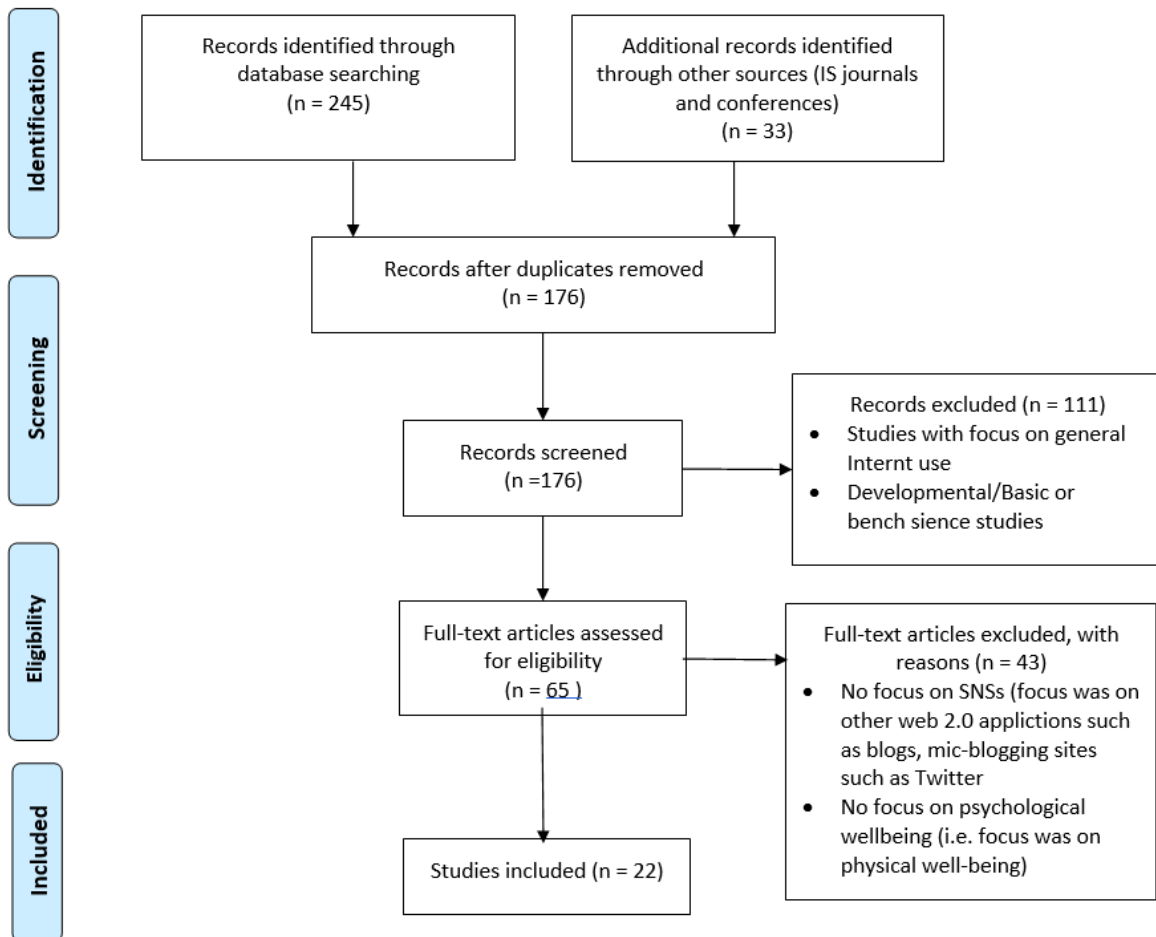


FIG 1. Flowchart of the systematic literature search

Data Extraction and Data Synthesis

The objective of this step was to synthesize the information obtained from the selected studies and summarize the results. To this end, all 22 articles were imported to NVivo (QSR International, Melbourne) for qualitative analysis. Importing journal articles into NVivo via EndNote captures the bibliographic details of sources as well as the source itself. We selected NVivo for conducting our literature review because it maximises precision with minimal effort, reduces reliance on memory and misplacing of important data, facilitates data handling and review, and enables rapid identification of co-occurring references in articles.

