



SOCIAL WELL-BEING ACROSS LEVELS OF SOCIAL MEDIA USAGE AND GENDER AMONG GRADE IX STUDENTS IN PUNJAB

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Abstract

Social media occupies an important place in adolescents' communication, learning, recreation, and peer relationships, but evidence concerning its association with well-being remains mixed because studies differ in how both social media use and well-being are conceptualized. The present study examined differences in Social Well-Being across three levels of Social Media Usage and gender among 1,120 Grade IX students studying in schools affiliated with the Punjab School Education Board in Hoshiarpur, Barnala, and Ludhiana districts. The sample comprised 520 male and 600 female students drawn from Government and Private schools through a stratified sampling procedure within a multistage framework. Social Well-Being and Social Media Usage were assessed using their respective scales. Students were classified into High, Average, and Low Social Media Usage groups, and a 3×2 factorial analysis of variance with Type III sums of squares was conducted, followed by Scheffé comparisons for the three-level factor. Social Media Usage showed a statistically significant main effect on Social Well-Being, $F(2, 1114) = 1403.238, p < .001$. Mean Social Well-Being was highest in the High group ($M = 143.74, SD = 12.31$), followed by the Average group ($M = 116.69, SD = 11.56$) and the Low group ($M = 91.82, SD = 11.20$); all pairwise differences were significant. The main effect of gender, $F(1, 1114) = 1.423, p = .233$, and the Social Media Usage $\times$ Gender interaction, $F(2, 1114) = 2.568, p = .077$, were not statistically significant. The corrected model accounted for 71.7% of the variance in Social Well-Being. The findings indicate a strong graded difference in Social Well-Being across the study's Social Media Usage classifications while showing no reliable gender difference or gender-contingent pattern. Interpretation should remain non-causal and should distinguish general or constructive social media engagement from problematic or addictive use.

Keywords: adolescents, factorial ANOVA, gender, Grade IX, social media usage, social well-being

Introduction

Social well-being reflects an individual's functioning within society through social integration, acceptance, contribution, actualization, and coherence (Keyes, 1998). During adolescence, these processes increasingly operate within digital environments. Valkenburg and Peter (2013) proposed that media effects vary across individuals and contexts, a view supported by evidence of heterogeneous associations between social media use and adolescent well-being (Beyens et al., 2020; Valkenburg et al., 2022).

Research distinguishes general social media engagement from problematic use. While Keles et al. (2020), Kelly et al. (2018), and Riehm et al. (2019) linked heavy or problematic use with adverse outcomes, Coyne et al. (2026) and Sahoo et al. (2024) reported potentially positive associations under certain conditions. Indian studies likewise show both benefits and risks (Maurya et al., 2024; Taddi et al., 2024), whereas Vaghasiya et al. (2023), Engti et al. (2022), and Joseph et al. (2022) highlighted problematic digital behaviour. Thus, ordinary social, educational, and recreational use should not be equated with addiction.

Indian policy also promotes safe and purposeful digital participation (Ministry of Education, 2020; Ministry of Human Resource Development, 2020; NCERT, 2023). Evidence regarding gender remains inconsistent, with some studies reporting gender differences and others finding limited moderation (Kelly et al., 2018; Orben et al., 2022; Coyne et al., 2020; Shawcroft & Cingel, 2026).

Accordingly, the present study examined Social Well-Being among Grade IX students in Punjab across levels of Social Media Usage and gender, including their main and interaction effects.

Review of Related Literature

Keyes (1998) conceptualized Social Well-Being through social integration, acceptance, contribution, actualization, and coherence. Valkenburg and Peter (2013) proposed that media effects vary across individuals and contexts, while Valkenburg et al. (2022), Shankleman et al. (2021), and Calandri et al. (2021) emphasized heterogeneity, benefits, risks, and possible gender differences in adolescent social media experiences.

Indian evidence is mixed. Maurya et al. (2024) reported bidirectional links between social media use and depressive symptoms, whereas Sahoo et al. (2024) found positive associations with psychological well-being. Taddi et al. (2024) identified both benefits and risks. Studies by Vaghasiya et al. (2023), Engti et al. (2022), Joseph et al. (2022), Bhandari et al. (2021), Gangadharan et al. (2022), Prabhakaran et al. (2016), and Narayanappa et al. (2024) mainly focused on problematic or addictive use, which differs from broader social, educational, and entertainment use.

Gender findings are also inconsistent. Bhuvaneswari (2019) reported no significant gender effect, whereas Engti et al. (2022) found greater addiction risk among girls. Ramesh Masthi et al. (2017, 2018), Asha and D'Souza (2025), Sharma and Singh (2023), Abinayaa (2023), and Kumar (2022) further demonstrated variation across psychosocial and academic outcomes.

