Depression among Users of Social Networking Sites (SNSs): The Role of SNS Addiction and Increased Usage

Ella Donnelly and Daria J. Kuss*

Nottingham Trent University, Burton Street, Nottingham NG1 4GN, UK

Abstract

Background: Previous literature suggests that increased usage of social networking sites (SNSs) can have a detrimental effect on mental wellbeing [1,2]. Furthermore, increased SNS usage has been found to result in the development of a new behavioral addiction: SNS addiction [3]. This new form of addiction to social networking is shown to predict depression in users of SNSs [4,5].

Objective: As the rates of people who use SNSs are rising, the current study aimed to identify relationships between SNS usage, SNS addiction and depression, with a focus on SNSs used today that have not been researched before, namely Instagram, Twitter and Snapchat.

Methods: A cross-sectional online study was conducted on a sample of 103 young adults. Each participant filled out a questionnaire consisting of the Centre for Epidemiologic Studies of Depression Scale Revised (CESD-R), Young's Internet Addiction Test (IAT), along with general questions relating to SNS use.

Results: The results of the current study suggest that Instagram use ($\beta = .24$, $p \leq .05$) and SNS addiction ($\beta = .32$, $p = .001$) were significant predictors of depression. The results also showed that Instagram use predicted SNS addiction ($\beta = .22$, $p < .05$). No such relationship existed between Facebook, Twitter or Snapchat and SNS addiction or depression.

Conclusion: The results indicated that both Instagram use and SNS addiction were related to depression, and that Instagram use was related to SNS addiction. Results are explained from a uses and gratifications perspective. Further research using longitudinal designs is needed to establish the direction of this relationship.

Keywords: Social Networking Sites; SNS Addiction; Internet Addiction; Depression; Instagram; Uses and Gratifications

Introduction

Since their emergence, social networking sites (SNS) such as Facebook, MySpace, Instagram, Twitter and Snapchat have attracted billions of users worldwide. The use of these sites has become intertwined with daily life, with Facebook alone reporting 1.04 billion daily active users worldwide on average as of December 2015 [6]. These web-based sites are virtual communities where users can create individual public profiles, interact with real-life friends, and meet other people based on shared interests [7]. This area of study has become increasingly important over the past two decades due to research suggesting a link between general Internet usage, including specific online activities, such as social networking site (SNS) usage, and certain mental health problems [1].

SNS usage has significantly increased in the last decade, arguably due to the rise in SNS platforms and the improved accessibility on smartphones and tablets. Despite there being many positives associated with SNS use, such as establishing and maintaining relationships, some individuals seem to be driven by inner and outer forces to use SNSs excessively and compulsively [8]. This in turn has led to the development of what can be considered a potential new behavioral addiction: social networking site addiction [7]. Griffiths [9] has laid out definitive features of addictive behavior and what he believes are the six core components of addiction which can be linked to SNS addiction, as suggested by previous research [8]: (1) salience (i.e., preoccupation with online social networking sites), (2) mood modification (i.e., the subjective feelings experienced when using social networking sites), (3) tolerance (i.e., increasing use of online social networking sites in order to produce the mood-modifying effects), (4) withdrawal symptoms (i.e., dysphoria when unable to engage in online social network sites), (5) conflict (i.e., social networking site use leads to conflict between a person and those around them, and within themselves), and (6) relapse (i.e., returning to the old behaviour after a period of abstinence from social networking sites) [9]. These six components have previously been validated in the context of Internet addiction [10,11]. SNS addiction can be defined as being overly concerned with SNSs, and a strong motivation to log onto SNSs so frequently that it impacts on other social activities, studies/jobs, interpersonal relationships and/or psychological health and wellbeing [8]. Excessively using SNSs may lead to negative consequences that may arise as a result of overuse, with research showing it to be particularly problematic for younger individuals [12]. The current study will assess self-reported SNS addiction, but it is worth noting findings are based on self-report questionnaires, and therefore are not clinical diagnoses, and therefore the "addiction" label needs to be interpreted with caution, and will be used for the sake of argument.

