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Psychology Extended Essay

To what extent do social networking sites (SNS) usage lead to experience of anxiety in adolescents?

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Introduction

With the rapid development of digital technology, social networking sites (SNS) have become the mainstream medium of communication. Traversing from the original purpose of connecting people to viewing friends' profiles, SNSs are now a primary means of participating in society (Dutton, 2019). According to Anderson and Jiang (2018), 95% adolescents reported having access to a smartphone, and 45% claimed being online constantly. Research has also shown the excessive use of SNS among adolescents, with 51% visiting SNSs daily, and 34% re-visiting their SNSs several times a day (Calancie, Ewing, Narducci, Horgan, & Khalid-Khan, 2017).

Adolescence is a developmental period following puberty, wherein an individual goes through significant biological, psychological and socio-cultural changes, while transitioning into adulthood. Erickson's Theory of Psychosocial Development (1963) suggests that adolescents strive to find their role, belong to a society and fit in. During this time, trying different identities and finding the most suitable one becomes pivotal, which makes them more likely to be involved in social activities.

As mentioned before, in the current digital era, a major part of social interaction happens through SNS. As adolescents mature with the popularity of SNS, they are found to be experiencing problems related to compulsive and excessive SNS usage, possibly to fulfil their current socio-developmental needs. Excessive use of SNS has been related to adolescents' low academic performance (Matthew, 2011) and poor sleep quality (Woods & Scott, 2006). Much to their irritation, adolescents often hear their parents say, "it is all because of that phone", attributing all their problematic behaviours or other supposedly unrelated concerns to their phone usage. Research on parents' perception of their children's phone usage highlighted one of main concerns as "becoming too 'attached' to the internet" (Hill, 2017, p.17). Another growing concern with this population is the increasing prevalence of anxiety, which has become a common mental health issue that affects 31% adolescents (S Siegel, Rebecca & Dickstein, Daniel, 2012). So, is it possible that the increasing prevalence of anxiety in adolescents is due to excessive SNS usage? Are parents valid in saying "it is all because of that phone"?

Since anxiety falls along different categories (general, performance, social) and spectrums of severity, this paper will be exploring adolescents' general "experience of anxiety", which is not limited to clinically diagnosed anxiety. Sadock, Sadock and Ruiz (2015) define anxiety as "a diffused, unpleasant, vague sense of apprehension, the experience of feeling manifested based on threat in the future. And anxiety has been found to have adverse impacts on adolescents, including poor school performance (Mazzone, 2007), increased substance use (Kendall, 2004), even lead to

suicide attempts if adolescents developed an anxiety disorder (Nepon, 2010).

Considering the increasing SNS usage, prevalence of anxiety and impacts both have on adolescents, it is relevant to explore the question, “To what extent do social networking sites lead to the experience of anxiety in adolescents?” In answering this, the focus will be on whether there is evidence for a causal relationship between the two variables.

This paper through the exploration of contradicting evidences (Hunt, Marx, Lipson and Young, 2018; Farahani, Kazemi, Aghamohamadi, Bakhtiarvand and Ansari, 2011; Coyne, Rogers, Zurcher, Stockdale and Booth, 2019), concludes that SNS usage leads to an experience of anxiety only to a certain extent, when **not** mediated by third variables or mediating factors such as fear of missing out (Przybylski, Murayama, DeHaan & Gladwell, 2013; Thomée, Dellve, Härenstam & Hagberg, 2010), social rejection (Sampasa-Kanyinga & Hamilton, 2015; Leary, 2015; Cacioppo, Frum, Asp, Weiss, Lewis & Cacioppo, 2013) and social comparison (Soomro & Ahmad, 2017). Additionally, it concludes that restricting SNS usage in adolescents exacerbates anxiety (Skierkowski and Wood, 2012).

