

Gender and Academic Level Differences in Social Media Use and Psychosocial Outcomes among DHH Students at Takoradi Technical University

Gmanikpa Gaou^{1*}, Emmanuel K. Acheampong²

Department of Special Education, University of Education, Winneba - Ghana

*Corresponding Author

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ABSTRACT

This study examined active and passive social media use, fear of missing out (FoMO), perceived social isolation, and self-esteem among Deaf and hard-of-hearing (DHH) students at Takoradi Technical University, Ghana, and assessed whether these constructs differed by gender and academic level. An attempted census of the accessible DHH student population identified 40 eligible students, of whom 34 returned usable questionnaires, representing an 85.0% response rate. Participants completed adapted measures of active and passive social media use, FoMO, perceived social isolation, and self-esteem. Internal consistency estimates for the analysed scales ranged from $\alpha = 0.74$ to 0.85. Independent-samples t-tests were used to examine gender differences, while one-way analyses of variance were used to examine academic-level differences. Cohen's d and eta-squared were reported alongside exact p-values and 95% confidence intervals. Scores across the five constructs were generally near the respective scale midpoints. None of the gender comparisons reached statistical significance. Effect sizes were negligible to small for active social media use, passive social media use, perceived social isolation, and self-esteem. FoMO showed the largest gender effect, with female students reporting higher scores than male students, $d = -0.49$, $p = 0.171$, 95% CI [-10.03, 1.86]. None of the academic-level comparisons reached statistical significance. Academic-level effect sizes ranged from $\eta^2 = 0.057$ to 0.074. Sensitivity analysis indicated limited capacity to detect effects below approximately $d = 1.01$ for the gender comparisons and $f = 0.60$, corresponding to $\eta^2 \approx 0.27$, for the four-group academic-level analyses. The findings therefore indicate that the present sample did not provide sufficient statistical evidence for gender or academic-level differences, while smaller effects remain unresolved. The medium-sized FoMO pattern among female students warrants replication in larger, multi-institutional DHH samples. Accessible social media literacy and psychosocial support should be available across the DHH student population while remaining responsive to individual differences.

Keywords: Deaf and hard-of-hearing; active and passive social media use; fear of missing out; social isolation; self-esteem

INTRODUCTION

Social media has become an important component of university students' communication, social interaction, information exchange, and identity expression. By late 2025, global social media user identities were estimated at 5.66 billion, with young adults representing an important user group (Kemp, 2025). Research on social media and well-being increasingly suggests that frequency of use alone provides an incomplete account of psychosocial outcomes. Instead, the type and quality of engagement appear important. Contemporary research distinguishes active engagement, such as posting, commenting, and messaging, from passive engagement, such as browsing and observing content without direct interaction (Valkenburg et al., 2021; Verduyn et al., 2017). This distinction is particularly relevant when examining populations whose opportunities for face-to-face interaction are constrained.

For DHH students, the social context of higher education differs from the experience of many hearing students. University environments often depend heavily on spontaneous spoken interaction, informal conversation, group discussion, and rapid exchanges among peers. Communication barriers therefore have implications for participation, relationship formation, and social belonging among DHH students (Antia et al., 2011; Olsson et al., 2021). These barriers do not necessarily imply social isolation for every DHH student, since DHH students may maintain strong peer, family, community, and online relationships. Nevertheless, restricted communication access within hearing-dominant environments creates conditions in which digital communication may assume particular importance.

Social media offers DHH students communication formats that rely heavily on text, visual information, and asynchronous interaction. Such features may facilitate social participation and relationship maintenance where face-to-face communication is difficult (Amka & Mirnawati, 2020; Blom et al., 2014). Social media therefore has potential benefits for DHH students. At the same time, digital environments also expose students to information about peers, activities, relationships, and social experiences from which they might feel excluded. Passive observation of others' activities may contribute to comparison and fear of missing out. Previous research involving DHH populations has linked problematic social media use with psychosocial difficulties, including lower self-esteem and greater perceived social isolation (Schäfer & Miles, 2023). Studies involving DHH students have also examined problematic social media use in relation to depression, anxiety, and related behavioural outcomes (Awed & Hammad, 2022, 2023).

The distinction between active and passive use is therefore important. Active engagement provides opportunities for reciprocal communication, whereas passive engagement involves observing other users with comparatively limited interpersonal exchange. Research

among broader student and adolescent populations has produced mixed findings, with the relationship between social media use and well-being varying according to the activity, individual characteristics, and social context involved (Meier & Reinecke, 2021; Valkenburg et al., 2022). A DHH-specific investigation is therefore necessary rather than assuming that findings from hearing populations transfer directly to DHH students.

