



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Chapter 10

The relationships between social media use and factors relating to depression

Jacqui Taylor-Jackson^a and Ahmed A. Moustafa^{a,b}

^a*School of Psychology & Marcs Institute for Brain and Behaviour, Western Sydney University, Sydney, NSW, Australia,* ^b*Department of Human Anatomy and Physiology, Faculty of Health Sciences, University of Johannesburg, Johannesburg, South Africa*

Background

Social media usage is increasing year on year, from 48% to 66% between 2012 to 2017 in the United Kingdom, and in Australia the number of active social media users increased from 58% of the population in 2015 to 69% in 2018 (Statista, 2019). Social media use is set to increase and it is likely that technological features, such as the infinite scroll implemented on Facebook, are adding to their ‘addictive nature.’ Time spent on social media differs between countries, which is likely to be driven by age demographics. For example, during a typical day in Japan, people, on average, spend less than an hour on social media (but Japan has one of the oldest average age in the world); while individuals in the United Kingdom and the United States spent closer to 2 h/day engaging with social media. Individuals in developing countries (with younger average ages) spend more time on social media: just over 4 h/day in the Philippines, and over 3 h/day in Nigeria, Mexico, and Turkey (Statista, 2019).

According to Statista (2019), in the US Snapchat is the most popular social media platform for all age groups between 12 to 24 years (46 million users), followed by Instagram (20 million users) and Facebook (2.6 million users). It is important to define the different types of social media platform and their specific features (e.g., whether they are based on text, static image, or video and whether messages are temporary or permanent, etc.). These features make different platforms more or less suitable for different types of interactions and affect the amount and way social media is used, and consequently their potential impact on mental health. Facebook allows users to connect with networks of people (up to 5000) and is often linked to existing offline networks (e.g., contacts, friends, family known face-to-face, and events and locations visited). While Instagram is

similar to Facebook, the difference is that with Instagram users can only publish content with a picture or short video and a caption. Snapchat is like Instagram, in that it is designed mainly for posting images and talking via them. However, importantly the images disappear after seeing them and this temporary nature can affect the way it is used. For example, we suggest that due to the temporary nature of these single snaps and the fact that they take up the whole screen, they demand attention; consequently the fear of missing out is high, so the need to be always ready to open and interact with a snap makes Snapchat highly engaging. Further research is needed to confirm these suggestions. Twitter allows users to write and engage with many others (i.e., as many individuals who ‘follow’ them) and often the networks are very large, resembling an audience, and consist of contacts not known in the offline world. Twitter is fast-paced, less elaborate and quicker to send messages compared to Instagram, making it very effective for individuals to post instantly what they are thinking.

Prior to the widespread use of social media, social and emotional development occurred through face-to-face interactions, and it is unclear how the reliance on social media is affecting the socioemotional development of children and adolescents, for example, in terms of their ability to cope with adverse and ‘normal’ life events. Adolescent emotional development involves learning how to accurately perceive, express and regulate emotions, to promote emotional growth (Salovey & Sluyter, 1997), which helps to achieve social competence and maintain positive relationships with others (Rubin & Rose-Krasnor, 1992). According to the National Institute of Mental Health (NIMH, 2017) in the United States, the prevalence of mental illness is increasing across all age groups, and in the past year 19% of the population were reported to experience ‘any anxiety disorder’; this increased to 26% of those between 18 to 29 years old reporting these experiences. NIMH estimates that in 2017, 17.3 million adults in the United States (7.1% of the population) had experienced at least one major depressive episode, and the prevalence was highest for those aged 18–25 (13.1%). It is these increases in mental health issues coming at the same time as increases in the use of social media that has led to growing concerns (e.g., the Royal Society for Public Health, 2017) relating using social media use to negative impacts on mental health.

Review of research relating social media use and mental health

The use of social media can be viewed as both a protective and a risk factor for mental health. For example, the support gained from social media may ameliorate feelings of loneliness or lack of offline social interaction, and help prevent the onset of mental health issues. While in other cases using social media can be responsible for the onset of or exacerbating existing mental health issues. However, it is still unclear whether these factors are causally related and in this

section, we review research reporting potential negative and positive impacts of using social media on mental health.