Cause-effect relationship of SNS and Anxiety

Hunt et al. (2018) conducted an experimental study with the aim of investigating whether excessive SNS usage caused mental wellbeing, including depression, loneliness, fear of missing out and anxiety. 143 undergraduate students from the University of Pennsylvania (108 women, 35 men) were recruited. Social media use was measured through iPhone battery usage, which displays total minutes of each application (Facebook, Instagram and Snapchat) that is actively open on the screen per day. Participants were instructed to send screenshots of this to the researchers daily throughout the course of the research. Several psychometric tools were used to measure the participant’s wellbeing weekly, including the Spielberger State-Trait Anxiety Inventory (STAI-S; Spielberger, Gorsuch, & Lushene, 1970) to measure anxiety level. Following a week of baseline surveys of wellbeing and normal usage of SNS, participants in the second week were divided into two groups. The intervention group was told to limit usage to 10 minutes per platform per day for the next three weeks, and the control group continued to use SNS as usual. A month later, participants were to complete a one-time follow-up which included a final wellbeing survey and screenshot.

The results showed a significant reduction in loneliness and depression in the experimental group. However, anxiety was seen to have a statistically significant modest decline over baseline in both groups. Researchers posit this as a result of self-monitoring. One of the participants quoted “I was in the control group and I was definitely more conscious that someone was monitoring my

usage. I ended up using less and felt happier...” Since both groups’ SNS usage decreased, the research implies that reduction of SNS usage lead to a reduction in anxiety. Having said that, there seems to be a weak causation between excessive SNS usage and anxiety.

Unlike other researches conducted in this field of investigation, the independent variable was objectively and quantitatively measured, which makes the measure of IV reliable and allows for standardisation. Nonetheless, participants can still use alternative devices such as laptops and tablets to access SNSs, which may confound the results. Not controlling this variable so strictly is with respect of participant autonomy and not invading privacy any further. In terms of the dependent variable, the use of self-reported psychometric tools makes the measure of the DV highly subjective, allowing for biases to affect the reliability of the results.

Since the general perception of SNS is negative, it is not difficult to guess the nature of the research; the co-occurrence of the two variables can lead to demand characteristics. The rebellious nature common to adolescents may lead to screw-you effect, wherein they try to prove that SNS does not have negative effects, especially shown by the control group. It might have also been perceived to be socially desirable to show self-regulation since their SNS usage was being observed by their professors. Belonging to an elite university, participants may desire to uphold the stereotype of a hardworking student. In addition, the research lost 79% of participants largely due to absence of incentive at the followup stage, meaning the result and conclusion is only based on around 30 subjects, reducing the generalisability.

Although a modest causal relationship was established, the lack of representation and reliability of the results can make one question the predictive validity of the conclusions. One cannot absolutely predict that every adolescent that uses SNS will experience anxiety, which is also supported by the lack of research triangulation.

Positive Correlation between SNS and Anxiety

Although not many researchers have found causal relationship between the two variables, there are a significant amount of research supporting a positive correlation. One such research conducted on Facebook usage and anxiety is Farahani et al. (2011). Samples in the study were recruited through availability sampling, and included 265 bachelor students studying in Azad Universities in Iran, with a mean age of 21. Researcher-made demographic questionnaire was used to assess participants’ Facebook use frequency and the Depression, Anxiety and Stress Scales (DASS-21) was used to assess depression, anxiety and stress (Lavibond & Lavibond, 1995). DASS-21 has

established good reliability and validity (Samani S., Jokar B., 2007). Researchers compared the anxiety of Facebook users and non-Facebook users. Result shows, the correlation coefficient of using Facebook and anxiety was 0.44 (moderate positive correlation), which was found to be statistically significant. T test results of comparing anxiety in Facebook users and non-Facebook users showed a significant difference between the two groups, with the Facebook users scoring higher in the DASS-21 anxiety subscale. This leads to a conclusion that there is a positive correlation between rate of using Facebook and experience of anxiety to a certain extent, since the correlation was only moderate.

A major strength of this research is that it avoided ascertainment bias by recruiting both Facebook users and non-users, increasing the reliability of the findings. However, samples were all from Iranian culture, which makes the research findings lack cross-cultural validity. Besides this, whether 21-year old Iranian students are considered adolescents is debatable; Iranians' maturity age might be younger because it is common to see 15-year old girls being married in their culture (Momeni, Djamchid A, 1972). It gives a potential implication that regardless of maturity and age, people who use excessive SNS are likely to experience anxiety. Furthermore, Iran as a collectivistic culture, people tend to think of the larger good. Expressing symptoms of mental illnesses can be seen as an emphasis on personal experiences, which could explain why only a moderate correlation was found. There may be a reporting bias involved due to cultural norms and stigma. If it was conducted on an individualistic culture, could the significance value be higher?