Gender represents one potential source of variation. Research involving broader student and adolescent populations has reported gender differences in social media engagement and associations between digital media use and well-being (Booker et al., 2018; Svensson et al., 2022; Twenge & Martin, 2020). Some research also reports gender differences in self-esteem among young social media users (Pop et al., 2022). Whether similar patterns occur among DHH students is less clear. One possibility is that gender differences observed in hearing populations also occur among DHH students. Another possibility is that communication-access conditions shared across genders reduce the magnitude of some gender differences. Existing DHH evidence provides limited support for either interpretation, with Huang and He (2025) reporting no gender difference in social media use among DHH college students.

Academic level provides a second potentially relevant source of variation. Students at different academic levels may differ in their social networks, university experience, academic demands, and exposure to institutional support. Yet academic level should not automatically be interpreted as a developmental progression. Academic level is an institutional classification rather than a direct measure of psychological development. Evidence concerning academic-level differences in FoMO is available in general student populations, including a study reporting variation across year groups (Çapuk, 2025), but equivalent evidence among DHH students is limited.

The geographical context is also important. Research concerning DHH students and social media has largely originated from North America, Europe, and Asia, while evidence from Sub-Saharan Africa remains limited. Ghanaian research has documented challenges involving communication access, social inclusion, and counselling access for students with deafness in higher education (Acheampong, 2024; Awini et al., 2024). Ghana's Inclusive Education Policy also recognises the need for more accessible educational environments (Ministry of Education, 2015). However, limited evidence is available concerning the levels of social media use and selected psychosocial constructs among DHH university students in Ghana.

Takoradi Technical University provides an appropriate institutional context for such an investigation. The university supports DHH students through disability and advocacy structures and provides communication and technology-related accommodations. Examining this population offers institution-specific evidence concerning active and passive social media use, FoMO, perceived social isolation, and self-esteem.

The present study addressed three objectives. First, it examined the levels of active and passive social media use, FoMO, perceived social isolation, and self-esteem among DHH students. Second, it examined whether these variables differed by gender. Third, it examined whether these variables differed by academic level.

These nondirectional hypotheses were formulated:

- H1a: Active social media use differs significantly by gender among DHH students.
- H1b: Passive social media use differs significantly by gender among DHH students.
- H1c: Fear of missing out differs significantly by gender among DHH students.
- H1d: Perceived social isolation differs significantly by gender among DHH students.
- H1e: Self-esteem differs significantly by gender among DHH students.
- H2a: Active social media use differs significantly by academic level among DHH students.
- H2b: Passive social media use differs significantly by academic level among DHH students.
- H2c: Fear of missing out differs significantly by academic level among DHH students.
- H2d: Perceived social isolation differs significantly by academic level among DHH students.
- H2e: Self-esteem differs significantly by academic level among DHH students.

THEORETICAL FRAMEWORK

Two complementary theoretical perspectives informed the study: Uses and Gratifications Theory and Social Comparison Theory.

Uses and Gratifications Theory views media users as active participants who select media to meet social, informational, and emotional needs (Katz et al., 1974; Ruggiero, 2000). This perspective is relevant to DHH students because social media platforms offer communication formats capable of reducing some barriers associated with hearing-dominant face-to-face interaction. Active social media use, such as messaging and commenting, may therefore provide opportunities for social connection and participation.

The theory does not, by itself, establish that active use produces better psychosocial outcomes among DHH students. The present study did not directly measure gratifications sought, motives for platform selection, or gratification obtained. Consequently, Uses and Gratifications Theory serves as an interpretive framework rather than a directly tested causal model.

Social Comparison Theory proposes that individuals evaluate themselves partly through comparisons with others (Festinger, 1954). Social

media provides frequent exposure to information about peers, relationships, achievements, activities, and social experiences. Such exposure may contribute to comparison processes and concerns about being excluded from desirable experiences. Previous research has linked social comparison on social media with self-esteem and related psychosocial outcomes (Vogel et al., 2014), while recent reviews have examined social comparison processes among postsecondary students (Rafiq & Linden, 2024).

The relevance of Social Comparison Theory to DHH students is potentially important because comparison occurs within a social context shaped by communication access. A DHH student who observes peers participating in activities without accessible communication may experience a different form of comparison from a student whose communication access is unrestricted. The present study did not directly measure social comparison, upward comparison, or comparison orientation. Therefore, the theory is used to interpret the FoMO and self-esteem findings rather than to claim a direct test of social comparison mechanisms.