Social media use and negative impacts on mental health

Many studies have used self-report responses to surveys. [Woods and Scott \(2016\)](#) used the Hospital Anxiety and Depression Scale (HADS) to assess anxiety and depression levels and the Rosenberg Self-Esteem Scale ([Rosenberg, 1965](#)) to assess trait self-esteem. A modified version of the Social Integration and Emotional Connection subscale of the Social Media Use Integration Scale ([Jenkins-Guarnieri, Wright, & Johnson, 2013](#)), was used to assess emotional investment in social media. The sample consisted of 467 pupils at a secondary school in the United Kingdom, aged between 11 to 17 years. They found significant positive correlations between higher anxiety levels and greater social media use, and emotional investment in social media. Similarly, higher depression levels were also associated with increased social media use, and emotional investment in social media. The relationship between self-esteem and social media use was found to be negative, whereby lower self-esteem scores were associated with higher levels of social media use, and emotional investment in social media.

The Royal Society for Public Health ([RSPH, 2017](#)) and the Young Health Movement sent an online survey to a sample of young people across the United Kingdom aged between 14 to 24 years and was completed by 1479 individuals. The findings showed that social media use was linked to increased incidence of depression, anxiety and poor sleep. Participant ratings overall scored Instagram as the worst social platform in terms of well-being issues (reduced satisfaction with body image and a higher need to stay connected), followed by Snapchat and Facebook. This could be due to the reliance of Instagram on images, and that unlike Snapchat they remain permanently, and thus allow for later reflection or comparison.

In contrast to the many surveys conducted, [Fardouly, Diedrichs, Vartanian, and Halliwell \(2015\)](#) conducted a small experimental study to assess the immediate effects of using Facebook on self-perceptions. Fardouly et al. randomly assigned 112 female participants aged between 17 to 25 years to one of three conditions: spending 10 min browsing their Facebook account, a magazine website, or an appearance-neutral control website (on home craft). Participants then completed state measures of mood, body dissatisfaction, appearance discrepancies (weight-related, and face, hair, and skin-related), and a trait measure of appearance comparison tendency. Females who spent their browsing time on Facebook gave more negative mood scores, compared to those who browsed the control website. Further, females high in appearance comparison tendency reported more facial, hair, and skin-related discrepancies after exposure to Facebook than to the control website.

A number of researchers have specifically focused on depression. For example, an early study by [Steers, Wickham, and Acitelli \(2014\)](#) found a correlation between the number of depressive symptoms experienced and increased amount of time using Facebook. [Shensa, Sidani, Dew, Escobar-Viera, and Primack \(2018\)](#) attempted to identify which patterns of social media use were associated with depression and anxiety symptoms, using an online survey of a nationally representative sample of 1730 US adults aged between 19 to 32 years. Depression and anxiety were measured using the Patient-Reported Outcome Measurement Information System (PROMIS) scale. Cluster analysis characterized participants into five types of social media user: wired, connected, diffuse dabblers, concentrated dabblers, and unplugged. Multivariable logistic regression models then assessed associations between cluster membership and depression and anxiety. They found that membership in two clusters (wired and connected) were associated with higher levels of depression and anxiety symptoms. Interestingly, although not significant there were more females in the wired (57%) and connected (60%) clusters, and less females in the unplugged cluster (40%). Furthermore, those in the unplugged cluster were older (mean 26.4 years) and those in the connected cluster were younger (mean 23.8 years), compared with those in the other three clusters (mean 25 years). Although age and gender differences were not significant, these patterns may be worthy of future study.

[Aalbers, McNally, Heeren, de Wit, and Fried \(2019\)](#) collected measures relating to depression symptoms and social media use from 125 students, at seven times per day for 14 days. Using regression and time-series models, they found that spending more time on social media was associated with higher levels of loss of interest in offline activities, concentration problems, fatigue, and loneliness. Fatigue and loneliness predicted social media use across time, but social media use predicted neither depression symptoms or stress. Mean social media use was positively correlated with a depressed mood and feeling inferior, but these associations disappeared when controlling for all other variables. These correlations with loneliness are important, but it would be useful to know if individuals were lonely before using social media, or whether using social media led to loneliness. In a national UK survey called the ‘Loneliness Experiment’ ([BBC, 2018](#)), individuals who reported feeling lonely were found to have more ‘online only’ Facebook friends.