We then coded the data extracted from each paper independently, and resolved disagreements by discussion. Data synthesis employed a narrative approach – a descriptive qualitative approach that is widely used in the synthesis of heterogeneous studies (Erfani & Abedin, 2014). We ran query and framework matrices in NVivo for summarizing the data in a grid with rows for case nodes (i.e., each journal article) and columns for theme nodes (i.e., the types of SNSs, theories, research methods, demographics of participants, impacts of SNS use on users' psychological well-being, and the mechanisms through which SNS use was positively or negatively related to users' psychological well-being). Finally, we analysed the extracted information with respect to our research questions.

RESULTS

Demographics

Unsurprisingly Facebook was the most popular (n=16) SNS platform studied, while the remaining studies investigated one or more other platforms. More importantly, we found that most of the selected articles (n=15) used students as their samples, neglecting other cohorts of SNS users and their patterns of use and needs.

Eight of the 22 studies were conducted in the USA, and the remainder in The Netherlands, Australia, United Kingdom, Spain, Germany, Japan, South Korea, Northern Ireland and

Taiwan. Nineteen papers used a cross-sectional design, and only two studies applied a longitudinal approach involving pre- and post-test measurements (Oh et al., 2014; Reinecke & Trepte, 2014). As Table 2 shows, most of the reviewed articles (n=16) did not use a theoretical foundation for explaining the relation between SNS use and users' well-being. Exceptions were articles that applied self-esteem theory (Apaolaza et al., 2013; Valkenburg et al., 2006), social change and human development theory (Manago & Greenfield, 2012), belongingness theory (Grieve et al., 2013) or theory of stress (Nabi et al., 2013).

	Author	SNS use measures	Recruitment and sampling	Type of SNS	Well-being measures	Data Collection	Data analysis	Applied theories
1	Valkenburg et al. (2006)	Frequency of use Intensity of use	881 adolescents (10-19 years old) Participants were recruited via links posted to CU2	CU2 (Dutch social network site)	Life Satisfaction	Online survey	Correlational analyses	Self-esteem theories
2	Valenzuela et al. (2009)	Intensity of use	2603 college students (18-29) years old Participants were recruited randomly through students email list	Facebook	Life satisfaction	Online survey	Regression Analysis	None
3	Dare et al. (2009)	Frequency of use	40 Western Australian women Participants were recruited randomly	Facebook/ My space	positive relatedness	semi-structured interviews	Thematic analysis	None
4	Burke et al. (2010)	Intensity of use	1193 adults Participants were recruited via links posted on Facebook	Facebook	Loneliness	Online survey	Regression Analysis	None
5	Sundar et al. (2011)	Intensity of use Frequency of use	168 adults aged 55 and older Participants were recruited from a random national sample of 1200 US adults	Facebook	Life Satisfaction	A nationwide mail survey	Correlational analyses	None
6	Kalpidou et al. (2011)	Intensity of use	70 undergraduates (junior and senior) college students The participants were recruited from multidiscipline and upper-level classes at a Catholic, liberal arts institution	Facebook	Self-esteem Life satisfaction	Survey	Correlational analyses	None
7	Lee et al.(2011)	Intensity of use Network size	217 University students in South Korea	Cyworld.com	Positive and negative affect Life satisfaction	Survey	Regression Analysis	None
8	Manago et al. (2012)	Network size Frequency of use	88 college students Participants were recruited from enrolled students who had access to SNSs	Facebook	Life satisfaction	Online survey	Correlational analyses	Social change and human development
9	Hume and Sullivan Mort (2012)	Frequency of use	35 diaries (14 males and 21 female) 22 interviews with students (11 male-11 female), 10-14 years old	Facebook	Life Satisfaction	Diaries In-depth interviews	Content analysis (sequential coding)	None