Since a majority of findings between SNS usage and experience of anxiety are correlational, the major issues include bidirectional ambiguity and the third variable issue. It is unclear whether SNS use leads to the experience of anxiety, or the opposite (Dobrea, Anca, & Costina-Ruxandra Pasarelu, 2016). It is also unclear whether there are other variables that influence this relationship. These areas of uncertainty imply again that not every individual that excessively uses SNS will develop anxiety, and even if there is a correlational trend in the general population, these trends may be influenced by other variables.

The longitudinal research conducted by Coyne et al. (2019) argued that there is no causation between SNS usage and anxiety, rather there are mediating factors in this relationship, confirming the third variable issue in the relationship. 500 participants were studied for 8 years since the age of 13, collecting self-reports of average daily SNS usage on a yearly basis. The six-item generalized anxiety disorder subscale from the Spence Child Anxiety Inventory was used to measure participant anxiety. Even though participants' daily SNS usage ranged from a minimum of one hour to a maximum of eight hours, which had increased over the course of the research, there were no

associations found between participants' SNS usage time and anxiety. Researchers said, "mental health is a multi-process syndrome where no one stressor is likely to cause anxiety". Through their in-depth analysis, researchers concluded that it was not the amount of time that the adolescents spent on SNS, rather the way they are using it, which makes someone more prone to experience anxiety. One of the ways that was outlined was active versus passive use of SNS, suggesting it was better to like, comment and post than to just passively scroll. The effect of social desirability bias would be less significant in this research because one is less likely to gloss over as socially desirable for 8 years.

Although this research has not identified any specific mediating factors, fear of missing out, social rejection and social comparison could potentially play a mediating role in this relationship, considering each of their relationship with both SNS usage and anxiety. The following section will discuss research to support the same.

Fear of Missing out

The key features of social media especially on mobile phones are portability and flexibility; these features lead to a demand and expectations of constant connection to a virtual society. People's dependency to phones were described as compulsive behaviors, which results in a feeling of detachment when not accessible (Thom   et al., 2010). The fear of missing out is defined as a pervasive apprehension that others might be having rewarding experiences when one is absent. (Przybyski et al. 2013) These researchers investigated whether Facebook engagement would be positively correlated to FOMO scores. Samples were 87 university freshmen, including 20 men and 67 women. The 10-item FOMO scale was used to measure respondents' level of FOMO. Participants were required to answer questions on Facebook usage during key times of the day in reference to their past week in an eight-point Likert scale. Values were summed to form a Facebook engagement score for each participant. The result showed FOMO was positively correlated to Facebook engagement at key times in the day. Those of high engagement in Facebook, who use it immediately when awake and before sleep were associated with high FOMO. A compulsive concern of missing out social interaction and behavior of constantly checking SNS due to FOMO made adolescents experience anxiety.

Somatic symptoms such as sleeping disorders and its relationship with FOMO and anxiety was also found in a qualitative interview study conducted by Thom   et al. (2010) with young adults. One of the participants who had symptoms of sleep disturbance expressed constant concern about SNS messaging at night due to their FOMO. The ICD -10 categorized trouble sleeping as a

symptom of Generalized Anxiety Disorder, which suggests that an individual who experiences FOMO and engages in high SNS usage, is likely to experience anxiety. This shows that FOMO is a mediating factor between SNS usage and experience of anxiety.

However, interview as a methodology is reliant on self-reported qualitative data from participants, which can be biased, leading to lack of credibility. Since the inclusion criteria for Thomé et al., (2010) is to have high SNS usage and confirming having symptom of anxiety, there is a possibility of demand characteristics; participants were likely to try to link the two inclusion criteria by doing illusory correlation. Also, there was no mention of reflexivity in the journal, which is vital for qualitative analysis; as researchers themselves were mobile phone users, their own subjective experience can interfere the credibility of the analysis. While it still shows the mediating role of FOMO between SNS usage and anxiety, more quantitative research should be conducted.

