

Social Media Use and Mood, Suicidal Ideation and Self-Harm in Adolescents

Grazia Maria Giovanna PASTORINO^{1*},
Francesca Felicia OPERTO²,
Roberto BUONAIUTO³,
Giuseppe DIASPRO⁴,
Giannennaro COPPOLA⁵

¹ Child Neuropsychiatry Unit, Department of Medicine, Surgery and Dentistry, University of Salerno, Salerno, Italy, graziapastorino@gmail.com
Corresponding author

² Child Neuropsychiatry Unit, Department of Medicine, Surgery and Dentistry, University of Salerno, Salerno, Italy, opertofrancesca@gmail.com

³ Child Neuropsychiatry Unit, Department of Medicine, Surgery and Dentistry, University of Salerno, Salerno, Italy, buonaiuto.roberto@libero.it

⁴ Child Neuropsychiatry Unit, Department of Medicine, Surgery and Dentistry, University of Salerno, Salerno, Italy, peppedias28@gmail.com

⁵ Child Neuropsychiatry Unit, Department of Medicine, Surgery and Dentistry, University of Salerno, Salerno, Italy, gcoppola@unisa.it

Abstract: Objective: *The aim of our observational study was to evaluate depressive symptoms in adolescent population, focusing on suicidal ideation and intentionality, and to establish the relationship between depressive symptoms/self-harm and the average time spent in social media.*

Methods: *Our study was an observational cross-sectional study that involved three Middle Schools and three High Schools in the Campania region of Italy. One thousand three hundred sixty-five students 11-19 years of age were recruited (mean age=15 years; female=51%, male=49%). Percentage of adhesion was 95%. All the subjects were administered three self-report questionnaires, filled out anonymously and in the presence of the teachers after illustrating their validity and purpose.*

Results: *In 23% females and 18% males, depressive symptoms were above the norm, with a slight increase in the prevalence of depressive symptoms in high school students compared to middle school ones. Suicidal intentionality was expressed in 4% of the total sample, with no differences between males and females. Suicidal ideation was present in 14% of the total sample, with a higher prevalence in females than in males (17% vs 10%). We found a significant positive relationship between the depressive symptoms and the hours spent on Social Media, in both males and females. A significant relationship was also found between hours on Social Media and suicidal ideation/intentionality.*

Conclusions: *Our study showed a high prevalence of depressive symptoms in adolescents, in keeping with previous studies. Our study also showed a significant association between the use of social networks and the development of depressive symptoms, as well as suicidal ideation and intentionality. Further studies are needed to investigate the nature of this relationship.*

Keywords: *adolescents; depression; self-harm; social media.*

How to cite: Pastorino, G. M. G., Operto F. F., Buonaiuto, R., Diaspro, G., & Coppola G. (2020). Social Media Use and Mood, Suicidal Ideation and Self-Harm in Adolescents. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 11(3), 31-40. <https://doi.org/10.18662/brain/11.3Sup1/119>

Introduction

Depression is a disabling and recurrent disorder, with high prevalence in the general population, that affects 10-25% of women and 5-12% of men in adulthood.

In the last years, in industrialized countries, there has been a trend towards an increase in the prevalence of this disorder and a decrease in the average age of its onset.

According to a study of last years, mood disorders was present in 0.3% of preschooler, in 2-3% of children and in 6-8% of adolescents (Avenevoli et al., 2008).

Many studies also show a continuity of depression throughout the life span; in fact, about 80% of children and adolescents with depressive disorder tend to present the same condition even in adulthood (Burlea et al., 2012; Luca et al., 2019).

According to WHO, psychiatric disorders, such as mood disorders and depression will be the main reason for mortality and morbidity in adolescence, and can lead to poorer psychosocial functioning, lower quality of life and school achievements, more interpersonal difficulty, more comorbid psychiatric conditions, and increased risk of self-injurious behaviors and suicide (World Health Organization, 2001).