10	Devine and Lloyd (2012)	Frequency of use	3657 students Participants were recruited from school students	multiple SNSs	Life Satisfaction Happiness	Survey	Regression analysis	None
11	Grieve et al. (2013)	Facebook connectedness factor	274 university students Participants were recruited from Facebook members	Facebook	Life Satisfaction	Online questionnaire	Correlational analyses	Belongingness theory
12	Liu and Yu (2013)	Intensity of use	330 college students Participants were recruited from Taiwanese college students who use Facebook	Facebook	Autonomy Environmental mastery Personal growth Positive relations Purpose in life	Survey	Correlational analyses	None
13	Apaolaza et al. (2013)	Intensity of use	344 school students Participants were recruited from Tuenti	Tuenti (Spanish social)	Life satisfaction	Survey	Correlational analyses	Self-esteem theories
14	Baek et al. (2013)	type of use:social and par asocial relationship	404 Korean adults	Facebook	Interpersonal trust, Loneliness	Online survey	Least squares regression	None
15	Nabi et al. (2013)	History of use, Network size	401 undergraduate students Participants were students with Facebook accounts	Facebook	Life satisfaction	Online survey	Correlational analyses	Theory of stress
16	Helliwell and Huang (2013)	Network size	5,000 participants were recruited from online panel Lager Web	multiple SNSs	Happiness life satisfaction	Survey	Regression analysis	None
17	Chan (2014)	The number of Facebook Friends, number of posts	515 college students Participants were recruited from Facebook users	Facebook	Life satisfaction	Online survey	Correlational	Self-presentational theory
18	Kross et al. (2013)	Frequency of use	82 Facebook users Participants were Facebook users recruited using flyers posted around Ann Arbor, Michigan	Facebook	Life satisfaction	Survey	Multilevel analyses	None
19	Guo et al. (2014)	Intensity of use Frequency of reply	142 Chinese internationals students	Weibo, Renren Facebook	Life satisfaction	Online and hard copy survey	Multiple regressions	None

20	Reinecke and Trepte (2014)	Intensity of use	Wave 1—556 students, wave 2—457 students Participants were recruited via links posted on Facebook and StudiVZ	Facebook StudiVZ	Life satisfaction	Survey	Correlational analyses	None
21	Oh et al. (2014)	Number of friends Frequency of use History of use	339 Undergraduate students Participants were recruited using a snowball sampling technique	Facebook Myspace Cyworld	Life satisfaction	Momentary sampling	Correlational	None
22	Wang et al. (2014)	Frequency of use	337 Undergraduate students Participants were recruited using advertisements distributed in classrooms	Qzone Renren	Life satisfaction	Survey	Correlational analyses	None

TABLE 2. Summary of the reviewed articles

Which variables have been used to measure the use of SNSs and users' psychological well-being?

Table 2 summarizes the variables that the selected papers used for measuring SNSs use as well as users' psychological well-being (see our second research question). Accordingly, below is a consolidated list of variables for measuring the use of SNSs:

- frequency of use – the number of times SNSs are used within a given period;
- history of use – how long (years and months) people have been a member of an SNS;
- frequency of replies – the number of time that users receive a reply from people in their online environment within a given period;
- number of friends or connections in the online environment;
- connectedness – the individual's perception of self in relation to their online social environment (positive and negative feelings);
- type of SNS relationships, including social relationships based on reciprocity between a user and his/her friends, and para-social relationships in which an ordinary user is aware of the activities of celebrities but not vice versa; and
- intensity of use – user engagement in SNS activities based on number of friends, amount of time spent on the network on a typical day, and participants' attitudes toward SNS.

Furthermore, users' psychological well-being was measured by the following variables in the reviewed studies:

- life satisfaction – how people assess their lives and how they feel about their relations with others and their achievement of goals which has commonly been measured using Diener et al.'s (1985) Life Scale;
- interpersonal trust – the confidence a person has in relying on another person in her/his online environment;
- autonomy – being able to resist social pressures;
- personal growth – feelings of continued development;

- self-acceptance – holding positive attitudes toward oneself;
- life purpose – a sense of direction in life;
- environmental mastery – feeling competent in creating a context suited to personal needs and values; and
- positive relatedness – the extent to which one forms satisfying relationship with others.

How does the use of SNSs impact users' psychological well-being?

The reviewed studies presented conflicting results in regard to this question: some studies reported that the use of SNSs has positive impacts on users' psychological well-being, whereas some others reported negative impacts.