Internationally, Keles et al. (2020), Kelly et al. (2018), and Orben et al. (2022) reported adverse or gender-sensitive associations, whereas Coyne et al. (2020), Beyens et al. (2020), and Shawcroft and Cingel (2026) highlighted weak, heterogeneous, or person-specific effects. Fassi et al. (2024, 2025), Kurten et al. (2025), Coyne et al. (2026), and Ahmer et al. (2026) further showed that outcomes depend on the nature, context, and quality of social media use.

Overall, the literature indicates that Social Media Usage is not uniformly beneficial or harmful and that gender effects are inconsistent, supporting direct examination of Social Media Usage, gender, and their interaction in relation to Social Well-Being.

Rationale and Significance of the Study

The study is significant because Social Well-Being captures adolescents' sense of belonging, acceptance, contribution, social growth, and coherence, which are educationally relevant aspects of adjustment that extend beyond symptom-based mental-health measures. Keyes (1998) provides a theoretical basis for treating these dimensions as a coherent social component of positive functioning.

The study is also significant in the Indian school context because educational policy increasingly treats digital participation as something to be designed responsibly rather than simply maximized or prohibited. The Ministry of Education (2020), the Ministry of Human Resource Development (2020), and NCERT (2023) emphasize equitable participation, safe digital learning, holistic development, and purposeful educational use of technology. Evidence about how Social Well-Being differs across empirically defined Social Media Usage levels can therefore inform digital-literacy, guidance, and student-support practices while avoiding simplistic screen-time narratives.

Finally, the factorial analysis contributes by testing gender simultaneously with Social Media Usage. Valkenburg and Peter (2013) predict that media responses can differ by developmental and social susceptibilities, but Shawcroft and Cingel (2026) demonstrate that such moderation cannot be presumed. Testing the interaction directly allows the study to distinguish a general Social Media Usage pattern from one that varies systematically by gender.

Objectives of the Study

1. To compare the mean Social Well-Being scores of Grade IX students across High, Average, and Low levels of Social Media Usage.
2. To compare the mean Social Well-Being scores of male and female Grade IX students.
3. To examine the interaction of Social Media Usage level and gender on the Social Well-Being of Grade IX students.

Null Hypotheses

1. H01: There is no significant difference in the mean Social Well-Being scores of Grade IX students across High, Average, and Low levels of Social Media Usage.
2. H02: There is no significant difference in the mean Social Well-Being scores of male and female Grade IX students.
3. H03: There is no significant interaction effect of Social Media Usage level and gender on the Social Well-Being of Grade IX students.

Methodology

Research Approach

The investigation compared naturally occurring groups of students classified by Social Media Usage level and gender and analyzed their Social Well-Being scores without reporting any manipulation of the independent variables. Accordingly, the statistical interpretation in this paper is comparative and non-causal. The factorial analysis was used to estimate main and interaction effects within the observed sample.

Sample and Sampling Technique

The final sample consisted of 1,120 Grade IX students studying in schools affiliated with the Punjab School Education Board. Students were drawn from Hoshiarpur, Barnala, and Ludhiana districts of Punjab and represented Government and Private school types. The sample included 520 male and 600 female students. Sampling was described as multistage in nature, with stratification used to secure representation across school type, gender, category, location, and other demographic groupings. For the present analysis, the sample was classified by Social Media Usage level and gender.

Variables

The dependent variable was Social Well-Being. The between-subject factors were Social Media Usage level, with three categories (High, Average, and Low), and gender, with two categories (Male and Female). The analysis also included the Social Media Usage $\times$ Gender interaction. Other demographic variables mentioned in the broader study were not included in this factorial model.

Research Instruments

The Social Well-Being Scale measured students' functioning within the social world. The dimensions identified for the scale were Social Integration, Social Acceptance, Social Contribution, Social Actualization, and Social Coherence. These dimensions are conceptually consistent with the five-component social well-being framework proposed by Keyes (1998).

The Social Media Usage Scale assessed the nature and level of students' social media engagement. The stated dimensions were Social Use, Educational Use, Entertainment Use, Perceived Risks and Stresses, Addiction, and Malfunctioning. Because these dimensions include both ordinary or potentially constructive uses and risk-related or dysfunctional experiences, a high total Social Media Usage classification is interpreted only as a high score on the study's scale, not automatically as social media addiction.