METHOD

Design

A quantitative, cross-sectional survey design was used. The design was appropriate for describing the selected constructs and examining differences across gender and academic-level groups. Because the study involved a small and specialised population, an attempted census of the accessible population was conducted rather than probability sampling.

Participants and Sampling

Participants were DHH undergraduate students enrolled at Takoradi Technical University. Institutional records identified 47 DHH students during the study period. Seven students were undertaking compulsory off-campus internships and were therefore inaccessible during data collection. The accessible population consequently comprised 40 students.

An attempted census of the accessible population was conducted by inviting all 40 eligible students to participate. Thirty-four students returned usable questionnaires, producing an 85.0% response rate. The study therefore represents an attempted census of the accessible population rather than a complete census of all DHH students enrolled at the university. The six nonresponses resulted from scheduling conflicts and voluntary withdrawal.

The final analytic sample comprised 20 male students (58.8%) and 14 female students (41.2%). Participants represented all four undergraduate academic levels. Seven students were in Level 100, 11 in Level 200, 10 in Level 300, and six in Level 400.

Table 1 Population Accessibility and Response Rate

Sampling stage	<i>n</i>
Enrolled DHH students (target population)	47
Unavailable (compulsory off-campus internship)	7
Accessible population invited (census)	40
Usable questionnaires returned (analytic sample)	34
Non-response (scheduling conflict / withdrawal)	6
Response rate	85.0%

Note. A census of the accessible population was conducted; the response rate is calculated against the 40 invited students.

Table 2 Demographic Characteristics of the Analytic Sample (N = 34)

Characteristic	Category	<i>n</i>	%
Gender	Male	20	58.8
	Female	14	41.2
Age (years)	18-24	15	44.1
	25-29	12	35.3
	30 and above	7	20.6
Academic level	100	7	20.6
	200	11	32.4
	300	10	29.4
	400	6	17.6

Note. Percentages are calculated within the analytic sample and may not total 100 owing to rounding.

Measures

The questionnaire comprised demographic questions and four measures assessing active social media use, passive social media use, FoMO,

perceived social isolation, and self-esteem. The measures were adapted to the local context. A pilot exercise involving 10 DHH students from a neighbouring institution was conducted before the main data collection to assess clarity and contextual appropriateness.

Active and Passive Social Media Use

Active and passive social media use were assessed using an adapted version of the Extended Active-Passive Social Media Use Scale developed by Niu et al. (2025). The administered instrument contained 20 items divided into active and passive use dimensions.

The active social media use subscale initially contained 10 items and produced $\alpha = 0.738$. Two items had corrected item-total correlations below 0.30. Because these item-level findings were identified after data collection and removal would have changed comparability with the administered instrument, the full 10-item active-use composite was retained for the primary analysis. The resulting reliability estimate was $\alpha = 0.74$.

The passive social media use subscale initially contained 10 items and produced $\alpha = 0.825$. One item showed a low corrected item-total correlation and was removed before construction of the final composite. The resulting nine-item scale produced $\alpha = 0.846$, reported as $\alpha = 0.85$ in the descriptive table.

These item-retention decisions represent preliminary scale refinement rather than formal validation. Future studies should examine the factorial structure, item functioning, and measurement properties of the adapted active and passive social media use measures in larger DHH samples.

Fear of Missing Out

FoMO was measured using the 10-item Fear of Missing Out Scale developed by Przybylski et al. (2013). Items were rated from 1, not at all true of me, to 5, extremely true of me. Higher scores indicate greater FoMO. The scale demonstrated $\alpha = 0.80$ in the present sample.

Perceived Social Isolation

Perceived social isolation was assessed using the eight-item PROMIS Social Isolation Scale (Health Measures, 2017). Items were rated from 1, never, to 5, always, with higher scores indicating greater perceived social isolation. The scale demonstrated $\alpha = 0.78$ in the present sample.

Self-Esteem

Self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The original RSES contains 10 items rated on a four-point response scale. Five items were removed following item analysis because of weak corrected item-total correlations and their contribution to lower internal consistency. The retained five-item composite produced $\alpha = 0.74$.

Statistical Analysis

Data were analysed using Python with pandas, NumPy, and SciPy. Descriptive statistics included means, standard deviations, observed minimums, and observed maximums. Gender differences were examined using independent-samples t-tests. Academic-level differences were examined using one-way ANOVA with four academic-level groups.