[Dogan \(2019\)](#) reports that experiencing fear of missing out (FoMO) is becoming increasingly widespread among social media users and to avoid this ‘fear,’ users experience a strong desire, and exhibit behavior, to stay connected online. Fear of missing out (FoMO) is defined as an apprehension of being disconnected, absent or missing an experience which peers, friends or family might participate in or enjoy ([Przybylski, Murayama, DeHaan, & Gladwell, 2013](#)). Recent studies have linked FoMO with a variety of negative psychological and physiological conditions, including depression and other emotional problems ([Przybylski et al., 2013](#)). [Dhir, Yossatorn, Kaur, and Chen \(2018\)](#) explored the relationships

between psychosocial wellbeing (measured by levels of anxiety and depression) and factors relating to social media (using previously validated measures of compulsive media use, fear of missing out, and trigger fatigue). 2698 Adolescent social media users in India completed the survey and the results suggested that compulsive media use significantly triggered social media fatigue, which later result in elevated anxiety and depression. Fear of missing out indirectly predicted social media fatigue, through mediation of compulsive social media use.

Social media use and positive impacts on mental health

Despite the findings presented in “[Social media use and negative impacts on mental health](#)” section, other researchers ([Berryman, Ferguson, & Negy, 2018](#)) have found no evidence for negative impacts, or they have found positive impacts of social media use on mental health (e.g., [RSPH, 2017](#) found that higher use of social media was associated with positive effects on self-expression). Social media and other online resources can offer positive opportunities to engage and provide support for individuals with mental health issues. [Allen, Ryan, Gray, McInerney, and Waters \(2014\)](#) highlight that a key positive feature of social media is to enhance ‘social connectedness’ and this has become even more important now during times when individuals are unable to meet in person due to COVID-19 restrictions ([Taylor-Jackson et al., 2020](#)). [Rideout and Fox \(2018\)](#) conducted a nationally representative survey of 1337 young people aged between 14 to 22 years. In addition to measures of online and social media behaviors, the survey also included the Patient Health Questionnaire Depression Scale (PHQ-8). They found that those individuals experiencing moderate to severe symptoms of depression were searching the internet for help, including researching mental health issues online (90%), accessing other people’s health stories through blogs, podcasts, and videos (75%), using mobile apps related to well-being (38%), and connecting with health providers through digital tools such as texting and video chat (32%).

Social media enables users to easily influence other individual’s perceptions, by manipulating online content about themselves. [Walther, Van Der Heide, Ramirez, Burgoon, and Peña \(2015\)](#) associated this ability to add information about oneself with enhanced feelings of control and satisfaction with life. Further, by using multiple social media platforms, individuals can present themselves differently in each one, and in this way, they are able to experiment with different identities ([Toma & Hancock, 2012](#)). From a developmental perspective, using social media can benefit the development of an individual’s identity and has been linked to positive impacts on psychosocial well-being. This can happen through various ways. For example, Facebook was found to increase self-awareness and self-esteem after viewing one’s own personal profile ([Gonzales & Hancock, 2010](#)), and individuals with low self-esteem perceived improved feelings of self-worth through receiving ‘likes’ ([Attrill, 2015](#)). [Bland, Melton, Welle, and Bigham \(2012\)](#) suggested that people may use social media

as a way to alleviate stress, however, it is unclear whether using social media exacerbates stress for those individuals already suffering with anxiety. Other studies have shown that social media use can help create an online community that can support in the treatments of several disorders, such as drug abuse (Bliuc, Best, & Moustafa, 2020) or depression (Griffiths et al., 2012).

Explanatory theories and models

There have been two types of explanation to account for the relationship between social media use and the impacts on mental health, both relating to the asynchronous and ubiquitous features of social media. These features allow users the time to reflect on communications, images, profiles and to reflect upon their own sense of identity, or compare them self to others.

Identity development and impression management

Social media allows users to explore, manipulate and maintain their online identity and this can allow individuals to easily adjust their sense of self-worth. Because individuals can exhibit and withhold information to influence perceptions and manage impressions held by others this enables users to portray an ideal version of themselves that may be unachievable in real life. A number of researchers have expressed caution regarding potential mental health implications, with concerns of people placing less value on their ‘real world’ identity, resulting in individuals being more vulnerable to symptoms related to depression. In support of this view, Aiken (2016) also proposes that the action of portraying one’s ‘aspirational self’ online could have negative consequences on later self-perception and mental wellbeing.