Depression is a multifactorial etiology disorder in which biological, genetic, environmental and psychological factors contribute. In more recent years researchers investigated the possible association between increasing depressive disorders in children and adolescents and the increased use of digital tools, including the internet, social networks sites and video games (Evans et al., 2005; Costello et al., 2006).

In recent decades the use of the Internet and Social Media increased exponentially, especially among teenagers. On average, 50-75% of teenagers have online connectivity and 73% of them use social networks regularly (Luca et al., 2020; Rideout et al., 2005).

Social media can have a positive impact on teenagers in terms of increasing social contacts, developing new ideas and creativity, greater sharing of knowledge. The negative effects are related to physical problems such as obesity and sleep problems but also to privacy violation, cyberbullying, addiction and psychiatric problems such as mood disorders (Augner & Hacker, 2012; Huang, 2017).

In a recent review by Schou Andreassen et al. (2016), a significant correlation was found between symptoms of addictive technology use and psychiatric disorder symptoms.

Another recent review (Hussain & Griffiths, 2018) reported the simultaneous presence of psychiatric symptoms and Problematic Social Networking Site Use among adolescents.

Boers et al. (2019), in a study of the past year that included 3826 adolescents, reported the correlation between hours of social media exposure and mood disorders symptoms.

The upward social comparison that social media users experience could be a factor related to the development of depressive feelings. This phenomenon gave rise to the so-called “Facebook depression” (Yoon et al., 2019).

Despite some evidence, the exact nature of the association between depressive symptoms and social media use could further be investigated. Individuals with greater problematic use of social media may develop social withdrawal and depressive feelings; on the other hand, it is also possible that individuals with depressive feelings find refuge in social media (Shensa et al., 2017). In two nationally representative surveys of U.S. adolescents it was reported that in a population approximately 500,000 young people aged 13-15, symptoms of depression and suicides were on the rise from 2010 to 2015, and young people who spent more time on social media had more psychiatric problems than those who spent more time in social activities (Twenge et al., 2018). In the study of Sampasa-Kanyinga et al. (2015) emerged that Daily Social Networking Site use (over two hours per day) was related to decreased psychological well-being and increased suicidal thoughts. Memon et al. (2018) found that young people with self-harm and suicidal thoughts sought support from other users via social media. Furthermore, social media could encourage emulation among young people by sharing self-harming messages. Authors concluded that greater time spent on online social media promotes self-harm behavior and suicidal ideation in vulnerable adolescents.

The aim of our observational study was to evaluate depressive symptoms in adolescent population, focusing on suicidal ideation and intentionality and to establish the relationship between depressive symptoms/self-harm and the average time spent in social media use.

Methodology

Participants

Our study was an observational cross-sectional study that involved three Middle Schools and three High Schools in the Campania region of Italy. One thousand three hundred sixty-five students aged 11-19 years were recruited (mean age=15 years; female=51%, male=49%). The percentage of adherence was 95%. All the subjects were administered three self-report questionnaires, filled out anonymously and in the presence of the teachers, after illustrating their validity and purpose. The parents of all participants provided their written informed consent.

Social media questionnaire

Self-report non standardized questionnaire assessing the modality of use of new technologies in adolescents. The evaluation was both quantitative (daily hours dedicated to the social media) and qualitative (motivation to the use of social media, sharing information and personal photos, cyberbullying).

Children Depression Inventory (Cdi-2) - Kovacs

Self-report standardized questionnaire assessing current cognitive, affective, and behavioral signs of depression in children and adolescents (Kovacs, 2004).

Youth Self-Report (Ysr) – Achenbach & Rescorla

Self-report standardized questionnaire for the assesment of emotional-behavioral problems in adolescents, along Internalizing scale, Externalizing scale and Total Problems scales (Achenbach & Rescorla, 2001).