Positive impacts of SNS use on users' psychological well-being

Sixteen studies demonstrated positive impacts of SNS use on users' psychological well-being. Dare et al. (2009) found that the use of SNSs plays an important role in women's friendships, which is pivotal to their psychological well-being. Hume and Sullivan Mort (2012) discovered that students using SNS experienced a greater sense of psychological well-being. Wang et al. (2014) showed that using SNSs for social communication was positively related to students' psychological well-being. Baek et al. (2013) showed that, depending on the type of SNS-mediated relationship, SNS use can either enhance or harm users' psychological well-being. They classified SNS relationships into social and para-social relationships. Baek et al. (2013) identified that a higher reliance on social (reciprocal) relationships was negatively related to loneliness and positively related to interpersonal trust. On the other hand, high dependency on para-social relationships was related to greater feelings of isolation and lower presumably interpersonal trust. The remaining 12 out of 16 studies presented more detailed analyses, which collectively portrayed five factors that are mediators between SNS use and psychological well-being and are associated with positive relationships between the use of SNSs and users'

psychological well-being: perceived online social support, social capital, social self-esteem, authentic self-presentation, and social connectedness.

Perceived online social support

Nabi et al. (2013) examined the relationship between students' psychological well-being and their use of Facebook. Their online survey found that the total number of Facebook friends among undergraduate users was linked to perceived social support, which in turn was associated with a higher level of life satisfaction. Manago and Greenfield (2012) used an online survey to examine the level of sociability of Facebook during the transition to adulthood. Their findings suggested Facebook was a useful tool for experiencing more social support, and consequently a greater psychological well-being in terms of life satisfaction. Oh et al. (2014) examined the effects of SNS use on psychological well-being of undergraduate students in a media research course at a major Midwestern university. Results showed positive associations between the number of SNS friends and development of more supportive interactions, both of which were associated with a higher level of perceived social support and a greater life satisfaction. Finally, Liu and Yu (2013) examined the relationship between Facebook use and the psychological well-being of students, and found that it helped college students to receive online social support from their peers and consequently experience higher psychological well-being.

Social capital

Social capital, including bonding social capital and bridging social capital, refers to resources available to users through networks (Durst et al., 2013; Ellison et al., 2007). Bonding social capital reflects strong tie networks and refers to resources that can provide support and enable members to meet their emotional needs. Bridging social capital refers to acquaintances that provide informational support to members, and reflects networks with weak ties (Erfani & Abedin, 2014; Johnston et al., 2013).

Social capital is achieved through the use of SNSs over time, and is associated with a greater level of psychological well-being (Guo et al., 2014; Valenzuela et al., 2009). Guo et al. (2014) investigated the consequences of SNSs use for Chinese students in Japan, and showed that SNSs use – in particular for social and information purposes – was related to a greater perceived bridging social capital, which consequently increased levels of psychological well-being in terms of life satisfaction. Burke et al. (2010) demonstrated a positive relationship between direct use of SNSs (e.g., posting, chatting and photo tagging) and bonding social capital, which was consequently associated with greater perceived social and psychological well-being among adult Facebook users.

Social self-esteem

Apaolaza et al. (2013) collected data using a self-administered questionnaire in three Spanish education centers to investigate the influence of a Spanish SNS, Tuenti, on the psychological well-being of Spanish adolescents. Their study showed that the frequency of SNS use (i.e., socializing on Tuenti) was positively related to perceived self-esteem, which in turn had a positive influence on teenagers' perceptions of greater psychological well-being. Apaolaza et al. (2013) noted a positive relationship between SNSs use and users' psychological well-being, and that this relationship was mediated by intervening factors of self-esteem. Valkenburg et al. (2006) found that the frequency of use of SNSs for communication purposes was correlated with developing interpersonal relationships and receiving positive feedback, which increased adolescents' social self-esteem and led to higher perceived life satisfaction.

Authentic self-presentation and self-disclosure

Authentic self-presentation is the unobstructed operation of one's true self. Self-disclosure means communicating personal information, thoughts, and feelings with other people (Archer, 1980). Reinecke and Trepte (2014) came to the conclusion that SNSs enable their users to enact authentic behavior using a great variety of features such as status updates, photo sharing and

links to external online content, all of which promote psychological well-being. Reinecke and Trepte (2014) recruited participants via links posted on Facebook and StudiVZ and collected data in a two-wave online panel survey. They provided longitudinal evidence for the beneficial effects of SNSs in increasing authenticity and hence psychological well-being in terms of positive affect and life satisfaction. Another study conducted by Lee et al. (2011) showed that the amount of self-disclosure on SNSs is positively related to life satisfaction, happiness and subjective well-being.

