

Correlation of Social Media Usage With Depression: A Systematic Review

Manav Kalra, Bhupinder Kaur*, Gagandeep Kaur, Anshu Vashisth

Lovely faculty of Technology and Sciences

Lovely Professional University, Phagwara, Punjab

manavisright@gmail.com , bhupinder.23626@lpu.co.in

gagandeep.23625@lpu.co.in , anshu.23500@lpu.co.in

Abstract - The aim of this paper is to review the current literature available on Social Media/ online networking use (SMU) and its psychological impacts such as distress, anxiety etc, to find a relation in them. After meta-analysis of literature found on various journal's online to find relation in time and frequency of SMU and distress, anxiety etc. We came to the conclusion that there is no direct correlation into time utilized on SMU and distress, anxiety and other mediating factors such as motives behind the use of Social Media, sociodemographic characteristics, financial status of an individual etc. need to be examined in further studies. Also more longitudinal studies needs to be performed in contrast to the most cross- sectional studies performed in the past.

Keywords: SMU, problematic SMU, SMU frequency, social-inviolability, psychological impacts, distress, anxiety

1. Introduction

During the previous decade, web-based life locales have significantly changed the manner in which we collaborate with one another today. Because of the predominance of web-based life in the everyday existence of everybody and its huge measure of clients, it is an imperative to examine the connection in time utilised via web-based networking media and its mental impacts from general well-being point of view. Online networking is likely the most prevalent way for people to connect with each other across different continents and time zones. According to a Pew Research Center poll, 97% of teenagers reported using at least 1 of the 7 leading Online networking platforms (Facebook, Twitter, Tumblr, Reddit, YouTube, Instagram, Reddit) and those are online many times a day they were 90% reported.

Social Media Sites

Social Media sites as characterized by Boyd [2], from that point will be characterized in this investigation as sites which enable clients to make an open or semi-open profile, interface

with different clients whom they might know and peruse and navigate through profile of different clients with whom they have associated.

A. Social Media Sites and its psychological impacts

Many researchers tried to tackle the task of finding correlation in the two and their findings suggest that the relation in the two is complex and could be related with multiple behavioral, psychological, social and individual characteristics. That is, there could be some underlying variable controlling the relation in the two: such as, gender, age, sociodemographic, drug history, educational level, financial status or the encouragements behind the use of Online networking which could affect this relation instead of just the time alone spent on Online networking.

While some found that the correlation in time utilised on Online networking and its psychological well-being was positive i.e. it helped to increase social capital, self- esteem or life satisfaction [3][4] and a massive body of research has found that more the time utilised on Online networking, it affected psychological well-being of an individual negatively, i.e. high scores on depressive and anxiety tests [5][6]. And on the other side some authors suggest that there is no direct correlation into time utilised on Online networking and distress and/or anxiety and it may actually be impacted by other outer factors such as encouragement behind the use of the user [7]. Online social-intercourse has been characterized by Boyd [8] as procedure of creating and with a virtual community of people with whom they may or may not know offline.

According to Huang [7], the motives behind the use of social-intercourse sites falls under one of these four categories- (1) It could be used to maintain offline relations and not to interact with strangers, solidifying pre-existing relations and thus having a positive effect on a user's psychological well-being. (2) It could be used to replace offline communication of a user with family and friends and thus having ~~not~~ positive impact on psychological well-being of a user, as strong social ties of a user are replaced by weak ties. (3) Third model suggests that the relation in Online networking use and psychological well-being is influenced by the personal characteristics of an individual, such as its impacts were positive for extroverts and negative for introverts [9].(4)While the fourth position asserts that online networking use isn't identified with mental prosperity of a client and the relation in the time utilised via web-based networking media and life fulfillment is zero [10].

B. Motives behind this study

Despite the numerous benefits offered by Online networking: such as easy communication, exposure to current events and enhancement of social network, it is constantly being criticized for its potential negative psychological impacts on teenagers and general masses.

Sadness is the chief reason for disability around the world. The proposed relation in distress/anxiety may be explained by the Problematic SMU of an individual. In this review we will further analyze how Online networking use of an individual can influence the depressive and/or anxiety symptoms of that individual and how other mediators of this relation come into play. Up to date, there has been no conclusive answer as to if use of Online networking is beneficial for one's psychological well-being or if it is harmful [11].