Emerging evidence supports the claim that excessive SNS usage can lead to the development of addiction symptoms in both adolescent [13] and university student samples [14]. Several studies have drawn conclusions that SNS addiction may result from users enjoying their time spent online, with motivations centering around social factors and maintaining online and offline relationships [15–18]. One well-established theory that has been applied to explain media use, and more recently social networking, is uses and gratifications theory [19]. This draws on the concept that people who get enjoyment out of their time spent online will continue to engage in the behavior as they expect positive outcomes, or gratifications [20]. Research that has focused on this area by analyzing the relationship between gratification and Internet addiction [3,21–23] has consistently found that Internet addicts versus non-Internet addicts self-reported a higher pleasure experience from using the Internet, although contemporary SNSs (such as Twitter and Instagram) have not been studied. Additional research [24] similarly found virtual-community-related gratifications associated with Internet addiction. Overall, the aforementioned studies are limited due to the fact they all measure "Internet" addiction and usage, without specifying which activities on the Internet they are focusing on. It is not the Internet per se that users become addicted to, but the specific content [7,25]; for example, computer addictions, net compulsions or cyber-relationship addictions. It could be argued the previously

mentioned studies are measuring cyber-relationship addictions as the content found to be gratifying is the forming of new relationships and maintaining existing relationships. SNS addiction could be a result of gaining gratification and enjoyment whilst using SNSs, which leads the user to excessively engage in the behaviour. Consequently, in order to continue filling the gap in the literature regarding the focus on general "Internet" addiction, the current study aims to concentrate on SNSs that are popular among young adults today, and the users' perceived addiction to these sites.

Problematic and excessive SNSs usage has been found to have a detrimental effect on mental wellbeing. Studying depression resulting from SNS use is relevant because of the high prevalence rate of depression, with more than 350 million people affected worldwide of all ages [26,27], and research suggests excessive SNS use is associated with depressive symptoms [8]. Therefore, the relationship between excessive SNS use and depression needs to be examined further to identify potential risk and resilience factors. The idea that perceptions of others can lead to depression is supported by social rank theory as a theory of depression as it postulates that humans are social competitors who want to exert social control over resources in contexts where others are going after the same resources [28]. This can lead to competing for things like power or attractiveness, with the theory holding that those who perceive they have not succeeded feel subordinated. This relates to SNS use as users create profiles of themselves in an online space where others are doing the same, and potentially compete for the same goals involved within each individual SNS. For example, Twitter is primarily a text-based social network, with the common goal being to gain 'retweets' or 'favorites' on tweets and to attract new followers. A Twitter user who does not feel they are doing this successfully (i.e., not gaining many retweets or followers) may feel, according to social rank theory, subordinate to others who may be getting more attention on the site, which in turn could lead to depressive symptoms [28]. This is in line with research [29] suggesting that upward social comparisons on social networks predict lower self-esteem relative to downward social comparisons, which predict higher self-esteem. Social rank theory acts as a possible explanation for the findings of depression resulting from SNS usage and will be considered along with the current study's findings.

Currently, the majority of research centers on Facebook use, or general SNS use, and the effects on mental wellbeing, namely depression. Studies [4,5,30–32] found positive correlations between depression and Internet addiction [4,30,32], Facebook usage [31] or problematic SNS usage [5]. Similarly, Kross et al. [33] found Facebook use predicts declines in two aspects of wellbeing: how people feel moment-to-moment and how satisfied people are with their lives. Further research [2] investigated the relationship between social networking and depression, with findings highlighting that as time spent on SNSs increased, so did the scores for depression. These findings contrast with other results [4] that did not find any relationship between time spent on SNSs and depression. The current study will include time spent on SNSs as a variable predicting depression because of the conflicting results in previous literature, and because it is a dimension of SNS addiction.

Potential causes for feelings of depression resulting from increased time on SNSs or SNS addiction have been widely discussed. Chou and Edge [34] argued that Facebook use affects people's perceptions of others. They found the longer people used Facebook, the stronger people's beliefs were that others lead happier lives and that life is not fair. The viewing of happy photos online led to the belief that other people are "always" happy and have good lives, which when compared to their own lives,

arguably led to a decrease in satisfaction. This correspondence bias was exacerbated when people had more "friends" on their Facebook that they did not know personally. Chou and Edge [34] supported this with findings that correspondence bias can be avoided by interacting face-to-face with friends because face-to-face interaction allows for a deeper level of communication rather than the arguably more superficial connections engaged in online. Support for this comes from research [4] which suggested increased SNS usage decreases psychological wellbeing because as computer mediated communication increases, time available for face-to-face interaction decreases.

