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Differences in Perceived Depression across Levels of Social Media Usage

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Abstract

This study investigates the relationship between social media usage and depressive symptoms. The study comprised 222 participants and depressive symptoms were measured by the PHQ-9 (Patient Health Questionnaire–9). No significant association was found between daily social media use and depressive symptom severity ($F(4, 202) = 0.427$, $p = .789$), despite a slight nonsignificant upward trend in depression scores among heavier users. However, age proved a significant predictor. Young adults aged 16-20 reported markedly higher depression scores ($M = 10.38$, $SD = 6.41$) compared to those aged 21-25 ($M = 6.92$, $SD = 4.90$), with the difference being statistically significant ($p = .002$). Recommendations include digital literacy, emotional regulation, and mindful social media use.

Keywords: Social Media Use, Depressive Symptoms, Adolescence.

Introduction

Depression is one of the global major sources of mental difficulty, affecting over 280 million people with attendant effects of personal and socioeconomic burdens (World Health Organization, 2023). Concurrently, social media platforms, comprising Facebook, Instagram, Snapchat and Twitter (now X) have become a mainstay of daily life with Facebook alone commanding the quotidian attention of more than 4 billion users (Statista, 2025). Adolescents and young adults alike allot large blocks of time and emotional attention to online interaction, leading mental health experts, parents, and well-meaning members of the global society to nurse concerns about the potential ripple effects on their mental health. Early theoretical models have posited that inordinate digital engagement could lead to a compulsive complex of behaviors, distorted self-image, and a hollowing sense of isolation, all of which are known risk factors for depressive symptoms (Nagata et al., 2025).

Over the past decade, research has made attempts to understand if and how social media use correlates with depression. Their curiosity also seeks to determine the conditions where this association is strongest if it exists. Despite heterogeneity in study designs, measures of both usage and mood, and target populations, two major motifs are noticeable. First, time-based metrics (total hours per day) tend to show weak associations with depressive symptoms. Second, qualitative dimensions of engagement, such as problematic or addictive use patterns, upward social comparisons, and high investment in content creation are more strongly linked to depressive outcomes. This distinction suggests that how individuals use social media may matter more than how much time they spend.

Moreover, the preponderance of evidence indicates a small to moderate positive association between social media use and depressive symptoms, with problematic engagement patterns and upward social comparisons acting as notable factors. Early large-scale surveys reported modest positive correlations between total time on social networking sites (SNS) and depressive symptoms ($r \approx 0.11$) (Cunningham et al., 2021; Ivie et al., 2020). One such example is Lin et al. (2016) who found that U.S. young adults in the highest quartile of daily SNS time

had 1.66 times greater adjusted odds of depression compared with the lowest quartile, controlling for sociodemographic covariates (Lin et al., 2016). As the study further found, these associations diminished after adjusting for usage intensity and problematic patterns, thus suggesting confounding by qualitative engagement dimensions (Lin et al., 2016). Two meta-analytic syntheses underlined the critical task of separating intensity (frequency of visits, number of friends/followers) and problematic SNS use (addictive patterns characterized by compulsive checking, loss of control). Wilson et al. (2021) synthesized 62 studies (N = 451,229) and reported weak associations for time spent (r=0.11) and intensity (r=0.09) but a moderate association for problematic use (r=0.29).

Similarly, Yoon et al. (2019) compared four constructs, which include: time spent, checking frequency, general social comparison, and upward social comparison. Yoon and his co-researchers found that upward comparisons produced a medium effect size on depression, surpassing time-based metrics. These two findings converge on the notion that addictive and comparison-heavy engagement more strongly predicts depressive symptomatology than mere usage quantity. Elsewhere, in one U.S. cohort study of children and early adolescents aged between 9 and 12, researchers demonstrated that within-person increases in social media time predicted subsequent depressive symptoms one year later, even after controlling for baseline mood and demographic factors (Nagata et al., 2025). Other longitudinal studies have reported mixed cross-lagged interrelationships among older adolescents, hinting of a plausible bidirectionality or reverse causality translating to preexisting depressive symptoms increasing problematic social media use, which by extension worsens mood over time (Nagata et al., 2025).

Fox and Moreland (2015) theorized that repetitive exposure to peer successes amplifies negative self-evaluation through social ranking mechanisms, particularly in individuals with preexisting low self-esteem. Upward social comparisons (i.e. viewing peers' idealized self-presentations), have been implicated as a key mediator of self-evaluation and depressive moods (Fox & Moreland, 2015). Passive consumption of curated content elicits feelings of envy and inferiority, which predict depressive mood states (Yoon et al., 2019).

Problematic social media use, a phenomenon typified by compulsive engagement, preoccupation, and withdrawal symptoms when unable to access platforms, parallels behavioral addiction (Miranda et al., 2023). Problematic social media use is associated with neglect of offline activities (face-to-face interactions, physical exercise, sleep, and vocational work), which independently and jointly mount guards against depressive symptoms (Shensa et al., 2017). In Shensa et al. 's nationally representative sample of young adults, each unit increase in problematic social media use score was associated with a 9% rise in the odds of clinically significant depressive symptoms, independent of time and frequency metrics.