Social connectedness

Social connectedness is described as emotional connectedness and a sense of belonging between an individual and other people (Baumeister & Leary, 1995). Grieve et al. (2013) found that Facebook provides opportunities to develop and maintain social connectedness in the online environment, and that feeling connected to others is associated with positive psychological outcomes and greater psychological well-being in terms of life satisfaction. They argued that building Facebook relationships is a useful avenue for social bonding, with benefits similar to those obtained from offline relationships, which can lead to improved mental health and well-being.

Negative aspects of the use of SNSs on users' psychological well-being

Six studies presented a different perspective and investigated the negative impacts of SNSs use on psychological well-being of users. Helliwell and Huang (2013) detected a negative association between SNS use – measured by the size of the user's online network – and individual's life satisfaction. Kalpidou et al. (2011) found that spending a lot of time on Facebook was negatively related to students' self-esteem and psychological well-being. The authors found that the number of Facebook friends was negatively related to emotional and academic adjustment among first-year students, but positively associated with social adjustment and attachment to institution among more senior students. Kross et al. (2013) and

Chan (2014) showed that when people spend a lot of time on Facebook and ignore other daily activities, they feel less life satisfaction and less good about themselves. Hume and Sullivan (2012) discovered that excessive use of SNSs without a balance with offline activities has negative effects on users' psychological well-being. A similar study conducted by Wang et al. (2014) showed that using SNSs for entertainment was negatively related to students' psychological well-being, and reaffirmed that the relationship between Internet use and well-being is weak when SNSs are used for non-social purposes. Devine and Lloyd (2012) showed that unsupervised access to social-networking sites is related to poorer psychological well-being among girls. Finally, Baek et al. (2013) showed that, depending on the type of SNS-mediated relationship, SNS use either enhances or harms users' psychological well-being. As mentioned earlier, these authors found that people who relied heavily on para-social relationships reported greater feelings of isolation and lower interpersonal trust.

RECOMMENDATIONS FOR FUTURE STUDIES

Broadening research recruitments from students to other cohorts of SNSs users

Most of the published studies in the context of SNSs use and psychological well-being have relied on healthy students and adolescents as the samples for data collection, ignoring or neglecting other cohorts of users, particularly vulnerable members of society. Such biased recruitment practices create difficulties and limitations in generalising findings of such studies to other cohorts of SNS users (Burke et al., 2011). SNSs are increasingly being used by children as well as people with mobility problems, and to obtain health-related information and emotional support (Erfani et al., 2017; Abedin & Jafarzadeh, 2017; Bender et al., 2011). Future studies are therefore encouraged to consider other groups of SNS users, such as children, the elderly, people with reduced mobility and/or those living with serious health conditions and chronic disease, as well as people living in remote geographical areas.

Theoretical justifications and diversity of research methods

Research on the theoretical underpinnings of the relationship between the use of SNSs and users' psychological well-being is scarce (Chan, 2014; Apaolaza et al., 2013; Grieve et al. 2013; Manago & Greenfield. 2012; Nabi et al., 2013; Valkenburg et al., 2006). More research is needed to develop new theories or to examine the appropriateness of existing theories for explaining the consequences of the use of SNSs for the psychological well-being of various groups of users. For instance, informational and emotional social support has been identified as a by-product of SNS use and a predictor of psychological well-being (Abubakar et al., 2014), and theories such as social support theory could provide insights into explaining how SNS use may be associated with a greater psychological well-being of users. Furthermore, our findings revealed that only two out of 22 studies (Hume & Sullivan Mort 2012; Dare et al. 2009) used a qualitative approach for data collection and analysis, and the rest of the studies primarily used questionnaires. Such a skew to quantitative survey methods limits our deeper understanding of root causes of the impacts of SNS use on psychological well-being. More exploratory methods by strong theoretical foundations are needed to understand the positive or negative consequences of SNS use for different cohorts of users.

Longitudinal investigations of SNSs use and psychological well-being

Most of the reviewed articles described cross-sectional studies, hence were unable to show the long-term impacts of the use of SNSs on individuals' psychological well-being or to determine potential causal relationships. Accordingly, the reviewed studies could not portray a comprehensive picture of the effects of SNSs use on users' psychological well-being over a long period of time. Future studies are encouraged to employ longitudinal approaches for demonstrating the long-term effects of SNSs use.