The above-mentioned research on both SNS addiction and depression as a result of SNS use highlights several gaps in the literature. Firstly, the majority of research on SNS addiction either centers on the Internet or SNSs in general, or Facebook rather than SNSs that have gained popularity over the last decade, namely Instagram, Twitter and Snapchat, launched in 2010 [35], 2006 [36] and 2011 [37], respectively. Secondly, previous research has reported conflicting results regarding relationships, with some studies showing there is a correlation between SNS usage/addiction and depression [4,5,32,33], with other studies suggesting there is no association between Facebook and depression, and that advising patients and parents on the risks associated with Facebook is premature [38]. Therefore, the current study aimed to address these inconsistent findings by measuring users' depression levels, along with measuring scores of addiction and time spent on the SNSs to understand if there is a relationship between the variables. Understanding this relationship can lead to education and advice for adolescents and parents about the potential implications when using SNSs. Importantly, knowledge can also lead to prevention, as knowing specifically what content or mental processes occur and lead to depressive symptoms as a result of increased usage could result in awareness and future avoidance. Additionally, there is currently little or no literature on the psychological effects resulting from using Facebook, Instagram, Twitter or Snapchat. The current study had two hypotheses:

1. SNS usage will predict feelings of depression.
2. SNS usage will predict feelings of depression indirectly through SNS addiction.

Methods

Design

A cross-sectional online survey was carried out to test a model of whether an increase in SNS usage predicted an increase in feelings of depression. The model also looked to test whether an increase in SNS usage predicted SNS addiction, which predicted an increase in feelings of depression. The survey tool used was Bristol Online Surveys (http://www.onlinesurveys.ac.uk), which was selected due to it being free and easy to use and develop. The research adhered to the BPS ethical guidelines and was approved by the hosting institution's ethics committee.

Participants

An opportunity sample of 103 participants was recruited through the use of online social networking sites (e.g., Facebook) and the Psychology Research Participation Scheme of the hosting UK university. The sample included 20 males and 83 females with a mean age of 20.91 years (SD = 2.27, range = 18–35). Initially, there were 104 responses, however after data cleaning there were 103 responses. Exclusion of responses was due to a respondent stating their age as 15 years old, which was below the minimum age of 18 years old.

Materials

Social Networking Site Usage

Participants were asked which SNSs they have an account with, how many times a day they log onto these accounts and how much time (hours/day) they spend on these accounts.

Internet Addiction Test (IAT)

The Internet Addiction Test is a 20-item questionnaire measuring levels of Internet addiction by asking about Internet usage and feelings about using the Internet [39]. The response format is a 5-point Likert ranging from 0 = Not applicable to 5 = Always. Total scores were calculated across items so that they produced a score from 0–100, with higher scores indicating greater levels of addiction (None = 0–30, Mild = 31–49, Moderate = 50–79, Severe = 80–100). Cronbach's Alpha internal reliability coefficients provided information that the test had internal reliability, and the IAT has also been found to have high construct validity in previous research [40, 41].

Centre for Epidemiologic Studies Depression Scale Revised (CESD-R)

The CESD-R is a 20-item screening test for depression and depressive disorder [42,43]. It measures symptoms defined by the DSM-5 for major depression. The response format is a 5-point Likert scale with responses ranging from not at all or less than one day last week to nearly every day for two weeks. Total scores were calculated across items so that they produced a score from 0–60, with scores equal to or above 16 suggesting a risk for clinical depression. This was determined using the following scale: no clinical significance, subthreshold depression symptoms, possible major depressive episode, probable major depressive episode and

meets criteria for major depressive episode.

The CESD-R has good psychometric properties, including high internal consistency (Cronbach's α = .92) [44] and strong factor loadings [45]. The CESD-R has also been found to be a valid measure of depression [45].

Results

A three stage hierarchical multiple regression was run to predict variability in feelings of depression using SNS addiction and SNS usage. The descriptive statistics for these variables are shown in Table 1. Multicollinearity was assessed via correlations between predictors, tolerance and VIF values for each predictor. This indicated that multicollinearity was not extreme enough to be problematic, as shown in Table 2.

The correlations showed that SNS addiction (as measured by IAT) had a moderate, and the greatest, positive correlation with depression (as measured by CESD-R), $r = .32$, $p = .001$. The second highest positive correlation with depression was the number of times logged on to Instagram, $r = .30$, $p = .001$. In terms of the correlations between the variables and SNS addiction, time spent on Facebook had the highest positive correlation with SNS addiction, $r = .24$, $p = .008$. In relation to the number of times logged on the SNSs, Instagram had the highest positive correlation with SNS addiction, $r = .32$, $p = .001$.

Regression Analysis

The predictors of Internet addiction were entered at Stage one of the regression, time spent on each SNS at Stage two and amount of times logged onto each SNS at Stage three. The regression statistics are reported in Table 3.