2. Literature Review**A. Social Inviolability**

Human beings, being incredibly social species, it is in our nature to socially connect with others and form meaningful relations [12]. Ebstein [12] goes on to suggest that distinct human characteristics such as empathy, love, trust, music etc. are partially hardwired in human brain. Gilbert [13] takes this idea further and describes when a person experiences a feeling of inviolability in his relations, it positively alters his choices, beliefs, and feelings. Gilbert [13] described Social inviolability as a one's ability to faith that the world is secure and emotionally enthusiasm place [14]. They discovered that individuals who experienced the safe and warm world at a younger age further went to develop greater motives for social connection later in life. People who did not acquire these warm and safe experiences struggle with trust attachment and belongings [14]. Based on this research, Gilbert the "Social Inviolability and Pleasure Scale" [15].

B. Social-Inviolability in relation with Distress/Anxiety

Gilbert tested the Social Inviolability scale with respect to the Distress, Anxiety Stress Scale (DAS – 21) [13]. His result indicated a inverse relation in Social Safety and Depressive and Anxious symptoms in a individual. He concluded that people with high social safety had lower feelings of DAS and people with high social safety were more secure. Gilbert & Kelly applied this theory in experimental study in 2012 and found that their results aligned with their hypothesis and there was high correlation into distress and social safety but it was not so strong in anxiety and social safety.

C. SMU

Online networking and social- networking sites are media for virtual communication in internet which forms virtual groups. These media permit the people to create their online profiles which enable users to communicate with each other via online posts, text messages, comments, likes, videos, blogs, chat-rooms etc. Such type of communications are shooting up extensively the lives of peoples. Studies have found that it is occupying major part of everyone's life especially adolescents, teenagers and children's [16]. Recent literature tried to focus on how these social network sites affect people psychology and results indicated both advantages as well as disadvantages of using SNS (social-intercourse sites), depending upon the user using them and their motives for using them [17] & [18]. For example, SMU has been correlated with an increase in a person's social network increase in self regard and social connectedness alike.

D. Problematic SMU

Remunerating nature of Online networking has been connected with its inordinate utilize, for example, it's over the top checking and commitment with locales and it has been proposed by investigate that it can lead individuals to become Problematic Online networking subscribers. Dangerous clients make them separate attributes, for example, –

They have a high encouragement to get busy with social sites. They put enough of efforts in their virtual groups. As described by Andreassen & Oallesen in 2014 [19]. Even still there is conceptual confusion around the lines as to how exactly to define the 'Problematic' aspect of Online networking use.

According to [20], correlation in Anxiety and PMSU could be affected by social reassurance which is the encouragement of a person to seek interaction and belong in a community. This advised that there is a relation in Distress, Anxiety, a problematic use of person and a person's social encouragement.

E. PMSU in relation with Distress or Anxiety

There have been various studies in literature analyzing the link in SMU by a user and distress and/or anxiety of that user. But there has been no causation established in the two as of now. However, there has been strong correlation found in them. There could be another variable which could be the causing factor for them such as the encouragement of a person behind the Online networking use or their problematic use. It could be implied that certain people are more susceptible to distress and/or anxiety when controlling for just the time utilised on

Online networking use.

Andreassen [19] acquired a sample of 1719 participants which represented a national population and according to their study, frequency and time utilised by a user on Online networking were positively correlated with distress. But they failed to control for other variable such as sociodemographic status of a user.

Shensa [21] worked on these limitations and studied data of 1749 participants. And results gathered from his analysis suggests that relation in problematic Online networking use and distress is likely due to a user's own characteristics. While the relation in problematic Online networking use and anxiety was not definite.

Whereas results from other author's such as Heather Cleland Woods [5] suggest that the time utilised on Online networking is positively correlated with anxiety of a person and higher anxiety of a person is likely to be caused by overall Online networking use throughout the day and specifically during bedtime as this results in poorer sleep quality, later bedtimes and rise times, briefer sleep durations, longer sleep latencies. And previous literature indicates that reduced sleep and poor quality of sleep is a known as contributor of anxiety, distress and low self regard in young adults [22].