Classification of Social Media Usage

Students were grouped into High, Average, and Low Social Media Usage categories for comparative analysis. The classification framework identified the 25th and 75th percentiles as the intended cut-points, with the lowest segment classified as Low, the middle segment as Average, and the highest segment as High.

Statistical Analysis

Descriptive statistics were computed for each Social Media Usage $\times$ Gender cell and for the corresponding marginal groups. A 3×2 univariate factorial analysis of variance was

conducted using Type III sums of squares with Social Well-Being as the dependent variable. The model contained the main effects of Social Media Usage level and gender and their two-way interaction. The criterion for statistical significance was $\alpha = .05$. Because Social Media Usage contained three groups, Scheffé post hoc comparisons were used to locate pairwise differences following the significant main effect. Post hoc comparisons were not required for gender because the factor contained only two groups.

Results

The results are presented for the three study objectives. Table 1 shows the observed means and standard deviations for each Social Media Usage $\times$ Gender cell and for the marginal groups.

Table 1 Descriptive Statistics for Social Well-Being by Social Media Usage Level and Gender

Social Media Usage	Gender	n	M	SD
High	Male	133	142.71	11.397
High	Female	141	144.72	13.085
High	Total	274	143.74	12.313
Average	Male	254	117.35	11.614
Average	Female	300	116.12	11.495
Average	Total	554	116.69	11.556
Low	Male	133	90.80	11.568
Low	Female	159	92.66	10.839
Low	Total	292	91.82	11.196
Overall	Male	520	117.05	21.867
Overall	Female	600	116.62	21.801
Overall	Total	1120	116.82	21.823

Note. Values are observed, unadjusted descriptive statistics.

Main Effect of Social Media Usage

Social Media Usage level had a statistically significant main effect on Social Well-Being, $F(2, 1114) = 1403.238$, $p < .001$. The High Social Media Usage group had the highest mean Social Well-Being score ($M = 143.74$, $SD = 12.31$), followed by the Average group ($M = 116.69$, $SD = 11.56$) and the Low group ($M = 91.82$, $SD = 11.20$). Thus, H_{01} was rejected.

Scheffé comparisons showed that all three Social Media Usage groups differed significantly from each other. The High group exceeded the Average group by 27.06 points, $p < .001$, 95% CI [24.95, 29.17], and exceeded the Low group by 51.93 points, $p < .001$, 95% CI [49.53, 54.33]. The Average group exceeded the Low group by 24.87 points, $p < .001$, 95% CI [22.81, 26.93]. The homogeneous-subset output placed Low, Average, and High in three separate subsets, confirming the ordered pattern $Low < Average < High$.

Main Effect of Gender

Gender did not show a statistically significant main effect on Social Well-Being, $F(1, 1114) = 1.423$, $p = .233$. The observed overall mean for male students was 117.05 ($SD = 21.87$) and for female students was 116.62 ($SD = 21.80$). The difference was small and not statistically reliable; therefore, H_{02} was not rejected.

Social Media Usage × Gender Interaction

The Social Media Usage × Gender interaction was not statistically significant, $F(2, 1114) = 2.568$, $p = .077$. Therefore, H_{03} was not rejected. Although the observed female mean was slightly higher than the male mean in the High and Low Social Media Usage groups and slightly lower in the Average group, these cell differences did not constitute a statistically significant interaction.

The overall corrected model was statistically significant, $F(5, 1114) = 563.642$, $p < .001$, $R^2 = .717$, adjusted $R^2 = .715$. Thus, the complete model accounted for 71.7% of the variance in observed Social Well-Being scores. This model-level R^2 should not be interpreted as the effect size of any single factor.

Table 2 Factorial Analysis of Variance for Social Well-Being

Source	SS	df	MS	F	p
Social Media Usage	380355.901	2	190177.950	1403.238	< .001
Gender	192.860	1	192.860	1.423	.233
Social Media Usage × Gender	696.204	2	348.102	2.568	.077
Error	150978.163	1114	135.528		

Note. Type III sums of squares. $R^2 = .717$; adjusted $R^2 = .715$. The intercept is omitted because it is not substantively relevant to the study objectives.

Table 3 Scheffé Pairwise Comparisons for Social Media Usage Levels

I	J	Mean Difference (I-J)	SE	p	95% CI
High	Average	27.06	.860	< .001	[24.95, 29.17]
High	Low	51.93	.979	< .001	[49.53, 54.33]
Average	Low	24.87	.842	< .001	[22.81, 26.93]

Note. Positive mean differences indicate higher Social Well-Being in group I than group J. The error mean square was 135.528.