Results

The scores obtained at CDI-2, which assessed depressive symptoms, were in the normal range in 77% females, while they were above the norm in 23%. More specifically: in 10% were above the average, in 6% were high and in 7% very high (Figure 1). In males the scores obtained at CDI-2 were in the normal range in 82%, while they were above the norm in 18%. More specifically, in 7% were above the average, in 6% were high and in 5% very high (Figure 2). The comparison by age showed a slight increase in the prevalence of depressive symptoms in high school students compared to middle school ones. Suicidal intentionality (I want to kill myself) was expressed in 4% of the total sample, with no differences between males and

females. Suicidal ideation (I'm thinking of killing myself) was present in 14% of the total sample, with a higher prevalence in females than in males (17% vs 10%). The comparison by age revealed an increase in both components in high school students compared to middle school ones.

Analyzing the association between CDI-2 scores and time spent on Social Media, we found a significant positive relationship between the depressive symptoms and the hours spent on Social Media in both males and females (Figure 3). In males the percentage of scores above the norm ranged from 12% to 24% of boys who spent less than an hour/day on Social Media compared to those who spent more than 3 hours/day ($p < 0.05$); in females this percentages ranged from 18% to 28% ($p < 0.05$). In the total sample also, suicidal ideation and suicidal intentionality were significantly related with hours spent on Social Media, ranging from 9% to 16% and from 2% to 6% respectively ($p < 0.05$) (Figure 4).

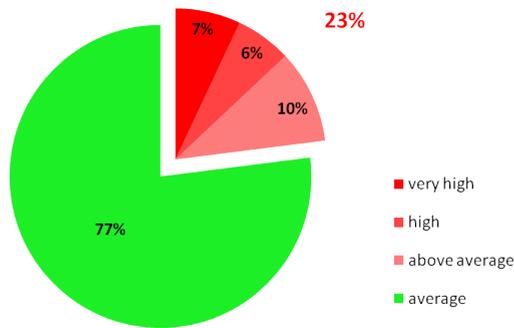


Fig.1: CDI-2 scores in females
Source: authors' own contribution

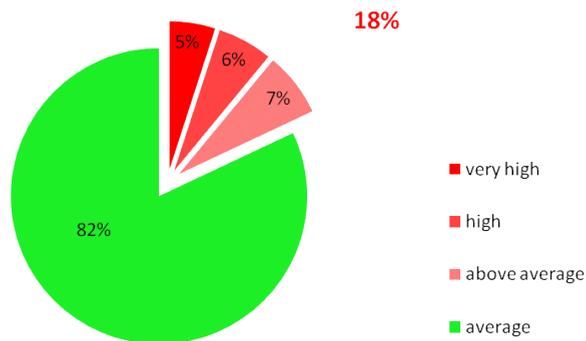


Fig.2: CDI-2 scores in males

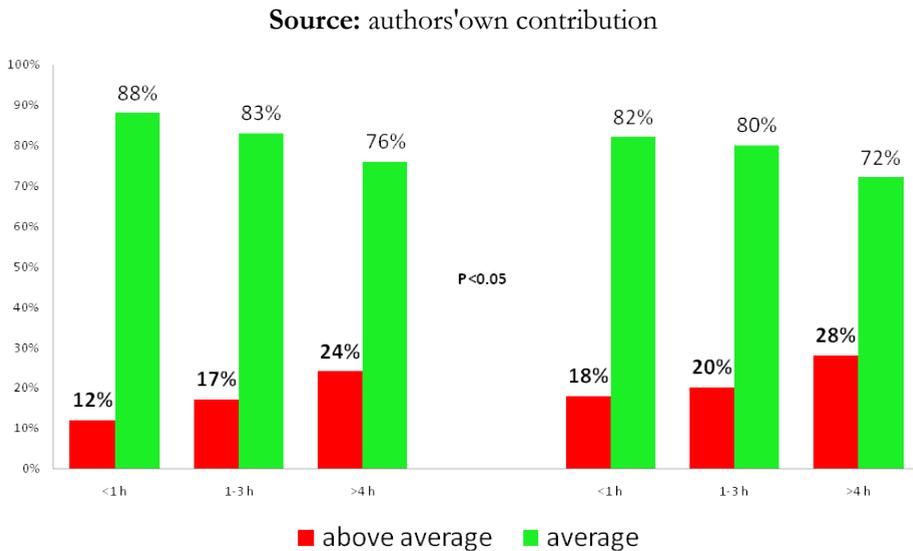


Fig. 3: Depression symptoms and number of hours on Social Media
Source: authors'own contribution