Social Identity Theory describes self-concept as developing from perceived group membership (Turner & Oakes, 1986), which, due to the opportunity to build larger numbers of online networks, could lead to individuals experiencing conflict, as a result of needing to maintain impressions across different groups. The Hyperpersonal Model of Communication (Walther et al., 2015) suggests that the different features of online communication, compared to traditional interaction, lead to interpersonal communication becoming extremely personal. Similarly, Suler’s (2004) Theory of Online Disinhibition proposes that when interactions take place online there is more self-disclosure, more detachment from real life, and trust develops more easily. An outcome of these impacts is that online communication can affect individuals more deeply and personally, and as a result negative self-perception can quickly develop.

Social comparison theory

Festinger’s (1954) social comparison theory proposes that individuals define their abilities and evaluate their sense of self-worth through comparison with

others. Downward comparison involves comparing oneself to people perceived to be less fortunate, which may be used as a method of self-enhancement. The alternative, upward social comparison, occurs when comparing oneself with others who have positive characteristics that one may view as superior to their own (Taylor & Lobel, 1989). When using social media, accessing information about other individuals (such as what they have been doing and where they have been) is more readily available, compared to offline interactions, therefore social comparison can occur more easily and more often (Verduyn, Ybarra, Résibois, Jonides, & Kross, 2017). Also, many social media sites provide functions that allow individuals to easily connect with and become informed about others who post information that is similar to them; so it can be difficult to avoid comparing oneself with others on a similar topic.

Upward social comparison on social media has been related to a decline in levels of self-esteem. Vogel, Rose, Roberts, and Eckles (2014) suggest social media provide a platform for many comparison opportunities. In a series of studies, they found that participants who used Facebook more had lower self-esteem, compared with less frequent users. This was mediated by an increased exposure to profiles with positive content (such as those with active and healthy lifestyles), which offered upward social comparisons, and levels of self-assessments declined when exposed to these profiles. Similarly, Feinstein et al. (2013) related increasing use of Facebook with an increase in the number of depressive symptoms, and that the mediating factor was the number of negative comparisons when using Facebook. They also found that individuals who made more frequent social comparisons on social media reported a greater number of depressive symptoms. However, the causal relationship between negative comparisons on social media and an increase in the number of symptoms of depression cannot be assumed, as there is no consideration in this study of existing levels of self-esteem or depression (and individuals who are depressed may be more likely to engage in negative social comparisons). Idealized images on social media are likely to affect body satisfaction in a negative way through the process of social comparison and Brown and Tiggemann (2016) found that participants indicated increased body dissatisfaction following exposure to both celebrity and peer images, in comparison to control images. However, their findings were based on a female-only sample, and more research is required including all genders.

Methodological limitations and suggestions for further research

The majority of studies reviewed in this chapter use self-report methods, and consistent with the negativity bias (Rozin & Royzman, 2001), negative experiences with social media are likely to be stored in memory or recalled more readily than positive experiences. Further, negative behavior or perceptions experienced while using social media escalate quickly and are viewed by

more people, and, as a consequence, may influence perceptions more strongly (Primack et al., 2018), compared to equivalent offline perceptions. The majority of studies reviewed in this chapter use a correlational design and caution is needed in assuming causal relationships.

There is a lack of research based on samples drawn from populations that are not Caucasian (White), Educated, Industrialized, Rich, and Democratic (WEIRD). Although in a study by Lin et al. (2016), where increased social media use was significantly associated with increased depression, although this was based on an American sample, participants were sampled from a variety of ethnicities, providing some evidence of cross-cultural similarities. Many of the research findings are based on samples containing a majority of females, and in some studies only females took part (Fardouly et al., 2015). Female adolescents tend to use social networking sites more than males (Statista, 2018), have lower self-esteem (Bachman, O'Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011), and experience higher levels of anxiety and depression (Faravelli, Scarpato, Castellini, & Lo Sauro, 2013). These factors may have skewed the individual differences. Escobar-Viera et al. (2018) suggest that future research needs to also focus on collecting data regarding sexual orientation (heterosexual, lesbian, gay, bisexual, and transgender) to enable further comparisons of findings. Escobar-Viera et al. (2018) state that so far, sexual minority participants have been identified inconsistently in research. They suggest that because these groups may be more socially active on social media and that rates of depression among LGBT are up to two times higher than heterosexual individuals, there may be a stronger relationship between social media use and depression, compared with heterosexuals. In many studies, age is not individually collected (often just the range of ages is stated), and this may also be a confounding factor in that relationships may not be shown or are weaker. For example, older adolescents tend to use computers more and experience higher levels of anxiety and depression than younger adolescents (Kozina, 2014).