Before inferential testing, distributional and variance assumptions were examined. Shapiro-Wilk tests did not identify statistically significant departures from normality for the study variables. Levene's tests did not identify statistically significant variance heterogeneity across the planned gender and academic-level comparisons. Given the small sample and unequal group sizes, these tests were interpreted cautiously and were not treated as definitive proof of normality or homogeneity.

For gender comparisons, Cohen's d was calculated using the pooled standard deviation. For academic-level comparisons, eta-squared (η^2) was calculated. Cohen's (1988) conventional benchmarks were used as descriptive guides. For Cohen's d , values of approximately 0.20, 0.50, and 0.80 represent small, medium, and large effects. For η^2 , values of approximately 0.01, 0.06, and 0.14 represent small, medium, and large effects. All tests were two-tailed with $\alpha = 0.05$. Exact p -values and 95% confidence intervals were reported.

The interpretation of findings considered statistical significance, effect size, and confidence intervals jointly. A nonsignificant result was not interpreted as evidence of equivalence between groups.

Sensitivity Analysis

A sensitivity analysis was conducted using the achieved sample sizes to clarify the magnitude of effects the study was reasonably positioned to detect.

For the gender comparisons, the achieved allocation of 20 male and 14 female students provided approximately 80% power to detect an

effect of $d \approx 1.01$ or larger at $\alpha = 0.05$ using a two-tailed independent-samples comparison. The observed FoMO effect of $d = -0.49$ was substantially below this threshold.

For the four-group academic-level analyses, the total sample of 34 students provided approximately 80% power to detect an effect of $f \approx 0.60$, corresponding to $\eta^2 \approx 0.27$. The observed academic-level effects ranged from $\eta^2 = .057$ to $.074$ and were therefore substantially below the estimated 80% sensitivity threshold.

The sensitivity analysis was used to qualify interpretation of the nonsignificant findings. It does not establish the absence of smaller effects.

RESULTS

Preliminary Analyses

All 34 cases contained complete data for the five analysed variables. Shapiro-Wilk tests did not indicate statistically significant departures from normality, and Levene's tests did not indicate statistically significant variance heterogeneity across the planned comparison groups. Given the small sample, these assumption tests were interpreted cautiously. The inferential results were therefore considered alongside effect sizes, confidence intervals, and the sensitivity analysis.

Levels of Social Media Use and Psychosocial Outcomes

Active social media use had a total mean of 26.24 (SD = 6.50) across 10 items, corresponding to an item-level mean of 2.62. Passive social media use had a total mean of 25.12 (SD = 7.86) across nine retained items, corresponding to an item-level mean of 2.79. Because the two final subscales contained different numbers of items, item-level means provide the appropriate basis for comparing their relative levels. Passive social media use therefore had a slightly higher item-level mean than active social media use.

FoMO had a mean of 25.88 (SD = 8.49) across 10 items, corresponding to an item-level mean of 2.59. Perceived social isolation had a mean of 20.29 (SD = 6.16) across eight items, corresponding to an item-level mean of 2.54. Self-esteem had a mean of 12.91 (SD = 3.43) across five retained items, corresponding to an item-level mean of 2.58.

The scores were generally near the midpoint of their respective response scales. Because the adapted measures do not provide validated clinical or categorical cut-offs for the present DHH population, the scores are reported as positions on their respective scales rather than classified as low, moderate, or high levels.

Table 3 Descriptive Statistics and Internal Consistency for Study Variables (N = 34)

Variable	<i>M</i>	<i>SD</i>	Min	Max	α
Active social media use	26.24	6.50	13.00	47.00	0.74
Passive social media use	25.12	7.86	12.00	45.00	0.85
Fear of missing out	25.88	8.49	10.00	43.00	0.80
Social isolation	20.29	6.16	10.00	35.00	0.78
Self-esteem	12.91	3.43	7.00	19.00	0.74

Note. α = Cronbach's alpha for each composite as analysed (active: 10 items; passive: 9 items; FoMO: 10 items; social isolation: 8 items; self-esteem: 5 items). Higher scores denote higher standing on each named construct.

Gender Differences

Independent-samples t-tests were conducted to examine gender differences in the five study variables. None of the comparisons reached statistical significance at $\alpha = 0.05$.

Active social media use showed a negligible gender difference, $t(32) = -0.25$, $p = 0.805$, $d = -0.09$, 95% CI [-5.26, 4.11]. Male students had a mean score of 26.00 (SD = 5.32), compared with 26.57 (SD = 8.11) among female students.