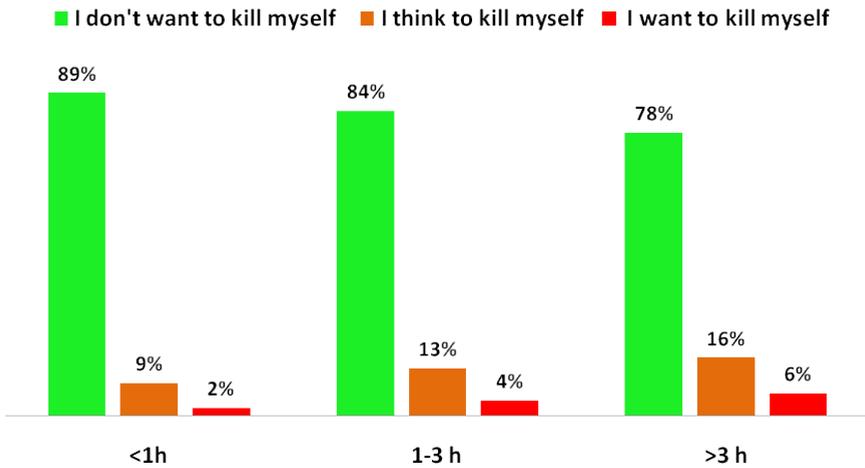


Fig. 4: Suicidal ideation/intentionality and hours on Social Media
Source: authors'own contribution

Discussions

In keeping with previous studies, 20% of our sample reported depressive symptoms, with a higher prevalence in females than in males (Sampasa-Kanyinga & Lewis, 2015; Twenge et al., 2018); 14% and 4% of the

total sample reported suicidal ideation and suicidal intentionality respectively (Sampasa-Kanyinga & Lewis, 2015; Sampasa-Kanyinga et al., 2017). The data should be interpreted with caution because CDI-2, like other self-report questionnaires for depression, does not allow to formulate a clinical diagnosis as it represents a screening tool to be integrated with other medical investigations and psychic examination of the patient.

Our study also confirmed a positive relationship between time spent on social media and depressive symptoms/suicidal ideation (Bolos et al., 2012; Memon et al., 2018). Another result of our study was the correlation between suicidal ideation/intentionality with the level of depressive symptoms correlated in line with what reported by previous studies, in which it is shown that depressive symptoms are an important mediator of suicidal ideation (Gutierrez, 2006; Sun et al., 2006).

There appears to be several mechanisms underlying the relationship between Social Media use and depressive symptoms in adolescents:

- The deprivation of hours of sleep that often accompanies the excessive use of social media (Twenge et al., 2018).

- The silent imposition by the media of idealized and unreachable models, which lead in the young a feeling of inadequacy, frustration, depressive tendencies and food disorders; this would explain the higher incidence in females due to the greater attention to the physical aspect, comparing to stereotyped models imposed by the network (Lin et al, 2016; Pantusa et al, 2006).

- The development of anxiety and rejection of interpersonal relationships (Vannucci et al, 2017).

Conclusions

Our study showed a high prevalence of depressive symptoms in adolescence, in keeping with previous studies. Our study also showed a significant association between the use of social networks and the development of depressive symptoms, as well as suicidal ideation and intentionality. Evidence suggests that depression symptoms and self-harming are more frequent in youth who are more active on online social networks. Further studies are needed to investigate the nature of this relationship.

