

Social Media Addiction and Consequences in Adolescents

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Abstract: Social media usage has become increasingly prevalent in adolescents, which contributes to proliferation of addictive behaviors around social media. Addiction of social media not only causes negative physical symptoms, it also brings negative psychological problems for adolescents. Excessive use of social media can result in poor sleeping quality, even insomnia, which is positively associated with having general anxiety disorder or depression. Insomnia, anxiety and depression can all be in the way of adolescents' development in academic performance and social media functioning. Studying the adverse effects of social media addiction of adolescents is helpful for understanding the significance of scientifically controlling the time spent on social media for adolescents. Previous studies use cross-sectional design. However, longitudinal studies will be helpful in terms of understanding the long term effects of social media addiction. Also, previous studies seldom consider the interplay between different consequences. The interaction between different consequences of social media addiction and how it affects the individual requires further investigation.

Keywords: Social media addiction, insomnia, depression

1. Introduction

During recent decades, the usage of social media has become more and more prevalent among not only adults, but also children and adolescents. While the prevalence of social media makes communication more convenient and accessible for most people, the overuse of social media also triggers the attention of both the academia and the general public. In the most extreme cases, excessive use of social media could lead to social media addiction (SMA), which can be influential towards people's lives.

The term social media addiction (SMA) can be synonymous with many other words, online social networking addiction, problematic social media use and compulsive social media use [1] [2]. Adapting from the definition of online social networking addiction, the definition of SMA is the compulsive usage of social media [1]. A more specific definition to this phenomenon would be a flawed social media use characterized by either symptoms that conform to standards for addictive behaviors and decreased level of self-regulation [2]. Basically, all definitions of SMA and its synonyms are focused on the compulsive nature of this type of social media use. It falls under the category of problematic Internet use, which is used to describe the maladaptive use of the Internet that is described as an impulse-control disorder [1]. Thus, SMA is in its nature an impulse-control disorder that involves the difficulty or inability in controlling their behaviors of using social media.

Research regarding the impacts of social media usage has increased exponentially in the last decade. Much research was devoted to investigating the mechanisms for SMA. Researchers tried explaining the cause of SMA from a dispositional difference's view, the view of motivations, the view of biology and neuroscience, the view of decision making, the perspective of technology use, the view of learning theory and using internet models [2]. Some of the important theoretical frameworks that can be applied to this problem include attachment theory, self-determination theory, social learning theory, uses and gratification theory, classical conditioning of learning [2]. A number of things that can serve as predictors for SMA. Fear of missing out, anxiety, avoidant attachment, extraversion, neuroticism, narcissism, lacking in intrinsic psychological needs, and other factors can all contribute to a greater chance of having SMA [2]. These theories approach SMA from a variety of angles, however, they all have a singular way of approaching the problem. Little research explained the complexity of this issue by integrating the theories of other researchers. Also, while there has been abundant research in explaining the predictors of SMA, there has been little systematic review on how SMA affects adolescents.

Since SMA can have a significant effect on adolescents, in this review article, how SMA affects adolescents both psychologically and physically is investigated. Many studies found correlations between SMA and adolescents' sleeping quality. Common sleep problems that adolescents face when addicted to social media includes poor sleeping quality and insomnia. There is also research that looks at the underlying mechanism of sleep deprivation from SMA. In addition to these research, some other researches investigated the associations between SMA and the development of some mental disorders like general anxiety disorder and depression which becomes increasingly common within today's adolescent population. Some studies look more deeply into the mechanisms behind these associations. They explained anxiety and depression with possible theories. Last but not least, there is also research about how these psychological and physical impacts will further influence adolescents' social functioning in academics and relationships.

2. Negative Consequences of SMA on Teenagers

As research on social media proliferated exponentially, much research has put their focus on the negative consequences of SMA. Throughout these years, researchers have successfully identified a series of physical and psychological problems.

2.1. Physical: Insomnia

Social media use was identified by studies to be associated with a greater chance of getting sleep disorders, like insomnia [3]. Insomnia found to be correlated to the duration of social media use. Some research have identified that adolescents that spend time on social media for over one hour every day have a greater chance of developing insomnia [4] while other studies didn't find similar results [5]. However, most studies found consistently that using social media for more than five hours or more every day is significantly associated with sleep deprivation [4]. From the result of previous studies, it's unclear whether moderate levels of social media use, like spending one hour every day on social media, would result in insomnia. The findings that excessive use of social media, which means using social media for over five hours per day, is associated with insomnia as well as bad sleeping quality are reliable across different studies.