As shown in Table 3, the hierarchical multiple regression revealed that at Stage one, SNS Addiction contributed significantly to the regression model, $F(1,101) = 11.11$, $p = .001$ and accounted for 9.9% of the variance in depression. Introducing SNS usage and time spent on SNS variables explained an additional 5.6% of the variance in depression. This change in R^2 was not significant, $F(4,97) = 1.61$, $p = .177$. Finally, the addition of times logged on to SNSs variables explained an additional 1.8% of the variance in depression. Again, this change in R^2 was not significant, $F(4,93) = .51$, $p = .731$. The most important predictor of depression with a significant positive association was SNS addiction, which explained 10% of the variance in depression. Together, the eight predictor variables accounted for 17.3% of the variance in depression.

Mediation Analysis

To understand the interaction highlighted in Hypothesis 2, a

| Variable	Mean	Standard Deviation
CESD-R	13.00	10.48
IAT	31.91	12.95
Hours/day on Facebook	3.82	1.20
Hours/day on Instagram	3.29	1.11
Hours/day on Twitter	2.62	1.33
Hours/day on Snapchat	3.20	1.12
Times Log onto Facebook	4.22	1.14
Times Log onto Instagram	3.74	1.36
Times Log onto Twitter	3.00	1.57
Times Log onto Snapchat	4.15	1.41

Table 1: Descriptive statistics for the predictor variables and outcome variable (*$p < .05$ **$p < .005$)

	CESD-R	IAT	Time Spent on Facebook	Time Spent on Instagram	Time Spent on Twitter	Time Spent on Snapchat	Times log onto FB	Times log onto Instagram	Times log onto Twitter	Times log onto Snapchat
CESD-R	1.00	.32*	.10	.29**	.15	.10	.20*	.30**	.20*	.13
IAT	.32**	1.00	.24*	.18*	.15	.04	.32**	.22*	.14	.09
Time Spent on Facebook	.10	.24*	1.00	.16	.32**	.52**	.56**	.07	.25**	.24*
Time Spent on Instagram	.29**	.18*	.19	1.00	.37**	.46**	.148	.77**	.32**	.47**
Time Spent on Twitter	.15	.15	.32**	.37**	1.00	.40**	.25**	.32**	.83**	.32**
Time Spent on Snapchat	.10	.04	.52**	.46**	.40**	1.00	.20*	.30**	.35**	.66**
Times Log onto Facebook	.20*	.32**	.56**	.14	.25*	.20*	1.00	.37**	.46**	.35**
Times Log onto Instagram	.30**	.22*	.10	.77**	.32**	.30**	.37**	1.00	.46**	.49**
Times Log onto Twitter	.20*	.14	.25**	.32**	.83**	.35**	.46**	.46**	1.00	.42**
Times Log onto Snapchat	.13	.10	.24*	.478**	.32**	.67**	.35**	.49**	.42**	1.00

Table 2: Pearson's correlation coefficient between every pair of variables (*$p <. 05$ **$p <. 005$)

Variable	b	SE B	β	p
Step 1				
Constant	4.87	2.63		p = .067
SNS Addiction	0.26	0.08	.32	p = .001
Step 2				
Constant	-1.27	4.34		p = .770
SNS Addiction	0.21	0.08	.26	p = .009
Hours/day on Facebook	0.10	1.01	.01	p = .920
Hours/day on Instagram	2.30	1.05	.24	p = .031
Hours/day on Twitter	0.27	0.839	.03	p = .752
Hours/day on Snapchat	-0.38	1.18	-.04	p = .747
Step 3				
Constant	-2.13	4.91		p = .665
SNS Addiction	0.20	0.08	.25	p = .016
Hours/day on Facebook	-0.21	1.38	-.02	p = .879
Hours/day on Instagram	2.09	1.69	.22	p = .219
Hours/day on Twitter	-0.93	1.60	-.12	p = .563
Hours/day on Snapchat	0.19	1.54	.02	p = .901
Times Log onto Facebook	0.52	1.47	.06	p = .727
Times Log onto Instagram	0.35	1.45	.05	p = .809
Times Log onto Twitter	1.19	1.47	.18	p = .421
Times Log onto Snapchat	-0.66	1.10	-.09	p = .548