The results obtained certainly open up new clinical and therapeutic scenarios in which the Internet could be a new tool for identifying and supporting adolescents at risk of developing psychiatric disorders. It would also be useful to sensitize young people on the risks related to the incorrect use of social media and to discourage mass emulation phenomena.

References

- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA School-Age Forms & Profiles*. University of Vermont, Research Center for Children, Youth, & Families.
- Augner, C., & Hacker, G. W. (2012). Associations between problematic mobile phone use and psychological parameters in young adults. *International Journal of Public Health*, 57, 437–441. <https://doi.org/10.1007/s00038-011-0234-z>
- Avenevoli, S., Knight, E., Kessler, R. C., & Merikangas, K. R. (2008). Epidemiology of depression in children and adolescents. In J. R. Z. Abela & B. L. Hankin (Eds.), *Handbook of depression in children and adolescents* (p. 6–32). The Guilford Press.
- Boers, E., Afzali, M. H., Newton, N., & Conrod, P. (2019). Association of Screen Time and Depression in Adolescence. *JAMA Pediatrics*, 173(9), 853-859. <https://doi.org/10.1001/jamapediatrics.2019.1759>
- Bolos, A., Ciubara, A-M, & Chirita, R. (2012). Moral And Ethical Aspects Of The Relationship Between Depression And Suicide. *Revista Romana De Bioetica*, 10(3), 71-79.
- Burlea, A., Sacuiu, I., Chirita, V., & Chirita, R. (2012). Teen depression prevention - an issue of great social impact. *International Journal o Neuropsychopharmacology*, 15 (Supp. 1), 176-176. Meeting Abstract: P-12-002.
- Costello, J. E., Erkanli, A., & Angold, A. (2006). Is there an epidemic of child or adolescent depression? *Journal of Child Psychology and Psychiatry*, 47, 1263–1271. <https://doi.org/10.1111/j.1469-7610.2006.01682.x>
- Evans D. L., Beardslee, W., Biederman, J., Brent, D., Charney, D., Coyle, J., Craighead, W. E., Crits-Christoph, P., Findling, P., Garber, J., Johnson, R., Keller, M., Nemeroff, C., Rynn, M. A., Wagner, K., Weissman, M., & Weller, E. (2005). Depression and bipolar disorder: Commission on Adolescent Depression and Bipolar Disorder. In Evans, D. L., Foa, E. B., Gur, R. E., Hendin, H., O'Brien, C. P., Seligman, M. E. P., & Walsh B. T. (Eds.), *Treating and Preventing Adolescent Mental Health Disorders: What We Know and What We Don't Know: A Research Agenda for Improving the Mental Health of Our Youth*. Oxford University Press.
- Gutierrez, P. M. (2006). Integratively Assessing Risk and Protective Factors for Adolescent Suicide. *Suicide and Life-Threatening Behavior*, 36(2), 129-135. <https://doi.org/10.1521/suli.2006.36.2.129>
- Huang, C. (2017). Time spent on social network sites and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior, and Social Networking*, 20(6), 346–354. <https://doi.org/10.1089/cyber.2016.0758>