According to a review of 29 studies by Anderson [23], it concluded that Online networking sites were used more publicly by young adults in order to receive and get support and additionally concluded that anxious user's could be using these sites to compensate for the difficulties faced by them in their peer to peer skills and lack of inviolability in their social relations.

According to a experiment done by Hunt [24] for a time span of over three weeks, frequency of Online networking was investigated with a control group. It was observed that group with less time in contrast to the control group had reduced depressive and anxiety scores. Even though problematic use was not investigated, it found that even users with 10-minute allowance had substantially higher scores on anxiety and distress. But this study still had few limitations.

F. PMSU and its relation to Social Inviolability

As per our review, there is still very limiting amount of literature present on the relation in Social Inviolability and PMSU. Nonetheless, the limiting amount of literature suggest of a possibility of a bi-directional relation in Social Inviolability and PMSU. For example, the direction of correlation in Social Safety and PMSU is still unclear and worth investigating.

It could be said that users with a problematic use indicators are more likely to feel less social safe within their social relations or it could be other way around, that one who feel less socially secure within their relations are more likely to become problematic users of Online networking which could further influence their depressive or anxiety levels.

According to study conducted by Akin & Akin [25], there was a paral relation in Problematic Facebook Use and Social Inviolability, however since the study only focused on Facebook and was cross- sectional, it's findings are questionable.

G. Time spent on Social-intercourse Platforms

Since the time utilised via web-based networking media stages has expanded eminently over the previous decade, it is essential to investigate the connection in the time utilised on long range interpersonal communication destinations and its mental impacts on a person. There is clashing measure of writing present on the connection in time utilised and its connection to discouragement and tension. While some examination recommends that there is a potential positive relation in the time utilised via web-based networking media by a client and his/her downturn or tension levels and different cases that this theory isn't substantial and there are numerous restrictions in the investigation performed so far on the theme and there is likely an intervening variable, for example, the inspiration of a client for the utilization of online life stage which is interceding the connection in the time utilised via web-based networking media by the client and the degrees of despondency or nervousness [4].

As per a meta-investigation by Huang [7] which contains 61 examinations comprising of sixty-seven free examples comprising of 19,652 members, the mean connection in the time utilised via web-based networking media locales and manifestations of mental prosperity, for example, sorrow or potentially uneasiness were factually inconsequential. The relation in time utilised via web-based networking media locales and markers of life fulfillment and confidence was immaterial. And further more the relation in the time utilised via web-based networking media and gloom and forlornness is powerless.

Banjanin [4] played out a cross-sectional investigation on an example of 336 secondary school understudies and found that neither the time utilised on long range interpersonal communication locales nor the person to person communication related exercises had any imperative impact on the connection in web compulsion and misery which further goes in accordance with our reason that there must be another variable in play here.

H. Frequency of Social-intercourse Site Visits

Frequency of Online networking use is the number of times an individual open or visits a

Online networking platform throughout the day. Sum of frequency of opening or visiting of all the Online networking platforms is calculated in order to find a relation in the overall frequency of visits of social-intercourse sites and distress and/or anxiety. With regards to frequency,

positive correlations were found in the frequency of Online networking visits and distress [26].

I. Socio-demographic characteristics

Sociodemographic qualities of an individual include age, sex, instruction, movement foundation and ethnicity, strict connection, conjugal status, family unit, work, and pay. As per Baker [27], critical measure of affiliation still stays in long range informal communication use and misery significantly in the wake of controlling for sociodemographic attributes, interpersonal interaction utilization factors and disconnected conduct of a person. For instance, negative or upward examinations with other client were found to foresee wretchedness significantly subsequent to controlling for different factors. As indicated by a review by Baker [27], social correlations are found to anticipate melancholy in any event, while controlling for general inclination for examinations disconnected which proposes that impact of social correlations via web-based networking media is intrinsically unique to examinations disconnected. This further could impact sentiments of jealousy, social help and social communications which are identified with indications of despondency [28].

J. Motives behind Social Media use

Motive is the reason or encouragement of an individual behind the use of public communication media platform or what he/she expects to gain from it. There could be several motives behind the use of a Online networking platform such as it could be used just to maintain the relations a person already has in real life, it could be used to create new connections with strangers or to meet new people online if a person lacks social capital in offline life which could be due to his/her sociodemographic characteristics, which could actually influence psychological well-being of a person positively. But it could also be used to replace the connections one already has in offline world such as with his family/ friends which could actually be detrimental for one's psychological wellbeing [7].