To tackle excessive SNS usage or “phone addiction” as perceived by parents and schools, a common measure taken is restricting adolescents’ time accessible to phones. However, Skierkowski and Wood (2012) conducted a field experiment to verify whether restricting phone usage truly reduced anxiety. Participants, 16 men and 16 women aged 18-23, were identified as high or low messaging users, then randomly divided into 3 or 5 day period of restricted texting (short messaging service) on any SNS platform. The experiment started on Monday to avoid weekend effect since university students are more likely to contact friends during weekends, which can also avoid confounding variable and avoid exaggerated non-compliance. During restrictions, participants are required to complete a survey at 7 p.m. each evening regarding their desire to text, report non-compliance honestly and an open-ended question that allows participants to describe their experiences during restrictions qualitatively. Anxiety was also measured in every survey sent out during baseline and restriction using a self-report scale. Although result does not show statistical significance, researchers found 34.8% of the participants reported their existing relationships had deteriorated in the absence of texting. Qualitative responses about participants’ feelings on the initial day of restriction includes: “I felt like I was separated from the world”; “I hated it because it made me feel anxious and lonely” “isolated”. For 5-day group, most participants reported anxiety about texting restriction.

This research has a very limited sample size because the experiment was conducted over a few days, and might cause inconveniences and restricts participant autonomy because so much communication is based on online texting, which limits generalizability of the results. Since a major function of SNS is texting, Skierkowski and Wood (2012) shows FOMO has exacerbated and lead to more intense experience of anxiety when texting is limited. The study then suggests that while excessive usage can positively correlate with anxiety, excessive restriction of it may also positively

correlate with anxiety. One can also question whether this experience of anxiety upon restriction, is a symptom of withdrawal, as seen in other addictions. Regardless, this research can be a helpful lead for further research, parents and schools to tackle excessive SNS use in adolescents.

Social Rejection

Humans have a fundamental need to belong, which SNS allows to fulfil. However, the SNS environment is not always peaceful. Cyberbullying is an antisocial behavior that often consists of social rejection, intimidating and insulting others online, (Oxford). Sampasa-Kanyinga and Hamilton (2015) confirmed the mediating role of cyberbullying between SNS and psychological distress. Sample included 5126 Canadian adolescents (11-20 years old, 48% female and 52% male), who had completed a mental health survey (OSDUHS). The result can predict adolescents' experience of anxiety, because as adolescents start to internalize insulting comments, trauma, rejection and fear of social interaction, anxiety can be developed. Cacioppo et al. (2013) investigated neural responses of participants when reliving an unwanted romantic rejection online using fMRI. Result indicated activation in the medial frontal gyrus, which activates the same part of brain when one experienced rejection in reality. A systematic review done by Leary (2015) shows social rejection can increase anxiety.

Although cyberbullying and romantic rejection can be seen as an extreme form of social rejection, SNSs allow this to occur naturally through the display of number of likes and hits of an individual's post. This very nature of SNS can put users into apprehension, and it is this uncertainty of whether one is going to be accepted or rejected, that can lead to anxiety when using SNS.

Social comparison and decreased self-esteem

As mentioned before, SNSs have created an environment that allows for social comparison. Features of SNSs such as 'people you may know' allow adolescents to view posts of others from both in-groups and out-groups. Public's reaction to a post, number of "likes", positive comments and number of friends have all become indicators of one's popularity on SNSs. Social categorization can potentially be based on popularity; individuals with more likes are viewed as the "socially attractive" group, whereas those with less likes as "socially unattractive".

A research conducted by Soomro & Ahmad (2017) demonstrated that high usage of social media results in lower self-esteem among adolescents. Samples were 150 adolescents (18-25) recruited through convenience sampling. The researchers used questionnaire that measures the frequency and reasons behind their Facebook usage, as well as whether respondents make

comparisons with other users. Self-esteem was quantified using Rosenberg's Self-esteem Scale. A finding drawn from the results is that approximately 88% of respondents engage in social comparisons on Facebook, and amongst these 88% participants, 98% showed upward social comparisons, which involves comparison with those who are better off. This makes people feel inferior and have negative evaluations of themselves (Morse & Gergen, 1970). Also, researchers found a significant strong negative correlation (-0.933) between time spent on Facebook and self-esteem. The study disclosed one hour spent on Facebook daily results in a decrease in the self-esteem score of an individual.