Passive social media use showed a small gender effect, $t(32) = -0.90$, $p = 0.375$, $d = -0.31$, 95% CI [-8.06, 3.12]. Female students had a higher mean score than male students, although the confidence interval was wide.

FoMO showed the largest gender effect. Female students reported a mean score of 28.29 (SD = 8.74), compared with 24.20 (SD = 8.11) among male students. The difference was not statistically significant, $t(32) = -1.40$, $p = 0.171$, $d = -0.49$, 95% CI [-10.03, 1.86]. The effect size was in the medium range according to the specified Cohen's benchmarks. The wide confidence interval indicates substantial uncertainty around the magnitude of the observed difference.

Perceived social isolation showed a negligible-to-small gender difference, $t(32) = 0.40$, $p = 0.694$, $d = 0.14$, 95% CI [-3.57, 5.30]. Male students reported slightly higher scores.

Self-esteem showed a negligible gender difference, $t(32) = 0.18$, $p = 0.861$, $d = 0.06$, 95% CI [-2.26, 2.69].

H1a, H1b, H1c, H1d, and H1e were therefore not supported by the statistical significance tests. These results indicate that no statistically significant gender differences were detected in the present sample. They do not establish statistical equivalence between male and female DHH students.

Table 4 Gender Differences in Study Variables: Independent-Samples t-Tests (N = 34)

Variable	Male <i>M</i> (<i>SD</i>)	Female <i>M</i> (<i>SD</i>)	<i>t</i> (32)	<i>p</i>	<i>d</i>	95% CI [diff]
Active social media use	26.00 (5.32)	26.57 (8.11)	-0.25	0.805	-0.09	[-5.26, 4.11]
Passive social media use	24.10 (7.12)	26.57 (8.87)	-0.90	0.375	-0.31	[-8.06, 3.12]
Fear of missing out	24.20 (8.11)	28.29 (8.74)	-1.40	0.171	-0.49	[-10.03, 1.86]
Social isolation	20.65 (6.72)	19.79 (5.47)	0.40	0.694	0.14	[-3.57, 5.30]
Self-esteem	13.00 (3.39)	12.79 (3.62)	0.18	0.861	0.06	[-2.26, 2.69]

Note. Male $n = 20$; female $n = 14$. d = Cohen's d (pooled SD); $|d| \approx 0.20, 0.50, 0.80$ denote small, medium, large effects (Cohen, 1988). 95% CI [diff] = 95% confidence interval for the mean difference (male - female). Pooled-variance (Student) t -tests; Levene's test confirmed variance homogeneity. No comparison was significant at $\alpha = 0.05$.

Academic Level Differences

One-way ANOVAs were conducted to examine differences across Levels 100, 200, 300, and 400.

None of the five ANOVA models reached statistical significance. Active social media use yielded $F(3, 30) = 0.72$, $p = 0.547$, $\eta^2 = 0.067$. Passive social media use yielded $F(3, 30) = 0.60$, $p = 0.617$, $\eta^2 = 0.057$. FoMO yielded $F(3, 30) = 0.79$, $p = 0.512$, $\eta^2 = 0.073$. Perceived social isolation yielded $F(3, 30) = 0.79$, $p = .507$, $\eta^2 = 0.074$. Self-esteem yielded $F(3, 30) = 0.73$, $p = 0.542$, $\eta^2 = 0.068$.

Using the specified Cohen's benchmarks, $\eta^2 = 0.057$ falls just below the 0.06 medium-effect threshold, while η^2 values from 0.067 to 0.074 fall within the conventional medium-effect range. These estimates should be interpreted cautiously because academic-level cell sizes were small and unequal, ranging from six to 11 students.

The group means did not show a consistent linear pattern across academic levels. For example, FoMO decreased from 27.71 at Level 100 to 23.00 at Level 200, increased to 25.90 at Level 300, and reached 29.00 at Level 400.

This pattern does not provide evidence of a systematic academic-level progression.

H2a, H2b, H2c, H2d, and H2e were not supported by the statistical significance tests. The findings indicate that no statistically significant academic-level differences were detected. They do not establish that academic level has no relationship with the study variables.