There are a few theories that explain how SMA might lead to insomnia. The first one is based on the interplay between light and circadian rhythms. Research has found that the light given by electronic devices could disrupt the circadian rhythms by decreasing melatonin secretion, which could lead to insomnia and sleep deprivation [6] [7]. SMA means excessive exposure to electronic devices and artificial lights. The circumstance could worsen as addicted individuals' tolerance, which is the

progress of increasing the duration of time people consume on social media to obtain satisfaction, increases, because a higher tolerance means that the adolescents would spend a longer time with social media and have more exposure to electronic devices that give away blue lights [4]. Thus, the addicted individuals are more likely to have sleep problems like insomnia and sleep deprivation.

Studies have discovered that the usage of social media before time for bed was correlated to insomnia [5]. The more people use social media before bed, the shorter their sleep is at night. Meanwhile, their sleep onset latency and pre-sleep arousal increases [5]. In other words, these individuals will be more excited before bed, which means it would be harder for them to go to sleep. At the same time, it would take them a longer period of time for them to fall asleep from full awakeness.

3. Psychological

3.1. Depression

3.1.1. Phenomenon

Even though many studies have pointed out that SMA can be used to predict depressive symptoms, whether SMA can cause depressive symptoms remains a controversial topic. Previous studies have identified depressive symptoms as a possible negative outcome of SMA [4] [8] [9]. However, there has still not been robust evidence that the social media use can cause depression or any one of the depressive symptoms. Some research even discovered that social media use for purposes of communicating with friends and family will lead to a decline in depression [8]. It may be true that connecting with family and friends can improve social media users' mental wellness. However, communication is not the only function that social media offers. Other than communicating with friends and family, social media also allows people to share their fragments of life, their thoughts and feelings, which could have opposite effects. To conclude, SMA is associated with a greater risk of developing depression.

3.1.2. Mechanism

Since depression among adolescents has drawn the academia's attention over the last decade, more studies are dedicated to the predictors behind depressive symptoms.

Some studies proposed that the reason why SMA might be correlated with depression was that the representation of individuals through the Internet is altered in the best possible way [9]. In simpler terms, Internet users always choose to present the best part of themselves on social media, which could lead to biased conclusions of who the person is by other social media users. People will have an altered perception of other people's physical appearance, educational level, intelligence, moral integrity, financial power, level of life satisfaction which could lower their self-esteem after comparison [9]. For example, one study conducted in Utah found that more frequent Facebook-using college students possess higher possibilities to perceive other people's lives to be happier than theirs. Also, they are more likely to feel that "life is unfair" [8]. Although thinking other people's lives are happier than their own doesn't necessarily mean the development of depressive symptoms, it still serves as an important reason for the appearance of depression.

Although there has not been any experimental studies on the association between SMA and depression that clearly proves causality, many correlational studies have been conducted and have found significant results. In a study that is conducted on 972 high school students in Thailand, a significant relationship was discovered between Facebook addiction and depression [10]. Similarly, two studies in China found statistically significant relationships between SMA and depression [1] [11]. The discoverance of statistically significant correlations between SMA exists all over the world.

There are results from not only Asian countries like China and Thailand, but also European countries like Hungary and Germany [1] [9] [10].

While most studies come to similar conclusions with the association between SMA and depression, they found relatively different mediators. For instance, in a Chinese study, they found statistically significant results for insomnia as a mediator [1]. Other mediators include low life satisfaction, feelings of jealousy and less healthy social relationships [2].

Insomnia is found by some studies to be the mediator for SMA and depression. The research conducted by Li et al. found a relatively large effect size for insomnia to be the mediator for social media addiction and depressive symptoms [1]. The findings indicated that SMA for adolescents would increase the likelihood of insomnia, which then increases the vulnerability for depression. A research conducted by Harbard explained why insomnia is associated with SMA. Excessive exposure to social media through electronic devices disrupts the sleep-wake cycle of teenagers, increases their pre-sleep arousal and sleep onset latency, contributing for a greater chance of insomnia [5]. While SMA can lead to insomnia, insomnia is also associated with developing depression. Research has found that sleep deprivation for over two weeks is associated with a greater risk of depression in the next three years [6]. When individuals lack sufficient sleep, their response to negative emotions will intensify, thus more likely to develop depressive symptoms [6].