K. Sleep quality and Social Media usage

Heather Cleland Woods & Holly Scott [5] performed a cross-sectional study on 467 Scottish adolescents to measure their Online networking use (overall & bedtime specific), their

emotional investment in Online networking, their sleep quality, self regard and their distress and anxiety levels. Their results indicated that individuals who were more emotionally invested in Online networking had poor quality of sleep, less self regard and increased scores of distress and anxiety. Specifically, the night time specific use was correlated anxiety and distress.

Table 1. Brief of studies of relation in time utilised on social media and psychological well- being.

Study	Design	Participants	Measures	Analysis	Conclusion
Barry [29]	Cross sectional study	Participants=226 Where parent-adolescent dyads=113, Adolescent age=14-17.	Social Media review – characterized by author; Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013); Fear of missing out review; UCLA loneliness scale, 3rd edition	Correlation analysis	Time utilised via web-based networking media is emphaticall y related with burdensome manifestati ons.
Banjanin [4]	Cross sectional study.	High school students=336 (age in average=18 years, males=116 females=22)	Center for Epidemiologic studies of distress scale for children (CES-DC), young internet addiction test (IAT), general questions related to internet and social-intercourse site use.	Correlation, Multiple regression analysis	No relation in just the time utilised on social-intercourse sites and distress
Datu [30]	Cross sectional study.	Filipino - adolescents =200 (age of college students =17– 20 in years)	Goldberg Distress Scale (GDS); review of the number of hours allotted to the use of facebook per week	Correlation	No direct correlation in time utilised on Online networking and distress.
Davila [28]	Longitudi nal l study	Undergraduates in the United States =334 (minimum-age = 18 years, age in average = 19.44 in years)	Social-intercourse Review (measuring type of SNS use and quality of interactions); Co-rumination Questionnaire; RRS; CES-D	Correlation, Hierarchic al regression analysis	Time utilised on Online networking has no direct correlation with depressive symptoms.
Jelenchick [31]	Cross sectional study.	Undergraduate-students in the united states =190	Patient Health Questionnaire-9 distress screen (PHQ-9); a	Logistic regression	No relation in time utilised on

		(age in average=18.9 in years)	weeklong ESm data collection period to assess SNS use.	analysis.	social-intercourse sites and distress.
Lin [32]	Cross sectional study.	young adults in the United States=1781 (age = 18–30 in years)	Review of total time utilised on SNSs per day and average number of SNS visits per week; global frequency scale adopted from the Pew Internet Research Questionnaire; Patient reported outcomes: Measurement Information System (PROMIS) distress scale	Logistic regression analysis	Online networking use is significantly associated with increased distress.
Pantic [33]	Crosssectional study	Students in Serbia high school=160 (age in average = 18.02 in years)	Anonymous structured questionnaire including average daily time utilised on social-intercourse sites	Correlation	Time utilised on Online networking is positively correlated with distress.
Simoncic [34]	Crosssectional study	United states adults=237 (age in average = 18.81 in years)	Revised NEO Personality Inventory (NEO PI-R; The Facebook Questionnaire; CES- D	Hierarchical regression analysis	No direct relation in Online networking and distress although Online networking use might be beneficial for depressive symptoms in some situations
Steers [35]	Longitudinal study	United States students =154 (age in average = 22.55 in years)	Diary completed every night over 14 days- Facebook time/logins questions; six items from the INCOM; five items from the CES-D	Multivariate regression - analyses	Time utilised on Online networking is positively correlated with distress
Tandoc [36]	Crosssectional study	Singapore college students=736 (age in average=19.09 in years)	Review of Facebook use (including engagement in specific activities such as reading friends' status updates and browsing timelines); scale of Facebook envy based	Correlation (r); Bootstrap regression - analysis (B)	No direct correlation in time utilised on Online networking and distress

			on different ways envy has been operationalized by other academics; CES-D		
Woods [5]	Crosssectional study	Scottish-adolescents =476 (age=11-17 in years)	Pittsburgh Sleep Quality Index, The Hospital Anxiety and Distress Scale, The Rosenberg Self regard Scale, Social Integration and Emotional Connection subscale of the Social Media Use Integration Scale with slight modification, two measures developed by authors to measure overall Social Media use and night time-specific Social Media use	Correlation ,Hierarchical regression analysis	Time utilised on Online networking is positively correlated with distress and anxiety