The dark side of social media runs amok with negative interactions such as cyberbullying, harassment, or online social rejection ("ghosting"), all of which exerts a strong influence on depression. Time spent on social media widens opportunities for negative interactions, which have demonstrated negative effects on internalizing personal problems (Riehm et al., 2019). These difficult experiences may function both as independent risk factors and as catalysts for maladaptive use patterns (e.g., avoidance, rumination).

Adolescents exist in a highly impressionable period of psychosocial development which includes the crucial event of identity formation. This makes them appear particularly vulnerable to social comparison effects. A systematic review of adolescent samples found

consistent cross-sectional associations across four domains: time, activity, investment, and addiction, with depression, although causal inferences are limited by study designs (Keles et al., 2019). Female adolescents have also been reported to exhibit stronger associations between problematic social media use and depressive symptoms (Ye & Gao, 2019). This is probably due to greater appearance-based comparisons on visually oriented platforms (e.g., Instagram). Further, personality traits such as neuroticism and self-esteem increase the tendency of individuals to be vulnerable to social media (Merrill et al., 2022). Individuals with high neuroticism traits are more likely to engage in excessive reassurance seeking and ruminate on negative online feedback which steeps them in depression (Merrill et al., 2022).

Summarily, the present literature reveals a moderate link between social media use and depressive symptoms, calibrated by intensity, problematic engagement, and upward social comparisons. Higher time spent on platforms correlates with increased depression, particularly through addictive behaviors and negative interactions like cyberbullying. Adolescents, especially females, are more vulnerable due to social comparison tendencies and personality traits like neuroticism. The foregoing literature shows the importance of studying qualitative engagement of social media usage over typical metrical analysis. This study aims to add to the body of knowledge by exploring the nuance of age-patterned and age-informed social media usage.

Method

Participants

A total of 222 participants completed the study, with ages ranging from 16 to 41+ years. The sample consisted of 74 participants (33.3%) aged 16-20 years, 92 participants (41.4%) aged 21-25 years, 33 participants (14.9%) aged 26-30 years, 12 participants (5.4%) aged 31-40 years, and 11 participants (5.0%) aged 41 years and above. For the social media usage analysis, 207 participants provided complete data, with 15 participants having missing values for social media usage. In the course of the survey, ethical principles of voluntary participation, consent, and assurance of anonymity and confidentiality were followed. The study didn't receive approval from any ethical board because participants were scattered across the country and there was no centralized ethics review board.

Measures

Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9), a validated 9-item self-report measure of depressive symptoms with a Cronbach Alpha coefficient of 0.892 and found to be very reliable for evaluating major depressive disorder (Sun et al., 2020). Total scores range from 0 to 27, with higher scores indicating greater depression severity. Social media usage was measured by asking participants to report the number of hours they spend on social media daily, categorized into five groups: 1-5 hours, 6-10 hours, 11-15 hours, 16-20 hours, and 21-24 hours.

Results

This study hypothesized that time spent on social media would significantly predict depression. A one-way ANOVA was conducted to examine differences in PHQ-9 scores across five social media usage groups. Prior to analysis, Levene's test confirmed homogeneity of variances ($p = .261$).

The analysis revealed no significant difference between groups, $F(4, 202) = 0.427$, $p = .789$. Therefore, social media did not predict depression scores. This result is supported by the cohort study finding of Steinsbekk et al (2023) who reported that within-person changes in

social media behavior was unrelated to within-person changes in depression even after two years.

Table 1

Descriptive Statistics for PHQ-9 Scores by Social Media Usage

Social Media Usage 95% CI	N	%	M	SD
1-5 hours [6.47, 9.33]	88	39.6	7.90	6.74
6-10 hours [6.35, 9.05]	73	32.9	7.70	5.80
11-15 hours [5.73, 10.59]	25	11.3	8.16	5.89
16-20 hours [5.99, 11.86]	13	5.9	8.92	4.86
21-24 hours [7.09, 13.66]	8	3.6	10.38	3.93
Total [7.18, 8.86]	207		8.02	6.10

Table 2

One-Way ANOVA Results for Social Media Usage and Depression

Source	SS	Df	MS	F	*p*
Between Groups	64.32	4	16.08	0.427	.789
Within Groups	7597.61	202	37.61		
Total	7661.92	206			

Discussion

The present study examined the differences in perceived depression across different levels of social media usage, focusing specifically on the quantity of daily social media engagement and differences in depression levels, as measured by the PHQ-9 depression scale.