Table 3: Hierarchical regression analysis for variables predicting depression

Figure 1: The model of SNS usage as a predictor of depression, mediated by SNS addiction
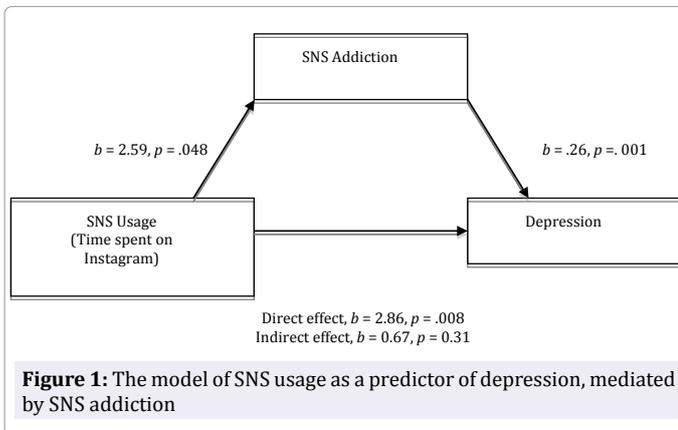
mediation analysis was carried out [46]. The mediation analyzed time spent on Facebook, Instagram, Twitter and Snapchat separately to further determine the use of which SNS significantly predicted depression. The only SNS to have a significant direct effect on depression was Instagram use (β = .30, t = 2.66, *p* =.008). This significance was slightly reduced when SNS addiction was included in the model (β = .24, t = 2.19, *p* = .03), suggesting SNS addiction partially mediated the relationship between SNS usage and depression. The model of SNS usage as a predictor of depression, mediated by SNS addiction is shown in Figure 1.

Discussion

The purpose of this study was to investigate the relationships between increased SNS usage and SNS addiction, and how an increase in SNS use can in turn result in a decrease in mental wellbeing operationalized via the experience of depressive symptoms. The results indicate that Instagram use predicted SNS addiction, which sequentially predicted increased feelings of depression. Therefore, the more a user participates in Instagram, the more likely they are to experience SNS addiction symptoms, and

consequently their feelings of depression increase. The findings also indicate there is a relationship between Instagram use and feelings of depression because as Instagram use increases so do feelings of depression, and vice versa. The analyses also found that Facebook use significantly correlated with SNS addiction, but did not support correlations between Facebook, Twitter and Snapchat use with depression. Whilst the current study does not attempt to provide claims regarding causality between SNS usage, SNS addiction and depression, it is discussed how a relationship between increased usage of SNSs predicted feelings of depression in users, and how SNS usage predicted SNS addiction, which in turn predicted higher levels of depression.

H1: SNS Usage Will Predict Depression

The first hypothesis aimed to understand if a relationship exists between SNS usage and depression. The result that time spent on Instagram significantly predicted depression adds to results [2,4] that conflicted regarding the amount of time spent on SNSs being positively correlated with depression. The current study provides support for Pantic et al.'s research [2], as it shows that time spent on SNSs is associated with increases in feelings of depression. This novel finding of a relationship between Instagram use and depression symptoms has several plausible explanations. Firstly, research [34] highlighting that Facebook use affects people's perceptions of others can be applied to the current findings concerning Instagram use. For example, spending larger amounts of time on Instagram may lead to stronger beliefs that other people lead happier lives and that life is not fair. Furthermore, finding that this feeling is exacerbated when users are connected online to people they do not know personally can also be applied to Instagram use because it is a platform that allows individuals to follow celebrities and public figures, many of whom lead privileged lives, leading to a correspondence bias and a possibly problematic downward comparison which has been found to be associated with lower self-esteem [29], which could explain increased feelings of depression because users' lives may not be as privileged as other users'. The repetitive viewing of other people being "happier" than the user could contribute to feelings of despondency and depression, which relates to uses and gratifications theory. Song et al. [24] discovered that users create profiles and self-images online that differ from who the user is in real life, and feel gratification when doing so because online it is easy to create a more positive self-image. Creating an inflated identity online can lead to dissatisfaction with their own lives and developing symptoms of depression [34]. Therefore, in relation to the current study, the finding that time spent on Instagram predicted depression could potentially be explained by the user being exposed to photos that make them feel like others are leading happier lives in comparison to themselves, leading to dissatisfaction. This relationship should be studied further by asking users whether they follow more celebrities and public figures on the site than people they know personally, or which activities on the site lead to their feelings of despondency.