L.Social comparisons and distress/anxiety

One of the reason why Online networking use is associated with distress and anxiety in scientific literature is because of the inherent social comparisons on Online networking [4]. Since everyone wants to portray their ‘perfect lives’ on Online networking, people often get the false impression of other people’s real lives as people tend to exaggerate every aspect of their lives on Online networking which leads to false comparisons which are made by a user which is associated with distress [35].

3. Results

Limitations in previous studies and future scope

Few of the limitations of the previous studies is that some of them used narrow range of studies in their analysis and all related studies were not included. In most of the studies, only facebook was used for analysis and all Online networking platforms were not examined. All the control variables were not taken into account while examining the relation in time utilised on Online networking and its psychological impacts such as: use of frequency, intensity of use, motives behind the use, sociodemographic characteristics, highest education level, financial status of an individual etc. Most of the studies done in the past are cross-sectional in nature, i.e. they only focus at one point in the time and are not reliable to establish relation like this and are difficult to conclude results from (Hunt et al., 2018). More longitudinal studies need to be done, i.e. over a period of time. Also details of the study design were not explicitly mentioned in most of the studies, like point in time, eligibility

criteria etc. Possible sources of bias were not discussed. Most of the sample taken were of teenage population and more studies need to be done on adult populations. It was not clearly described how and when participants were recruited. Previous studies have not analyzed the relation Online networking use and well-being of an individual throughout all life stages. Future research needs to be done to overcome all these limitations to properly understand the relation in time utilised on Online networking and psychological well-being.

4. Conclusion

The focus of this review was to examine the relation in time utilised on Online networking by an individual and its psychological impacts such as distress or anxiety and to examine the current qualitative research done on the topic thus far. As it is critical to evaluate the relation in SNS use and its psychological impacts on public health due to the ever-increasing popularity of social-intercourse sites. The findings from the meta-analysis of previous studies are mixed and majority of the studies advised a complex relation in time utilised on Online networking and distress and/or anxiety and suggest that there are other factors that may mediate or moderate this relation, which explains the variability of findings. These factors can be classified as ‘usage variables’ for instance “frequency of use”, “quality of use”, “motives behind use”, “type of use” and other individual characteristics related to a particular user such as his/her “financial status”, “highest educational level”, “sociodemographic status”, “social inviolability” etc. These factors seem to be intertwined with distress, anxiety rather than just time utilised alone and could mediate or moderate this relation. These factors are therefore important for clinicians to examine in cases of distress or PMSU. Online behaviors such as upward comparisons with others and low social safety of an individual seem to be of particular importance.

A key finding of this study is that distress and anxiety seem more to be influenced by the encouragement of the use by the user such as if the user is using the platform for finding support and connecting with friends and or family or if they are using to search and or post sad or depressive posts and are being influenced by negative or upward comparisons. Similarly, it was concluded by other authors that spending large amounts of time on facebook can indirectly influence distress but given that the person engages in social comparisons with other users.

An additional finding of this review is that social comparisons and social inviolability are

possible mediators in the relation in Online networking use and anxiety or distress. These results indicate that these processes could be recurring in nature and the relation in problematic Online networking use and distress/anxiety could be bidirectional. It is advised that more longitudinal studies over a wider demographic of population needs to be done while controlling for usage factors mentioned above. The results from studies discussed here also suggests that the impact of Online networking use can be both useful or cannot be useful depending upon the usage motives of the user. SMU can be beneficial for mental health if used in a positive manner such as for social support or to gain social capital and in conjunction with or to maintain offline and face to face relations which indicates that Online networking, inherently, is not dangerous but on the other hand, it can be detrimental to mental health if it used as a substitution for face to face interactivity which replaces strong ties of social connectedness with weak ties. It was also estimated by Pantic that the connections made on social-intercourse sites may lack the essential quality when collated to regular offline connections. The relation in SMU and distress seems to have multifaceted influences and it is hard to pin down just one variable for causation.