Personality needs to be considered as it may be a potential mediating factor influencing the likelihood of developing mental health issues as a result of increasing social media use. Attrill (2015) proposed that certain individuals are more susceptible to the negative or positive effects of social media; however, there has been little research to investigate personality. Paramboukis, Skues, and Wise (2016) explored the relationship between levels of narcissism and self-esteem with Instagram activity; however, only a weak correlation was found associating higher narcissism and lower self-esteem with more Instagram use. Similarly, anxious individuals are likely to be affected by increasing social media use differently than non-anxious individuals. It is important when conducting research to ensure that state and trait measures of mental health are clearly stated, as these are often not collected.

It is possible that whether positive or negative impacts on mental health are experienced depend on the type of social media platform used, as much as level of use. Indeed, Brailovskaia and Margraf (2018) provided some evidence that

this may be the case. They investigated the relationship between mental health and social media use and found that relationships were mediated by the type of social media platform used. The use of platforms that are based on written interaction (e.g., Twitter and Tumblr) were negatively associated with positive mental health variables and positively associated with depression, anxiety, and stress symptoms. While the use of social media platforms that focus on sharing photos (i.e., Instagram), led to positive correlations between social media use and positive mental health variables. These findings were in contrast the their hypotheses and previous research, showing Instagram to be associated with negative mental health. Social media as a class of communication varies widely and further research is needed to compare platforms and specifically identify the specific features of social media that exist when the research is conducted. For example, Facebook recently removed the feature where numbers of likes to a post could be seen by everyone, and this would influence the level of social comparison possible (i.e., which people or posts are liked the most or least). Much of the previous research is limited to exploring the effects of older platforms such as Facebook and there is less research exploring the impacts of Snapchat and Instagram. Moreover, different measures of social media activity are used (e.g., time spent online, frequency of pre-editing photos, visits per day, frequency of checking feedback, number of posts per month, and number of selfies posted per month). Relating to the findings reviewed earlier regarding loneliness, further research needs to examine changes to offline interpersonal interactions: increasing use of social media will naturally leave less time to engage in offline interpersonal interactions, e.g., [Subramanian \(2017\)](#) found a decline in family communication and the size of offline social networks; both important factors in developing and maintaining positive mental health.

In summary, understanding the psychological consequences of using social media is in the early stages of investigation. Evaluating and comparing the research results so far is difficult, due to the rapidly changing technologies, new platforms and new features leading to new ways of using social media. There is a complex relationship between the use of social media and symptoms linked to factors related to mental health and depression, and further research is needed before causal relationships can be confirmed. In summary, we would express caution regarding extravagant negative media headlines, such as the [RSPH \(2017\)](#) report claiming that social media is stimulating a global mental health crisis.

References

- Aalbers, G., McNally, R. J., Heeren, A., de Wit, S., & Fried, E. I. (2019). Social media and depression symptoms: A network perspective. *Journal of Experimental Psychology: General*, *148*(8), 1454.
- Aiken, M. (2016). *The cyber effect*. Spiegel & Grau.
- Allen, K.-A., Ryan, T., Gray, D. L., McInerney, D. M., & Waters, L. (2014). Social media use and social connectedness in adolescents: The positives and the potential pitfalls. *The Australian Educational and Developmental Psychologist*, *31*(1), 18–31. <https://doi.org/10.1017/edp.2014.2>.