The first major finding was the lack of a statistically significant impact of the amount of daily social media use on depressive symptoms. The results from the one-way ANOVA in Table 2 showed no significant differences in mean PHQ-9 scores across five social media usage groups ranging from 1-5 hours to 21-24 hours ($F(4, 202) = 0.427$, $p = .789$). Although a modest increasing trend in depression scores was observed with longer daily social media use, it wasn't significant. This finding is counter to the existing assumption that greater screen time inherently predicts higher depression risk.

This finding aligns with a lean body of research suggesting that time spent on social media alone is a weak predictor of depressive symptoms. For example, systematic reviews report small effect sizes (correlations often below r = .15) when linking raw usage time to depression (Huang, 2017; Keles et al., 2020). Instead, scholars stress the importance of qualitative factors such as the nature of use, content type, and psychological engagement style. Problematic usage patterns (including compulsive checking, social comparison, and exposure to negative content) demonstrate stronger associations with depressive symptoms (Marino et al., 2018; Tandoc et al., 2015). These findings suggest that social media effects on depression are complex and mediated by variables beyond simple duration, thus demanding careful, detailed interpretation in lieu of generalized screen time avoidance messages.

Theoretically, this study supports the differential susceptibility to media effects model (Valkenburg & Peter, 2013), which postulates that media effects vary depending on individual behavior and contexts. In this case, mere exposure duration may not be harmful if engagement is positive or purposeful, while excessive engagement marked by negative emotions, envy, or exclusion narratives may constitute true risk factors.

This study also made the lateral finding of age as a significant determinant of depressive symptoms. Younger participants aged 16-20 reported significantly higher mean depression scores (M = 10.38) compared to other age groups, with a statistically significant difference only between the 16-20 and 21-25 groups (p = .002). This finding is evocative of entrenched knowledge of adolescence and emerging adulthood as critical periods for vulnerability to depression. During this stage, individuals face intense identity development, social pressures, academic and career uncertainties, and heightened emotional reactivity, all contributing to increased depression risks.

The increased sensitivity of younger users to peer evaluation and social comparison in online arena may explain the age-related susceptibility to depression found in this study. Social comparison theory notes that adolescents are particularly susceptible to comparing themselves with idealized social media portrayals, which can lead to feelings of inadequacy, low self-esteem, and depressive symptoms (Appel et al., 2015; Nesi & Prinstein, 2015). This vulnerability is deepened by the relatively higher rates of exposure to social exclusion lifestyles.

This study which reports higher depressive symptoms in youth and also high social media use by adolescents is explainable by the social compensation hypothesis (McKenna & Bargh, 2000), which suggests that those with preexisting emotional distress might use social media excessively to compensate for offline difficulties.

Considered wholly, these findings point to the fact that depression related to social media use cannot be reliably mapped and understood by sheer focus on raw usage time as a standalone fact. Instead, variables are required that address the developmental and qualitative use angles such as engagement motives, emotional responses, and individual vulnerabilities.

Implications for Theory and Practice

In the current study, a direct relationship between social media usage and depressive symptoms was not found. The results, however, contribute to previous research identifying that time-based metrics may not capture individual and contextual differences in social media usage. Theoretically, the study adds to converging evidence validating developmental and contextual models of media effects. It supports models focused on individual vulnerabilities

and mediating features such as social comparison, compulsive use, and emotional regulation difficulties in the social media-depression relationship (Utz & Krämer, 2009; Nesi & Prinstein, 2019). It also suggests that static measures of social media quantity provide an incomplete picture, urging scholars to operationalize and investigate qualitative dimensions of social media use in future research.

Clinically, the age-related findings evince a need for targeted mental health support for adolescents and young adults, focusing on their specific psychosocial challenges and their interactions with digital environments. Recent research has shown that digital health promotion in youths led to considerable small improvements in general well-being and significant small-to-medium significant improvements in anxiety (Wright et al., 2023).

Interventions should prioritize digital literacy, emotional self-regulation strategies, and mindful engagement with social media rather than solely advocating for reduced usage time. Programs that teach adolescents to critically assess social media content and recognize harmful comparison patterns may mitigate depressive vulnerabilities.

Limitations

This study examining the relationship between social media usage and depressive symptoms presents several limitations that warrant consideration. Firstly, the cross-sectional design restricts causal inferences, as it captures data at a single point in time without revealing the directionality of the relationships. The reliance on self-reported measures, particularly through the PHQ-9, may introduce bias due to social desirability or recall errors.

The sample of 222 participants may lack diversity, limiting the generalizability of the findings across different socioeconomic, cultural, and geographic backgrounds. Furthermore, the focus on quantitative, time-based metrics of social media engagement overlooks qualitative aspects, such as content type and emotional context, which could be more impactful on depressive symptoms. The study also fails to account for contextual factors like personality, pre-existing mental health condition, and offline social support and life stressors, which could confound the results.

Conclusion

In sum, this study confirms that daily social media usage duration does not significantly predict depressive symptoms across a heterogeneous age sample, reinforcing the insufficiency of time-based metrics alone. However, younger age groups exhibit higher depression scores, showing developmental susceptibility as a core risk factor.

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