However, since the social-intercourse sites are constantly evolving, it is hard to generalize the relation in distress/anxiety and social network use and more empirical studies need to be performed. It is possible that if the functionality of social-intercourse sites is changed in a way as to provide more social support structure and to influence in such a way to reduce the comparison in users then this will likely alter the relation established thus far in literature. Therefore, further research into the changing networks and its effect on psychological well-being of an individual need to be performed.

5. References

- [1] M. Anderson and J. Jiang, "Teens, Social Media & Technology 2018 | Pew Research Center," 2018.
- [2] N. B. Ellison and D. Boyd, "Social Network Sites: Definition, History, and Scholarship," *J. Comput. Commun.*, 2008.
- [3] J. V. Chen, A. E. Widjaja, and D. C. Yen, "Need for Affiliation, Need for Popularity, Self regard, and the Moderating Effect of Big Five Personality Traits Affecting Individuals' Self-Disclosure on Facebook," *Int. J. Hum. Comput. Interact.*, 2015.
- [4] N. Banjanin, N. Banjanin, I. Dimitrijevic, and I. Pantic, "Relation in internet use and distress: Focus on physiological mood oscillations, social-intercourse and online addictive behavior," *Comput. Human Behav.*, 2015.
- [5] H. C. Woods and H. Scott, "#Sleepyteens: Social Media use in adolescence is associated with poor sleep quality, anxiety, distress and low self regard," *J. Adolesc.*, 2016.
- [6] C. M. Morrison and H. Gore, "The relation in excessive internet use and distress: A questionnaire-based study of 1,319 young people and adults," *Psychopathology*, 2010.

- [7] C. Huang, "Time spent on Social Network Sites and Psychological Well-Being: A Meta- Analysis," *Cyberpsychology, Behavior, and Social-intercourse*. 2017.
- [8] D. M. Boyd and N. B. Ellison, "Social network sites: Definition, history, and scholarship," *J. Comput. Commun.*, 2007.
- [9] R. Kraut, S. Kiesler, B. Boneva, J. Cummings,
4. Helgeson, and A. Crawford, "Internet paradox revisited," *J. Soc. Issues*, 2002.
- [10] G. Lee, J. Lee, and S. Kwon, "Use of social- networking sites and subjective well-being: a study in South Korea.," *Cyberpsychol. Behav. Soc. Netw.*, 2011.
- [11] P. Best, R. Manktelow, and B. Taylor, "Online communication, Social Media and adolescent wellbeing: A systematic narrative review," *Child. Youth Serv. Rev.*, vol. 41, pp. 27–36, 2014.
- [12] R. P. Ebstein, S. Israel, S. H. Chew, S. Zhong, and A. Knafo, "Genetics of Human Social Behavior," *Neuron*. 2010.
- [13] P. Gilbert, K. McEwan, R. Mitra, L. Franks, A. Richter, and H. Rockliff, "Feeling safe and content: A specific affect regulation system? Relation to distress, anxiety, stress, and self-criticism," *J. Posit. Psychol.*, 2008.
- [14] P. Gilbert, "Social Mentalities: A Biopsychosocial and Evolutionary Approach to Social Relations.," in *Interpersonal cognition*, 2005.
- [15] R. Gilbert, C. S. Widom, K. Browne, D. Fergusson, E. Webb, and S. Janson, "Burden and consequences of child maltreatment in high-income countries," *The Lancet*. 2009.
- [16] T. Correa, A. W. Hinsley, and H. G. de Zúñiga, "Who interacts on the Web?: The intersection of users' personality and Social Media use," *Comput. Human Behav.*, 2010.
- [17] N. B. Ellison, C. Steinfield, and C. Lampe, "The benefits of facebook 'friends:' Social capital and college students' use of online social network sites," *J. Comput. Commun.*, 2007.
- [18] E. M. Seabrook, M. L. Kern, and N. S. Rickard, "Social-intercourse Sites, Distress, and Anxiety: A Systematic Review," *JMIR Ment. Heal.*, 2016.
- [19] C. Andreassen and S. Pallesen, "Social Network Site Addiction - An Overview," *Curr. Pharm. Des.*, 2014.
- [20] R. J. Lee-Won, L. Herzog, and S. G. Park, "Hooked on Facebook: The Role of Social Anxiety and Need for Social Assurance in Problematic Use of Facebook," *Cyberpsychology, Behavior, and Social-intercourse*. 2015.
- [21] A. Shensa, C. G. Escobar-Viera, J. E. Sidani, N. D. Bowman, M. P. Marshal, and B. A. Primack, "Problematic Social Media use and depressive symptoms among U.S. young adults: A nationally-representative study," *Soc. Sci. Med.*, 2017.
- [22] C. A. Alfano, A. H. Zakem, N. M. Costa, L. K. Taylor, and C. F. Weems, "Sleep problems and their relation to cognitive factors, anxiety, and depressive symptoms in children and adolescents," *Depress. Anxiety*, 2009.
- [23] E. L. Anderson, E. Steen, and V. Stavropoulos, "Internet use and Problematic Internet Use: a systematic review of longitudinal research trends in adolescence and emergent adulthood," *International Journal of Adolescence and Youth*. 2017.
- [24] M. G. Hunt, R. Marx, C. Lipson, and J. Young, "No more FOMO: Limiting Social Media decreases loneliness and distress," *J. Soc. Clin. Psychol.*, 2018.
- [25] A. Akin and U. Akin, "The mediating role of social inviolability on the relation in Facebook® use and life satisfaction," *Psychol. Rep.*, 2015.