- Attrill, A. (2015). *Cyberpsychology*. Oxford: Oxford University Press.
- Bachman, J. G., O'Malley, P. M., Freedman-Doan, P., Trzesniewski, K. H., & Donnellan, M. B. (2011). Adolescent self-esteem: Differences by race/ethnicity, gender, and age. *Self and Identity, 10*(4), 445–473. <https://doi.org/10.1080/15298861003794538>.
- BBC. (2018). *Who feels lonely? The results of the world's largest loneliness study* Available from <https://www.bbc.co.uk/programmes/articles/2yzhfv4DvqVp5nZyxBD8G23/who-feels-lonely-the-results-of-the-world-s-largest-loneliness-study>.
- Berryman, C., Ferguson, C. J., & Negy, C. (2018). Social media use and mental health among young adults. *Psychiatric Quarterly, 89*, 307. <https://doi.org/10.1007/s1126-017-9535-6>.
- Bland, H. W., Melton, B. F., Welle, P., & Bigham, L. (2012). Stress tolerance: New challenges for millennial college students. *College Student Journal, 46*(2), 362–375.
- Bluci, A., Best, D., & Moustafa, A. A. (2020). Accessing addiction recovery capital via online and off-line channels: The role of peer-support and shared experiences of addiction. In A. A. Moustafa (Ed.), *Cognitive, clinical, and neural aspects of drug addiction*. Elsevier.
- Brailovskaia, J., & Margraf, J. (2018). What does media use reveal about personality and mental health? An exploratory investigation among German students. *PLoS One, 13*(1), e0191810. <https://doi.org/10.1371/journal.pone.0191810>.
- Brown, Z., & Tiggemann, M. (2016). Attractive celebrity and peer images on Instagram: Effect on women's mood and body image. *Body Image, 19*, 37–43. <https://doi.org/10.1016/j.bodyim.2016.08.007>.
- Dhir, A., Yossatorn, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing: A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International Journal of Information Management, 40*, 141–152.
- Dogan, V. (2019). Why do people experience the fear of missing out (FoMO)? Exposing the link between the self and the FoMO through self-construal. *Journal of Cross-Cultural Psychology, 50*(4), 524–538. <https://doi.org/10.1177/0022022119839145>.
- Escobar-Viera, C. G., Whitfield, D. L., Wessel, C. B., Shensa, A., Sidani, J. E., Brown, A. L., et al. (2018). For better or for worse? A systematic review of the evidence on social media use and depression among lesbian, gay, and bisexual minorities. *JMIR Mental Health, 5*(3), e10496. <https://doi.org/10.2196/10496>.
- Faravelli, C., Scarpatò, M. A., Castellini, G., & Lo Sauro, C. (2013). Gender differences in depression and anxiety: The role of age. *Psychiatry Research, 210*(3), 1301–1303. <https://doi.org/10.1016/j.psychres.2013.09.027>.
- Fardouly, J., Diedrichs, P., Vartanian, L., & Halliwell, E. (2015). Social comparisons on social media: The impact of Facebook on young women's body image concerns and mood. *Body Image, 13*, 38–45. <https://doi.org/10.1016/j.bodyim.2014.12.002>.
- Feinstein, B. A., Hershenberg, R., Bhatia, V., Latack, J. A., Meuwly, N., & Davila, J. (2013). Negative social comparison on Facebook and depressive symptoms: Rumination as a mechanism. *Psychology of Popular Media Culture, 2*(3), 161.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117–140.
- Gonzales, A., & Hancock, J. (2010). Mirror, mirror on my Facebook wall: Effects of exposure to Facebook on self-esteem. *Cyberpsychology, Behavior and Social Networking, 14*, 79–83. <https://doi.org/10.1089/cyber.2009.0411>.
- Griffiths, K. M., Mackinnon, A. J., Crisp, D. A., Christensen, H., Bennett, K., & Farrer, L. (2012). The effectiveness of an online support group for members of the community with depression: A randomised controlled trial. *PLoS One, 7*(12), e53244. <https://doi.org/10.1371/journal.pone.0053244>.