Secondly, another explanation for Instagram use predicting depression comes from social rank theory. This holds that users are competing against other users towards reaching a common goal. In the case of Instagram, the common goal is arguably gaining followers and receiving likes and comments on photos shared. Social rank theory postulates that if someone feels they are not succeeding in reaching the common goal, the user feels subordinated. The reverse would hold that success in social competition raises the status of the person within the group, leads to pride and euphoria, and increases self-confidence [28]. In relation to the current study Instagram users may develop feelings of depression because they

feel they are not successfully achieving the goal of the platform. For example, they are sharing photos on the site, but are not receiving many likes or comments on the photos. According to the theory, the feeling of under-achieving leads to thoughts of subordination and results in a vulnerability to depression [28]. This theory concerning depression could be studied further by asking users how they feel when they receive likes or comments, compared to when they do not. If this theory was accurate in explaining depression symptoms as a consequence of SNS use, users may feel pride and euphoria when receiving likes and comments on their profile, but shame and subordination when they do not.

H2: SNS Usage Will Predict Feelings of Depression Indirectly Through SNS Addiction

The second hypothesis aimed to understand the relationship between SNS usage, SNS addiction and depression. The findings regarding Facebook usage predicting SNS addiction contrast with previous literature [47], but new evidence has been found to support the relationship between SNS usage and SNS addiction. A possible explanation for this relationship, based on previously mentioned theory, is the enjoyment and gratification that users gain when engaging in this SNS. For example, SNS addiction resulting from using Instagram due to gratification may come about from users enjoying the visual aspect of the platform, similar to users receiving gratification from photo sharing on Facebook [48], which may explain why Twitter did not significantly predict SNS addiction, as it is primarily a text-based site and so users may not receive as much gratification reading tweets, and consequently do not develop an addiction to the site. The creation of online Instagram profiles being a potential cause in developing SNS addiction may be related to users gaining gratification by exploring new identities [49], which is supported by research [24] on virtual community gratification, arguing users gain gratification from creating a self-image online that is different to their real life persona. Instagram allows the user the freedom to do this as the user can control which photos they share depending on which self-image it is they wish to promote. Based on uses and gratifications theory, Instagram use can lead to SNS addiction, as the functions available to the user mean they can gain instant gratification from using the site, which in turn could lead to excessive use.

Contrary to previous research [3], the current study did not find that Facebook use predicted SNS addiction. One possible reason for this difference may be due to young people migrating from Facebook to other SNSs, such as Instagram. In just over five years since its launch, Instagram has gained more than 400 million daily active users and reaches 3.5 billion likes daily [35], suggesting people are spending less time on SNSs that have been around for longer, and are moving to newer sites. This provides one plausible explanation for why the current study, which included newer SNSs that have not been studied before along with Facebook, did not find Facebook to be a significant predictor of SNS addiction. A second possible reason for this difference may be methodological differences between previous research and the current study. Previous research [3] used a Facebook scale to measure levels of Facebook addiction. This may have caused a difference in results as using a general Internet addiction scale, as was used in the current study, may not yield the same results.

The implications of these findings in a wider context mean that, like with Facebook, awareness should be raised regarding the possible ramifications of using Instagram excessively, and knowledge should be shared amongst practitioners and through the education system. Raising awareness of using SNSs potentially leading to a behavioral addiction or decreasing mental wellbeing could lead to future prevention.

Conclusion

In conclusion, the current study demonstrated that there is a statistically significant relationship between Instagram use and depression, and Instagram use and SNS addiction. Findings also highlight there is a relationship between SNS addiction and depression. No such relationship existed between Facebook, Twitter and Snapchat and SNS addiction or depression. To the researchers knowledge, this is the first study to test the relationships between Facebook, Instagram, Twitter and Snapchat use together with SNS addiction and depression. Although further research is needed to demonstrate a causal relationship between these variables, these novel findings provide a basis for further investigation, prevention and intervention approaches.

Conflicts of Interest

There are no conflicts of interests to declare.

References

1. Kraut R, Patterson M, Lundmark V, Kiesler S, Mukopadhyay T, Scherlis W. Internet paradox - A social technology that reduces social involvement and psychological well-being? Am Psychol. 1998;53(9):1017-31.

2. Pantic I, Damjanovic A, Todorovic J, Topalovic D, Bojovic-Jovic D, Ristic S, et al. Association between online social networking and depression in high school students: Behavioral physiology viewpoint. Psychiatr Danub. 2012;24(1):90-3.

3. Hong FY, Huang DH, Lin HY, Chiu SL. Analysis of the psychological traits, Facebook usage, and Facebook addiction model of Taiwanese university students. Telematics and Informatics. 2014;31(4):597-606.

4. Banjanin N, Banjanin N, Dimitrijevic I, Pantic I. Relationship between internet use and depression: Focus on physiological mood oscillations, social networking and online addictive behavior. Computers in Human Behavior. 2015;43:308-12.