Table 5 Academic Level Differences in Study Variables: One-Way ANOVA (N = 34)

Variable	L100	L200	L300	L400	<i>F</i> (3,30)	<i>p</i>	η^2
Active social media use	26.57	24.36	28.50	25.50	0.72	0.547	0.067
Passive social media use	27.71	23.91	26.20	22.50	0.60	0.617	0.057
Fear of missing out	27.71	23.00	25.90	29.00	0.79	0.512	0.073
Social isolation	22.00	18.00	20.80	21.67	0.79	0.507	0.074
Self-esteem	13.43	12.82	11.80	14.33	0.73	0.542	0.068

Note. L100-L400 report group means. Cell sizes: L100 $n = 7$, L200 $n = 11$, L300 $n = 10$, L400 $n = 6$. η^2 = eta-squared; 0.01, 0.06, 0.14 denote small, medium, large effects (Cohen, 1988). No model was significant at $\alpha = 0.05$.

Sensitivity Analysis

The sensitivity analysis further qualified the nonsignificant findings.

For the gender comparisons, the achieved sample sizes of 20 male and 14 female students provided approximately 80% power to detect an effect of $d \approx 1.01$ or larger at $\alpha = 0.05$. The observed FoMO effect of $d = -0.49$ was below this threshold, with estimated power of approximately 0.28 for an effect of this magnitude. For the four-group academic-level analyses, the achieved total sample of 34 provided approximately 80% power to detect an effect of $f \approx 0.60$, corresponding to $\eta^2 \approx 0.27$. The observed academic-level effects, $\eta^2 = 0.057$ to 0.074, were below this threshold.

The sensitivity analysis therefore indicates limited capacity to detect small and medium effects under the achieved sample configuration. The results provide evidence against large effects of the magnitude detectable under the study design, while smaller effects remain unresolved.

DISCUSSION

The present study examined active and passive social media use, fear of missing out (FoMO), perceived social isolation, and self-esteem among DHH students at Takoradi Technical University, with particular attention to gender and academic-level differences. The findings provide a mixed picture. The five constructs generally occupied positions near the middle of their respective scales, while none of the gender or academic-level comparisons reached statistical significance. At the same time, the effect sizes indicate that some observed differences were not negligible, particularly the gender difference in FoMO and several academic-level comparisons. This pattern is important because previous research suggests that social media experiences among DHH students involve both opportunities for social participation and potential psychosocial vulnerabilities (Blom et al., 2014; Schäfer & Miles, 2023). The present findings therefore add evidence from a Ghanaian DHH university population while also showing why subgroup differences should be interpreted using effect sizes and statistical sensitivity rather than p-values alone.

Levels of Social Media Use and Psychosocial Outcomes

The descriptive findings showed that passive social media use had a slightly higher item-level mean than active social media use. This pattern is consistent with the distinction made in social media research between reciprocal participation and observational engagement. Valkenburg et al. (2021) noted that active and passive forms of social media use represent different forms of engagement and should not be treated as a single behavioural construct. Verduyn et al. (2017) similarly argued that the consequences of social networking depend partly on how users engage with social network content. The present finding therefore supports the value of separating active and passive use when examining DHH students rather than relying on overall frequency of social media use.

The relatively higher passive-use score also has relevance for DHH students. Higher education environments often rely on spontaneous spoken interaction, informal conversation, group discussion, and rapid interpersonal exchanges. Antia et al. (2011) and Olsson et al. (2021) documented the importance of communication access for social participation and interpersonal relationships among students and adults who are DHH. Social media provides alternative channels based on text, visual information, and asynchronous communication, which might support relationship maintenance where face-to-face interaction is difficult. Blom et al. (2014) similarly found that online activities form part of the social experiences of deaf students. Toofaninejad et al. (2017) also identified social media as an important educational and social communication resource for DHH students.

At the same time, the present finding should not be interpreted as evidence that passive use is beneficial or harmful by itself. Valkenburg et al. (2021) and Valkenburg et al. (2022) emphasised variation in social media effects according to the type of engagement and the individual and social context. Schäfer and Miles (2023) further showed that social media use among DHH adults exists alongside both positive and negative mental-health experiences. Awed and Hammad (2023) also reported associations between problematic social media use and symptoms of depression and generalized anxiety among DHH students. These findings suggest that the meaning of passive use depends on what students encounter online, why they engage, and how online experiences relate to their offline social environments. The present study did not measure motives, content exposure, problematic use, or quality of online relationships, so causal interpretations are not warranted.

The psychosocial measures also produced item-level means near the middle of their respective response scales. This finding should be considered alongside previous DHH research rather than interpreted as evidence of either positive or negative psychological well-being. Schäfer and Miles (2023) found that social media use among DHH adults was associated with a mixture of social and mental-health experiences. Blom et al. (2014) likewise examined online activity in relation to well-being among deaf students and showed the importance of considering online participation within the broader social lives of DHH individuals. The present findings extend this literature by showing that, within this Ghanaian university sample, FoMO, perceived social isolation, and self-esteem did not cluster clearly at the extreme ends of their respective scales.