More inclusive and rigorous sampling practices

Most of the reviewed studies used online channels for recruiting research samples, hence more active SNS users were more likely to be engaged. This leaves offline users under-researched and under-represented. Future studies therefore should use more inclusive practices for using offline channels and reaching out to less active SNS users or consider offline members of the society as control groups. In addition, larger sample sizes are recommended for investigating SNS use and its effect on users' psychological well-being. A larger sample size is recommended for conducting more rigorous studies in this area (Hume & Sullivan Mort, 2012) as different groups of people may have different perceptions about SNSs and experience different impacts on their psychological well-being.

Except for Liu and Yu (2013), all reviewed studies treated SNS use and psychological well-being as a one-dimensional construct, whereas research shows they can be considered as multi-dimensional constructs and should be treated and measured accordingly (Liu & Yu, 2013; Ryff & Keyes, 1995). Also, most of the researchers did not distinguish between different functionalities of SNSs (e.g., information search, communication, entertaining). The exceptions were Guo et al. (2013), who examined the use of SNSs for social and information purposes on psychological well-being, and Valkenburg et al. (2006), who focused on the use of SNS for communication purposes. Future studies therefore need to distinguish between different dimensions and functionalities of SNSs and separately examine their respective effects on the psychological well-being of users.

Lack of focus on developing countries

None of the studies in our review was conducted in a developing country. With the rapid adoption of SNSs around the world, and in particular in developing countries, research is needed to learn how SNS use may impact on users' psychological well-being in these countries due to their unique online climates. In addition, none of the studies that we reviewed focused on underserved communities, such as minorities or people of low social economic status.

Future studies should investigate the use of SNSs for psychological well-being purposes with particular attention to the users' cultural, education and economic circumstances.

CONCLUDING REMARKS

This study identified mediators (i.e., social capital, social support, perceived social support, self-esteem, and authentic self-presentation) through which SNSs can improve the psychological well-being of users as well as areas that can negatively impact users' psychological well-being, highlighted important gaps in the existing literature, and posited areas for future investigation. Our results showed that non-student users of SNSs have not been adequately investigated to date, as most published studies have relied on healthy students. Future empirical studies should be conducted to longitudinally examine the relationship between SNS use, its mediating factors, and the psychological well-being of various users.

The bulk of the relevant literature suggests that SNS use is positively related to users' psychological well-being; however, results are inconsistent, and only a few studies provided strong empirical support. For example, Kalpidou et al. (2011) regressed the number of SNS friends against users' psychological well-being, but failed to detect a positive relationship. In contrast, Nabi et al. (2013) showed the number of Facebook friends was related to the individual's perception of social support, which in turn was associated with greater psychological well-being. Inconsistent results could be due to differences in research design approaches, including insufficient theoretical justification for the relationship between SNS use and users' psychological well-being, or lack of consideration of variables that might mediate the relationship between users' psychological well-being and use of SNSs. Thus, there is a need for further and more sophisticated (including theoretically underpinned) investigation of the impact of SNS use on users' psychological well-being.

Studies that reported a positive relationship between SNS use and psychological well-being showed that the unique features of SNSs that support extensive aural and visual interactions

can enhance social capital, social support, perceived social support, self-esteem, and authentic self-presentation, and ultimately the psychological well-being of users. These findings strongly suggest that integrating SNSs into health and psychological well-being programs offers substantial benefits. On the other hand, studies that reported a negative relationship between SNS use and psychological well-being also indicated that such a negative impact is associated with 'injudicious access' or 'overly casual access' to SNSs (Kross et al., 2013; Chan 2014). SNSs have various features that can enhance informational and emotional support, which are predictors of psychological well-being, hence what matters is not SNS use itself but the communication and cultural behaviours undertaken in using SNS. If users do not balance SNS use and offline activities, spend a lot time on SNS and ignore other daily activities, or use SNS for non-social purposes or rely on para-social relationships, they do not experience higher psychological wellbeing (Devine and Lloyd, 2012; Kross et al., 2013; Chan 2014). This suggests a need to raise awareness about the most beneficial modes of SNS use and to develop training programs and sources of advice.

Finally, our findings are subject to limitations due to our restrictions with respect to year of publication and English-only publications; moreover, by focusing on SNSs that are user-oriented websites, we excluded some popular content-oriented sites (such as YouTube and Instagram). Future research could extend the review to content-oriented sites, and provide evidence about the (potentially) different impacts of user-oriented sites and content-oriented sites on users' psychological well-being.

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