5. Giota KG, Kleftaras G. The role of personality and depression in problematic use of social networking sites in Greece. Cyberpsychology - Journal of Psychosocial Research on Cyberspace. 2013;7(3). doi: 10.5817/CP2013-3-6

6. Facebook [Internet]. Facebook; 2016 [Cited 2016 Aug 5]. Available from: http://newsroom.fb.com/company-info/.

7. Kuss DJ, Griffiths MD. Online social networking and addiction - A review of the psychological literature. Int J Environ Res Public Health. 2011;8(9):3528-52. doi: 10.3390/ijerph8093528.

8. Andreassen CS, Pallesen S. Social network site addiction - An overview. Curr Pharm Des. 2014;20(25):4053-61.

9. Griffiths MD. A 'components' model of addiction within a biopsychosocial framework. Journal of Substance Use. 2005;10(4):191-7.

10. Kuss DJ, Shorter GW, van Rooij AJ, Griffiths MD, Schoenmakers T. Assessing Internet addiction using the parsimonious Internet addiction components model - A preliminary study. International Journal of Mental Health and Addiction. 2014;12(3):351-66.

11. Kuss DJ, Shorter GW, van Rooij AJ, van de Mheen D, Griffiths MD. The Internet addiction components model and personality: Establishing construct validity via a nomological network. Computers in Human Behavior. 2014;39:312-21.

12. Echeburua E, de Corral P. [Addiction to new technologies and to online social networking in young people: A new challenge]. Adicciones. 2010;22(2):91-5. Spanish.

13. Kuss DJ, van Rooij A, Shorter GW, Griffiths MD, van de Mheen D. Internet addiction in adolescents: Prevalence and risk factors. Computers in Human Behavior. 2013;29(5):1987–96.

14. Kuss DJ, Griffiths MD, Binder JF. Internet addiction in students: Prevalence and risk factors. Computers in Human Behavior. 2013;29(3):959–66.

15. Kim JH, Kim MS, Nam Y. An analysis of self-construals, motivations, facebook use, and user satisfaction. International Journal of Human-Computer Interaction. 2010;26(11-12):1077-99.

16. Barker V. Older adolescents' motivations for social network site use: The influence of gender, group identity, and collective self-esteem. Cyberpsychol Behav. 2009;12(2):209-13. doi: 10.1089/cpb.2008.0228..

17. Kujath CL. Facebook and MySpace: Complement or substitute for face-to-face interaction? Cyberpsychol Behav Soc Netw. 2011;14(1-2):75-8. doi: 10.1089/cyber.2009.0311.

18. Subrahmanyam K, Reich SM, Waechter N, Espinoza G. Online and offline social networks: Use of social networking sites by emerging adults. Journal of Applied Developmental Psychology. 2008;29(6):420-33.

19. McQuail D, McQuail D, Blumler JG, Brown JR. The television audience: A revised perspective. In: McQuail DM, editor. Sociology of mass communications: Selected readings. Harmondsworth: Penguin; 1972.

20. LaRose R, Mastro D, Eastin MS. Understanding Internet usage: A social-cognitive approach to uses and gratifications. Social Science Computer Review. 2001;10(4):395-413.

21. Chou C, Chou J, Tyan NCN. An exploratory study of Internet addiction, usage and communication pleasure. International Journal of Educational Telecommunications. 1998;5(1):47-64.

22. Chou C, Hsiao MC. Internet addiction, usage, gratification, and pleasure experience: The Taiwan college students' case. Computers & Education. 2000;35(1):65-80.

23. Yang SC, Tung CJ. Comparison of Internet addicts and non-addicts in Taiwanese high school. Computers in Human Behavior. 2007;23(1):79-96.

24. Song I, LaRose R, Eastin MS, Lin CA. Internet gratifications and internet addiction: On the uses and abuses of new media. Cyberpsychol Behav. 2004;7(4):384-94.

25. Young K. Internet addiction: Evaluation and treatment. Student British Medical Journal. 1999;7:351-2.

26. Collins PY, Patel V, Joestl SS, March D, Insel TR, Daar AS. Grand challenges in global mental health: A consortium of researchers, advocates and clinicians announces here research priorities for improving the lives of people with mental illness around the world, and calls for urgent action and investment. Nature. 2011;475(7354):27-30.

27. Park S, Kim I, Lee SW, Yoo J, Jeong B, Cha M, editors. Manifestation of depression and loneliness on social networks: A case study of young adults on Facebook. Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing; 2015: ACM.

28. Sloman L, Gilbert P, Hasey G. Evolved mechanisms in depression: The role and interaction of attachment and social rank in depression. J Affect Disord. 2003;74(2):107-21.