This pattern is also relevant to the Ghanaian context. Acheampong (2024) identified issues of social inclusion among deaf students in Ghanaian higher education, while Awini et al. (2024) reported concerns regarding access to counselling services among students with deafness at the University of Education, Winneba. These studies indicate that communication access and institutional support form part of the broader context within which DHH students experience university life. The present study therefore should not be read as showing that social media operates independently of institutional conditions. Rather, social media use and psychosocial experiences are situated within a wider environment involving communication access, peer relationships, inclusion, and support services.

Gender Differences

None of the five gender comparisons reached statistical significance. Active social media use showed a negligible effect, passive social media use showed a small effect, perceived social isolation showed a small effect, and self-esteem showed a negligible effect. FoMO produced the largest observed gender difference, with female students reporting higher scores than male students, $d = -0.49$, although the difference was not statistically significant, $p = 0.171$.

The absence of statistically significant gender differences partly contrasts with findings from broader populations. Booker et al. (2018) reported gender differences in associations between social media interaction and well-being among young people. Svensson et al. (2022) likewise examined gender in relation to different digital media activities and adolescent well-being, while Twenge and Martin (2020) reported gender differences in associations between digital media use and psychological well-being across large datasets. These studies provide a reasonable basis for expecting some gender variation in digital experiences. The present findings therefore do not reproduce a pattern consistently reported in broader populations.

One possible explanation concerns the shared communication context of DHH students. Unlike studies of general student populations, the present study involved a specialised group whose members share experiences associated with communication access in a hearing-dominant university environment. Antia et al. (2011) and Olsson et al. (2021) show why communication access matters for social participation and relationships among DHH populations. If male and female DHH students experience some of the same communication barriers and rely on similar accessible digital channels for social connection, these shared conditions might reduce some gender differences found in broader populations. This interpretation is plausible but remains untested in the present study because communication access, communication modality, and institutional inclusion were not measured.

The active social media result provides further support for caution in transferring findings from hearing populations to DHH students. The negligible gender effect, $d = -0.09$, indicates little separation between male and female students in active use within the present sample. Huang and He (2025), as reported in the study's literature base, similarly found no gender difference in social media use among DHH college students. This convergence provides some DHH-specific support for the present finding, although the small sample and differing contexts limit the strength of the comparison.

Passive social media use showed a somewhat larger effect, $d = -0.31$, with female students reporting higher scores. The result was not statistically significant. The direction nevertheless fits part of the broader literature suggesting that digital media experiences differ by gender (Booker et al., 2018; Svensson et al., 2022; Twenge & Martin, 2020). The difference between the present result and stronger gender patterns reported in some general populations might reflect the DHH-specific communication context, the small sample, or differences in measurement. The available evidence does not permit a firm explanation.

The self-esteem finding provides another useful comparison. Male and female students showed almost identical self-esteem scores, with $d = 0.06$. This differs from research reporting gender-related differences in self-esteem among young social media users. Pop et al. (2022), for example, examined body-esteem, self-esteem, and loneliness among young social media users and reported relationships among these psychosocial constructs. The present finding suggests that gender separation in self-esteem was minimal in this DHH sample. The result does not establish that DHH status removes gender differences in self-esteem. Rather, the data provide little evidence of a gender difference under the conditions of this study.

FoMO requires closer attention because it produced the largest gender effect. Female students recorded a mean FoMO score of 28.29 compared with 24.20 among male students, producing $d = -0.49$. The direction is consistent with broader research showing gender-related differences in some digital media and well-being outcomes (Svensson et al., 2022; Twenge & Martin, 2020). The result also fits the conceptual relevance of Social Comparison Theory. Festinger's (1954) theory proposes that people evaluate aspects of themselves through comparison with others, while Vogel et al. (2014) demonstrated a relationship between social comparison, social media use, and self-esteem. Social media exposes students to information about peers' relationships, activities, achievements, and social experiences, creating conditions in which comparison and concerns about exclusion might occur.

The DHH context adds an important qualification to this interpretation. A DHH student observing peers participating in activities through inaccessible communication might experience social comparison differently from a student with unrestricted communication access. Thus, FoMO might involve not only a desire to participate in desirable experiences but also perceptions of whether those experiences are socially and communicatively accessible. The present study did not measure social comparison, accessibility of peer activities, or communication barriers, so Social Comparison Theory provides an interpretive explanation rather than a tested mechanism.