- [26] E. Wegmann, B. Stodt, and M. Brand, "Addictive use of social-intercourse sites can be explained by the interaction of Internet use expectancies, Internet literacy, and psychopathological symptoms," *J. Behav. Addict.*, 2015.
- [27] D. A. Baker and G. P. Algorta, "The Relation in Online Social-intercourse and Distress: A Systematic Review of Quantitative Studies," *Cyberpsychology, Behav. Soc. Netw.*, 2016.
- [28] J. Davila, R. Hershenberg, B. A. Feinstein, K. Gorman, V. Bhatia, and L. R. Starr, "Frequency and quality of social-intercourse among young adults: Associations with depressive symptoms, rumination, and corumination.," *Psychol. Pop. Media Cult.*, 2012.
- [29] C. T. Barry, C. L. Sidoti, S. M. Briggs, S. R. Reiter, and R. A. Lindsey, "Adolescent Social Media use and mental health from adolescent and parent perspectives," *J. Adolesc.*, vol. 61, pp. 1–11, 2017.
- [30] J. Datu, J. Datu, J. Valdez, and N. Datu, "International journal of research studies in educational technology.," *Int. J. Res. Stud. Educ. Technol.*, vol. 1, no. 2, pp. 83–91, 2012.
- [31] L. A. Jelenchick, J. C. Eickhoff, and M. A. Moreno, "Facebook distress? social-intercourse site use and distress in older adolescents," *J. Adolesc. Heal.*, vol. 52, no. 1, pp. 128–130, 2013.
- [32] L. Y. Lin *et al.*, "ASSOCIATION in SOCIAL MEDIA USE and DISTRESS among U.S. YOUNG ADULTS," *Depress. Anxiety*, vol. 33, no. 4, pp. 323–331, 2016.
- [33] I. Pantic *et al.*, "Association in online social-intercourse and distress in high school students: Behavioral physiology viewpoint," *Psychiatr. Danub.*, 2012.
- [34] T. E. Simoncic, K. R. Kuhlman, I. Vargas, S. Houchins, and N. L. Lopez-Duran, "Facebook use and depressive symptomatology: Investigating the role of neuroticism and extraversion in youth," *Comput. Human Behav.*, vol. 40, pp. 1–5, 2014.
- [35] M. L. N. Steers, R. E. Wickham, and L. K. Acitelli, "Seeing everyone else's highlight reels: How Facebook usage is linked to depressive symptoms," *J. Soc. Clin. Psychol.*, 2014.
- [36] E. C. Tandoc, P. Ferrucci, and M. Duffy, "Facebook use, envy, and distress among college students: Is facebooking depressing?," *Comput. Human Behav.*, vol. 43, pp. 139–146, 2015.