29. Vogel EA, Rose JP, Roberts LR, Eckles K. Social comparison, social media, and self-esteem. Psychology of Popular Media Culture. 2014;3(4):206-22.

30. Morrison CM, Gore H. The relationship between excessive Internet use and depression: A questionnaire-based study of 1,319 young people and adults. Psychopathology. 2010;43(2):121-6. doi: 10.1159/000277001.

31. O'Keeffe GS, Clarke-Pearson K. The Impact of social media on children, adolescents, and families. Pediatrics. 2011;127(4):800-4. doi: 10.1542/peds.2011-0054.

32. Ryu EJ, Choi KS, Seo JS, Nam BW. [The relationships of Internet addiction, depression, and suicidal ideation in adolescents]. Taehan Kanho Hakhoe Chi. 2004;34(1):102-10. Korean.

33. Kross E, Verduyn P, Demiralp E, Park J, Lee DS, Lin N, et al. Facebook use predicts declines in subjective well-being in young adults. PLoS One. 2013;8(8):e69841. doi: 10.1371/journal.pone.0069841. eCollection 2013.

34. Chou HT, Edge N. "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives.

35. Cyberpsychol Behav Soc Netw. 2012;15(2):117-21. doi: 10.1089/cyber.2011.0324.

35. Instagram. Instagram press.: Instagram; 2016 [Cited 2016 Aug 5]. Available from: https://www.instagram.com/press

36. Twitter. About Twitter; 2016 [Cited 2016 Aug 5]. Available from: https://about.twitter.com/company/press/milestones.

37. Walker T. The 23-year-old Snapchat co-founder and CEO who said no to a $3bn offer from Facebook. The Independent.: The Independent,; 2013 [Cited 2016 Aug 5]. Available from: http://www.independent.co.uk/life-style/gadgets-and-tech/news/the-23-year-old-snapchat-co-founder-and-ceo-who-said-no-to-a-3bn-offer-from-facebook-8940433.html.

38. Jelenchick LA, Eickhoff JC, Moreno MA. "Facebook depression?" Social networking site use and depression in older adolescents. J Adolesc Health. 2013;52(1):128-30. doi: 10.1016/j.jadohealth.2012.05.008.

39. Young KS. Caught in the net. New York: Wiley; 1998.

40. Widyanto L, McMurran M. The psychometric properties of the Internet Addiction Test. Cyberpsychol Behav. 2004;7(4):443-50.

41. Boysan M, Kuss DJ, Barut J, Bayad A, Aykoese N, Guelec M, Oezdemir O. Psychometric properties of the Turkish version of the Internet Addiction Test (IAT). Addict Behav. 2015. pii: S0306-4603(15)30013-7. doi: 10.1016/j.addbeh.2015.09.002.

42. Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977;1:385-401.

43. Eaton WW, Smith C, Ybarra ML, Muntaner C, Tien A. Centre for Epidemiologic Studies Depression Scale: Review and revision (CESD and CESD-R). In: Maruish ME, editor. The use of psychological testing for treatment planning and outcomes assessment, instruments for adults. 3rd ed. London: Routledge; 2004.

44. LaChapelle DL, Alfano DP. Revised neurobehavioral scales of the MMPI: Sensitivity and specificity in traumatic brain injury. Appl Neuropsychol. 2005;12(3):143-50.

45. Van Dam NT, Earleywine M. Validation of the Center for Epidemiologic Studies Depression Scale--Revised (CESD-R): Pragmatic depression assessment in the general population. Psychiatry Res. 2011;186(1):128-32. doi: 10.1016/j.psychres.2010.08.018.

46. Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. J Pers Soc Psychol. 1986;51(6):1173-82.

47. Hong F-Y, Chiu S-L. Factors Influencing Facebook Usage and Facebook Addictive Tendency in University Students: The Role of Online Psychological Privacy and Facebook Usage Motivation. Stress Health. 2016;32(2):117-27. doi: 10.1002/smi.2585.

48. Malik A, Dhir A, Nieminen M. Uses and gratifications of digital photo sharing on Facebook. Telematics and Informatics. 2016;33(1):129-38.

49. Turkle S. Life on the screen: Identity in the Age of the Internet. New York, NY: Simon & Schuster; 1995.

Corresponding authors: Daria J. Kuss, Nottingham Trent University, Burton Street, Nottingham NG1 4GN, UK, Tel: +44-115-848-4153; E-mail: daria.kuss@ntu.ac.uk.

Elyns Publishing Group
Explore and Expand