Discussion

Social Media Usage and Social Well-Being

Social Well-Being differed significantly across Social Media Usage levels, following a clear pattern of High > Average > Low, with all pairwise differences significant. As the groups were naturally occurring, the finding indicates association rather than causation.

The result is consistent with Sahoo et al. (2024), Coyne et al. (2026), and Taddi et al. (2024), who showed that social media can support psychological well-being, connection, and social resources when engagement is constructive. It also aligns conceptually with Keyes (1998), as digital interaction may facilitate belonging, acceptance, contribution, and connectedness.

However, the finding differs from studies linking problematic or addictive use with poorer outcomes, including Engti et al. (2022), Vaghasiya et al. (2023), Sharma and Singh (2023), Abinayaa (2023), Asha and D'Souza (2025), Keles et al. (2020), Kelly et al. (2018), Riehm et al. (2019), and Woods and Scott (2016). This difference may reflect measurement because the present Social Media Usage construct includes social, educational, entertainment, risk, stress, addiction, and malfunctioning dimensions. Therefore, a High score should not automatically be interpreted as problematic use. Valkenburg et al. (2022), Odgers and Jensen (2020), Tølbøll (2026), Ahmer et al. (2026), and Fassi et al. (2025) similarly emphasized that conclusions depend heavily on how social media use and well-being are operationalized.

Gender and Social Well-Being

Gender had no significant main effect on Social Well-Being, with male and female students showing very similar overall means. This finding is broadly consistent with Bhuvaneshwari (2019), Coyne et al. (2020), and Shawcroft and Cingel (2026), who found limited or inconsistent gender differences in digital well-being outcomes.

In contrast, Engti et al. (2022), Kelly et al. (2018), and Orben et al. (2022) reported gender- or sex-related differences under specific conditions. Such inconsistencies may arise from differences in age, outcome variables, social media measures, cultural context, and research design. Thus, the present finding should be interpreted specifically for Social Well-Being among Grade IX students in Punjab.

Interaction of Social Media Usage and Gender

The Social Media Usage $\times$ Gender interaction was not statistically significant, indicating that the High > Average > Low pattern of Social Well-Being was broadly similar for male and female students. This finding is consistent with Shawcroft and Cingel (2026) and with Valkenburg and Peter's (2013) differential-susceptibility perspective, which does not assume that gender will moderate every media effect.

Although Calandri et al. (2021) and Orben et al. (2022) identified gender-related differences under particular conditions, the present results suggest that gender did not significantly alter the relationship between Social Media Usage classification and Social Well-Being. Beyens et al. (2020) and Fassi et al. (2025) further indicate that individual experiences, specific online activities, social comparison, support, and exposure may be more informative moderators than broad gender categories alone.

Major Findings

- Students in the High Social Media Usage group had the highest Social Well-Being ($M = 143.74$, $SD = 12.31$), followed by the Average group ($M = 116.69$, $SD = 11.56$) and the Low group ($M = 91.82$, $SD = 11.20$).
- All three Scheffé pairwise comparisons were significant at $p < .001$, establishing the ordered pattern Low < Average < High.
- Gender did not significantly differentiate Social Well-Being, $F(1, 1114) = 1.423$, $p = .233$.
- The Social Media Usage $\times$ Gender interaction was not statistically significant, $F(2, 1114) = 2.568$, $p = .077$.
- The corrected factorial model accounted for 71.7% of the variance in Social Well-Being ($R^2 = .717$; adjusted $R^2 = .715$).

Educational and Practical Implications

School-based digital education should distinguish purposeful social, educational, and recreational engagement from problematic, compulsive, stressful, or malfunctioning patterns rather than relying on screen time alone. This implication is consistent with the balanced digital-education orientation of the Ministry of Human Resource Development (2020) and the broader holistic-development goals of the Ministry of Education (2020) and NCERT (2023).

Teachers and counsellors may use Social Well-Being indicators such as belonging, acceptance, contribution, social growth, and coherence as part of student-support conversations because Keyes (1998) shows that social functioning is a substantive dimension of positive mental health rather than merely an absence of distress.

The non-significant gender main effect and interaction suggest that universal school supports should not be designed on the assumption that one gender necessarily experiences poorer Social Well-Being in relation to social media. Shawcroft and Cingel (2026) similarly caution against overly broad gendered assumptions, although targeted support remains appropriate when individual experiences indicate vulnerability.

Digital-literacy initiatives should address quality of participation, online social support, comparison, cyber-risk, sleep-disruptive habits, and self-regulation because Fassi et al. (2025), Keles et al. (2020), and Woods and Scott (2016) show that specific online experiences and behavioral patterns may be more consequential than undifferentiated exposure.

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