- Hussain, Z., & Griffiths, M. D. (2018). Problematic Social Networking Site Use and Comorbid Psychiatric Disorders: A Systematic Review of Recent Large-Scale Studies. *Front Psychiatry, 9*, 686.
<https://doi.org/10.3389/fpsy.2018.00686>
- Kovacs, M. (2004). Children's depression inventory (CDI). Multi-Health Systems.
- Lin, L.Y., Sidani, J. E., Shensa, A., Radovic, A., Miller, E., Colditz, J. B., Hoffman B. L., Giles, L. M., Primack, B. A. (2016). Association between social media use and depression among U.S young and adults. *Depress Anxiety, 33*(4), 323-31. <https://doi.org/10.1002/da.22466>
- Luca, I., Ciubara, A, Ciubara, A. B, Chiroasca, A. C, & Sarbu, F. (2019). Youth perceptions towards psychiatry. *European Psychiatry, 56* (Supp. S), S464-S464.
- Luca, L., Burlea, S. L., Chiroasca, A-C., Marin, I. M., Ciubara, A. B., Ciubara, A. (2020). The FOMO Syndrome and the Perception of Personal Needs in Contemporary Society. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 11*(1Sup1), 38-46.
<https://doi.org/10.18662/brain/11.1Sup1/27>
- Memon, A. M., Sharma, S. G., Mohite, S. S., & Jain, S. (2018). The role of online social networking on deliberate self-harm and suicidality in adolescents: A systematized review of literature. *Indian Journal of Psychiatry, 60*(4), 384-392.
https://doi.org/10.4103/psychiatry.IndianJPsychiatry_414_17
- Pantusa, M. F., Berardi, M., Paparo, S., & Scornaienchi, C. (2006). Differenze di genere e sintomatologia depressiva in adolescenza: relazioni tra autostima, sintomi depressivi e ideazione suicidaria [Gender differences in depressive symptoms during adolescence: the relationships between self-esteem, depressive symptoms and suicidal ideation]. *Giornale Italiano di Psicopatologia - Journal of Psychopathology, XII*(4), 407-414.
<https://www.jpsychopathol.it/issues/2006/vol12-4/pantusa.pdf>
- Rideout, V., Roberts, D., & Foehr, U. (2005). *Generation M: Media in the Lives of 8-18 Year-olds*. Kaiser Family Foundation.
- Sampasa-Kanyinga, H., & Lewis, R. F. (2015). Frequent Use of Social Networking Sites Is Associated with Poor Psychological Functioning Among Children and Adolescents. *Cyberpsychology, Behavior, and Social Networking, 18*(7), 380-385. <https://doi.org/10.1089/cyber.2015.0055>
- Sampasa-Kanyinga, H., Dupuis, L. C., & Ray, R. (2017). Prevalence and correlates of suicidal ideation and attempts among children and adolescents. *International Journal of Adolescent Medicine and Health, 29*(2), 20150053.
<https://doi.org/10.1515/ijamh-2015-0053>
- Schou Andreassen, C., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A

- large-scale cross-sectional study. *Psychology of Addictive Behaviors*, 30(2), 252-262.
<https://doi.org/10.1037/adb0000160>
- Shensa, A., Escobar-Viera, C. G., Sidani, J. E., Bowman, N. D., Marshal, M. P., & Primack, B. A. (2017). Problematic social media use and depressive symptoms among U.S. young adults: A nationally-representative study. *Social Science & Medicine*, 182, 150-157.
<https://doi.org/10.1016/j.socscimed.2017.03.061>
- Sun, R. C., Hue, E. K., & Watkins, D. (2006). Toward a model of suicidal ideation for Hong Kong Chinese adolescents. *Journal of Adolescence*, 29(2), 209-224.
<https://doi.org/10.1016/j.adolescence.2005.05.005>
- Twenge, J. M., Rogers, M. L., Joiner, T. E., & Martin, G. N. (2018). Increases in depressive symptoms, suicide-related outcomes, and suicide rates among U.S. adolescents after 2010 and links to increased new media screen time. *Clinical Psychological Science*, 6(1), 3-17.
<https://doi.org/10.1177/2167702617723376>
- Vannucci, A., Flannery, K. M., & Ohannessian, C. M. (2017). Social media use and anxiety in emerging adults. *Journal of Affective Disorders*, 207, 163-166.
<https://doi.org/10.1016/j.jad.2016.08.040>
- World Health Organization. (2001). Mental Health: a Call for Action by World Health Ministers. *World Health Organization*. 1-21. https://www.who.int/mental_health/advocacy/en/Call_for_Action_MoH_Intro.pdf
- Yoon, S., Kleinman, M., Mertz, J., & Brannick, M. (2019). Is social network site usage related to depression? A meta-analysis of Facebook-depression relations. *Journal of Affective Disorders*, 1(248), 65-72.
<https://doi.org/10.1016/j.jad.2019.01.026>