To explain this phenomenon with reference to anxiety, receiving less likes categorizes individuals as "socially unattractive", which makes adolescents desire to leave and belong to a "socially attractive group", so as to achieve positive distinctiveness. Posting is an opportunity to change social group status; while adolescents' mental state can be manifested by a threat that if there was not enough social response to the post, they will still stay in the negative social group. On top of that, decreased self-esteem by continuing upwards social comparison or receiving negative response can intensify the apprehension of getting negative response to the post, making adolescents more prone to experience anxiety. Secondly, human nature of showing only positive sides and highlights of life on SNS can lead to a misconception and skewed sense of normalcy, making adolescents feel worse off when doing social comparison of idealized lifestyles with their reality. This creates high standards for individuals to achieve positive distinctiveness through social comparison, which may not be possible, hence increasing the opportunities of experiencing anxiety.

Clearly, a social networking application, Instagram, owned by Facebook is aware of how number of 'likes' are detrimental to Instagram users' mental well-being due to social comparison. Instagram made a new feature of hiding number of likes, showing as 'Lucy and others liked this post' so as to reduce social comparison. (Yurieff, 2019)

Positive effects of Social Networking Sites

SNS is a double edge sword, although this essay has investigated that SNS can provide platforms of social rejection, comparison, cyberbullying, which eventually leads to the experience of anxiety, we still need to acknowledge benefits of SNS. SNS allows individuals to share problems at times of stress and obtain social supports, which can improve one's psychological wellbeing and health (Uchino, Cacioppo & Kiecolt-Glaser, 1996). More friends can lead to satisfaction with life and psychological well-being since SNS can compensate individual's loss of relations in real life with friends on SNS (Lee, Lee, & Kwon, 2011). Other than these, SNS has helped building social relationships for introverted personalities when they found it difficult to initiate conversations in

real life (Amichai, Hamburger & Vinitzky, 2011) SNS usage is mediated by self-disclosure, which can be seen by Facebook function of building profiles, this can lead to well-being of individuals due to sense of belonging associated with SNS (Morrow, Ross, Grocott, & Bennett, 2010). However, it is hard to say whether this sense of belonging can again lead to dependent and addiction of SNSs.

The primary methods used in the researches reviewed were self-reporting tools for both independent and dependent variables, which allow for social desirability and demand characteristics. Another drawback was the predominant use of university students, who are young, affluent, verbal, intelligent and social, which is a sampling bias. These two drawbacks in methodology reduce the reliability of the findings. Additionally, most adolescent samples have grown up with dependence on SNS, fostering the need for instant gratification. Dopamine has been associated with this instant gratification, which over time, may lead to an addiction in users due to increasing requirement of dopamine to experience gratification (Weinschenk, S. 2012). While in the world of digital divide, there are adolescents who have no access to SNS. Whether the SNS deprived population would also desire for such instant gratification is a significant direction for future investigation. Is the prevalence of anxiety in SNS deprived societies the same? Would having lesser access to SNS make them less vulnerable to the experience of anxiety?

Conclusion

The relationship between the two variables central to this paper are not a linear causal relationship to a large extent, meaning that one cannot predict every individual that uses SNS to experience anxiety or even develop a clinical disorder. Although positive correlations found can suggest that both excessive SNS usage and restricted SNS usage can lead to anxiety, there are limitations due to bidirectional ambiguity and the third variable issue. Researches have found different potential intermediate factors in the relationship, which have led a portion of SNS users to be more prone and vulnerable to experience anxiety when compared to other users. To conclude, SNS usage leads to an experience of anxiety only to a certain extent when **not** mediated by other variables such as FOMO, fear of social rejection and social comparison. This conclusion then calls for further research to be conducted in order to establish a comprehensive model, indicating the relevant mediating factors between SNS usage and the experience of anxiety. This would then provide further clarity for parents and schools to prevent adolescents misuse of SNS and subsequent negative impacts.

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