At the same time, another study found rumination to have mediating effects for the relationship between SMA and depression [11]. The definition of rumination is repetitive ideas and movements that are about the causes as well as the outcomes of the history of personal suffering [11]. The study identified the effect of rumination as the mediator for SMA and depression. Rumination can be triggered or reinforced by the usage of social media. For instance, built-in functions of social media, like sharing users' thoughts and getting feedback from other users, help users to repeat whatever thoughts they had in mind. SMA itself is a repetitive form of behavior that imprison the users inside the loop of constant browsing through the same content. At the same time, numerous studies have found that rumination is correlated with the development of depression because rumination strengthens negative moods [11]

3.2. Anxiety

3.2.1. Phenomenon

Like depression, generalized anxiety disorder is also one of the most prevalent disorders among children and adolescents [3]. With that being said, the percentage of young people who have anxiety continues to increase in the last few decades. The definition of generalized anxiety disorder is continuous and excessive worries of things in life. Generalized anxiety disorder includes a series of issues, including health, money, education, appearance, status, family etc. Individuals who suffer from generalized anxiety disorder find it hard to control their worries. They might worry about the circumstances that are worse than the actual situation without apparent reasons.

As discussed before, one of the predictors of depression is poor sleeping quality and insomnia, which could be caused by SMA [1]. There have also been studies that identified the predicting effects of poor sleep quality and insomnia for anxiety during adolescence [3]. Researchers worldwide have discovered that social media usage and anxiety have significant associations [12] [13]. The length of time people consumed on social media as well as the frequency of social media usage were discovered to be strongly correlated with adolescent anxiety [12] [13]. No matter what the measurements are, what is clear is that heavy usage of social media, including SMA, is correlated with anxiety in the adolescent population. One mediating factor of the association between SMA and anxiety could be insomnia and poor sleeping quality. However, the mediating factor of SMA and anxiety still requires more research. Currently there is no study that has conclusions about the effect size of sleeping quality

as the mediator of the association between SMA and anxiety. At the same time, the direction of SMA and anxiety also needs more research. Previous research not only identified the predicting effect of SMA on insomnia, but also found anxiety to have effects of reducing sleep quality. The interplay between SMA and anxiety requires more attention in the future.

3.3. Other Consequences

The physiological and psychological negative consequences of SMA could further influence other aspects of life, in terms of academic performance, social relationships and potential behavioral deviations like substance abuse or suicide [4]. For adolescents, depression and anxiety are associated with lowered academic performance, increased rates for students to drop out of school, lowered quality of social relationships, proliferated possibility of consuming alcohol and using drugs and increased possibility of self-harm or suicidal behaviors [4]. Poor sleeping quality and insomnia also have influences on children and adolescents' academic performance and ability to engage in social relationships [7]. To be more specific, lack of sleep contributes to worse performances in processes of memorization and concentration, which could negatively influence academic performances [7]. At the same time, insufficient sleep could lead to a decrease in abilities of emotional regulation as well as behavior regulation, which harms individuals' abilities in maintaining social relationships and engaging in social interactions.

4. Limitations and Future Research

Similar to research conducted on the causes of SMA, even though research about the consequences of SMA were diverse in terms of their perspectives and focuses, they seldom go beyond their own scope of reasoning and investigate the impacts of SMA on adolescents from a comprehensive perspective. Few researchers consider reviewing the interplay between different physical, psychological and social consequences. Whether these consequences develop independently or whether there are causal relationships existing between these consequences requires further research. Also, most studies investigate only the effects of individuals. For instance, current research only acknowledges maladaptive symptoms of SMA like insomnia, depression, general anxiety disorder and impaired academic and social performances, which are only predictive for individual adolescent's future performance [4] [8] [9]. Further research could look more at SMA as more than an individual problem, but as a pervasive phenomenon that has penetrated through the society and weaved into the popular culture, especially into the everyday lives of the adolescent demographic. How SMA is viewed as a problem on the society level contributes insight into how the new ways of distribution of knowledge and media creates novel challenges for the society as a whole in terms of adapting to the Internet and social media as the new way of communication. Furthermore, most research applied a cross-sectional design. In the future, research on the consequences of SMA requires more research with a longitudinal study design to get a better understanding of how the adverse effects of SMA unfolds on adolescents over a longer time span.

5. Conclusions

In this article, how SMA affects adolescents psychologically, physically and socially was reviewed. In terms of physical consequences of SMA, SMA could lead to insomnia and poor sleep quality. As for psychological consequences, SMA predicts an increased probability of depressive symptoms as well as anxious symptoms. Both the psychological and physical consequences contribute to further negative consequences in academic performances and social relationships. This review article investigates the negative consequences of SMA, providing a comprehensive view on how excessive use of social media can impact adolescents' development. Current research is still limited to the

perspective of individuals. Future research can expand on this review article and investigate more on the social and cultural implications of SMA. Also, building on cross-sectional research, future research of SMA could apply more longitudinal designs.

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