- Jenkins-Guarnieri, M. A., Wright, S. L., & Johnson, B. (2013). Development and validation of a social media use integration scale. *Psychology of Popular Media Culture*, 2(1), 38.
- Kozina, A. (2014). Developmental and time-related trends of anxiety from childhood to early adolescence: Two-wave cohort study. *European Journal of Developmental Psychology*, 11(5), 546–559. <https://doi.org/10.1080/17405629.2014.881284>.
- Lin, L. Y., Sidani, J. E., Shensa, A., Radovic, A., Miller, E., Colditz, J. B., et al. (2016). Association between social media use and depression among US young adults. *Depression and Anxiety*, 33(4), 323–331. <https://doi.org/10.1002/da.22466>.
- National Institute of Mental Health. (2017). *Prevalence of major depressive episode among adults*. Available from <https://www.nimh.nih.gov/health/statistics/major-depression.shtml>.
- Paramboukis, O., Skues, J., & Wise, L. (2016). An exploratory study of the relationships between narcissism, self-esteem and Instagram use. *Social Networking*, 5, 82–92. <https://doi.org/10.4236/sn.2016.52009>.
- Primack, B. A., Bisbey, M. A., Shensa, A., Bowman, N. D., Karim, S. A., Knight, J. M., et al. (2018). The association between valence of social media experiences and depressive symptoms. *Depression & Anxiety*, 35, 784–794. <https://doi.org/10.1002/da.22779>.
- Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, 29(4), 1841–1848. <https://doi.org/10.1016/j.chb.2013.02.014>.
- Rideout, V., & Fox, S. (2018). Digital health practices, social media use, and mental well-being among teens and young adults in the U.S. In *Articles, abstracts, and reports*. (pp. 1093). Available from <https://digitalcommons.psjhealth.org/publications/1093>.
- Rosenberg, M. (1965). *Society and the Adolescent self-image*. Princeton, NJ: Princeton University Press.
- Royal Society for Public Health (RSPH). (2017). *#StatusOfMind Social media and young people's mental health and wellbeing*. Available from <https://www.rsph.org.uk/uploads/assets/uploaded/d125b27c-0b62-41c5-a2c0155a8887cd01.pdf>.
- Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5(4), 296–320. https://doi.org/10.1207/S15327957PSPR0504_2.
- Rubin, K. H., & Rose-Krasnor, L. (1992). *Interpersonal problem solving and social competence in children*. In *Handbook of social development*. Boston, MA: Springer. (pp. 283–323).
- Salovey, P. E., & Sluyter, D. J. (1997). *Emotional development and emotional intelligence: Educational implications*. Basic Books.
- Shensa, A., Sidani, J. E., Dew, M. A., Escobar-Viera, C. G., & Primack, B. A. (2018). Social media use and depression and anxiety symptoms: A cluster analysis. *American Journal of Health Behavior*, 42(2), 116–128.
- Statista. (2018). *Frequency of using social networking sites in Australia as of April 2018, by gender*. <https://www.statista.com/statistics/648971/australia-frequency-of-social-network-site-usage-by-gender/>.
- Statista. (2019). Available from <https://www.statista.com/chart/18983/time-spent-on-social-media/>.
- Steers, M. L. N., Wickham, R. E., & Acitelli, L. K. (2014). Seeing everyone else's highlight reels: How Facebook usage is linked to depressive symptoms. *Journal of Social and Clinical Psychology*, 33(8), 701–731. <https://doi.org/10.1521/jscp.2014.33.8.701>.
- Subramanian, K. R. (2017). Influence of social media in interpersonal communication. *International Journal of Scientific Progress and Research*, 38(109), 70–75.

- Suler, J. (2004). The online disinhibition effect. *Cyberpsychology & Behavior*, 7(3), 321–326. <https://doi.org/10.1089/1094931041291295>.
- Taylor, S. E., & Lobel, M. (1989). Social comparison activity under threat: Downward evaluation and upward contacts. *Psychological Review*, 96(4), 569.
- Taylor-Jackson, J., Abba, I., Baradel, A., Lay, J., Herewini, J., & Taylor, A. (2020). Social media use, experiences of social connectedness and well-being during COVID-19. In A. Moustafa (Ed.), *COVID-19 and mental health*. Elsevier (in press).
- Toma, C. L., & Hancock, J. T. (2012). What lies beneath: The linguistic traces of deception in online dating profiles. *Journal of Communication*, 62, 78–97. <https://doi.org/10.1111/j.1460-2466.2011.01619.x>.
- Turner, J. C., & Oakes, P. J. (1986). The significance of the social identity concept for social psychology with reference to individualism, interactionism and social influence. *British Journal of Social Psychology*, 25, 237–252. <https://doi.org/10.1111/j.2044-8309.1986.tb00732.x>.
- Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do social network sites enhance or undermine subjective well-being? A critical review. *Social Issues and Policy Review*, 11(1), 274–302.
- Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture*, 3(4), 206.
- Walther, J. B., Van Der Heide, B., Ramirez, A., Jr., Burgoon, J. K., & Peña, J. (2015). Interpersonal and hyperpersonal dimensions of computer-mediated communication. In S. S. Sundar (Ed.), *The handbook of the psychology of communication technology*. <https://doi.org/10.1002/9781118426456.ch1>.
- Woods, H. C., & Scott, H. (2016). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence*, 51, 41–49.