Despite the medium effect, the FoMO comparison was not statistically significant. The sensitivity analysis showed approximately 28% power to detect an effect of $d = 0.49$ with the achieved sample. Therefore, the most defensible interpretation is an inconclusive medium-sized gender pattern. The finding deserves replication rather than classification as a confirmed gender difference. This position also fits the broader literature, where digital media and psychosocial outcomes show considerable variation across individuals and contexts (Valkenburg et al., 2021; Valkenburg et al., 2022). The present finding therefore contributes a specific signal for future DHH research rather than a definitive subgroup conclusion.

Academic-Level Differences

None of the five academic-level comparisons reached statistical significance. The group means also did not follow a consistent progression from Level 100 to Level 400. For example, FoMO was relatively high at Levels 100 and 400 and lower at Level 200. This irregular pattern differs from the expectation that academic level might correspond to a gradual change in social media-related experiences.

The finding contrasts with evidence from general student populations reporting variation in FoMO across academic years. Çapuk (2025), for example, reported academic-year differences in FoMO among students. The difference between that evidence and the present result

should not be treated as evidence of contradiction between DHH and hearing students. The populations, sample sizes, institutional contexts, measures, and statistical sensitivity differ. More importantly, the present academic-level groups contained only six to 11 students, limiting the precision of subgroup estimates.

Academic level also represents an institutional position rather than a direct measure of psychological development. A Level 400 student is not necessarily psychologically more mature than a Level 100 student. Academic-level differences might reflect differences in academic workload, peer networks, institutional exposure, social support, or length of university residence. None of these mechanisms was directly measured. Therefore, the absence of a linear pattern in the present data is not surprising and should not be interpreted as evidence against developmental change in a longitudinal sense.

The effect sizes require attention. Academic-level η^2 values ranged from 0.057 to 0.074. Under Cohen's (1988) benchmarks, these values range from near the medium-effect threshold to the medium-effect range. Thus, the academic-level findings should not be described as showing uniformly negligible differences. At the same time, the estimates require caution because the groups were small and unequal. The sensitivity analysis showed that the study had approximately 80% power only for effects around $\eta^2 = 0.27$ or larger. The observed effects were substantially below this level.

This pattern illustrates the importance of distinguishing statistical significance from effect magnitude. A nonsignificant ANOVA with $\eta^2 = 0.074$ does not demonstrate that academic level has no relationship with the outcome. It indicates that the present sample did not provide sufficient statistical evidence for a difference across the four groups. Larger samples are required to determine whether the observed medium-range estimates represent meaningful population patterns or sampling variation.

Integration with Uses and Gratifications Theory

The findings provide qualified support for the relevance of Uses and Gratifications Theory. The theory views users as active participants who select media to meet social, informational, and emotional needs (Katz et al., 1974; Ruggiero, 2000). For DHH students, the importance of accessible communication makes this perspective particularly relevant. Social media provides text-based, visual, and asynchronous communication formats, which might support social participation where face-to-face communication is difficult (Amka & Mirnawati, 2020; Blom et al., 2014).

The present finding of both active and passive social media use fits the theory's emphasis on differentiated media engagement. Yet the study did not measure students' motives for using social media or the gratifications they obtained. Therefore, the results do not constitute a direct test of Uses and Gratifications Theory. Instead, the theory helps explain why DHH students might use social media in different ways and why the distinction between active and passive engagement is analytically useful.

The absence of strong gender and academic-level differences also suggests that media engagement among DHH students might be shaped by shared communication needs rather than demographic characteristics alone. This interpretation requires direct testing in future studies through measures of communication goals, platform choice, social support, and perceived accessibility.

Integration with Social Comparison Theory

Social Comparison Theory provides a particularly relevant framework for interpreting the FoMO finding. Festinger (1954) proposed that individuals evaluate themselves partly through comparisons with others, while Vogel et al. (2014) linked social media-based comparison processes with self-esteem. Rafiq and Linden (2024) also identified social comparison and self-concept as important areas in research involving postsecondary students.

The present FoMO finding is compatible with this framework because social media provides repeated exposure to peers' activities and social experiences. Female students reported higher FoMO than male students, although the difference did not reach statistical significance. The finding therefore offers a possible indication of comparison-related vulnerability rather than evidence of a confirmed mechanism.

The DHH context is important here. Comparison is not necessarily based only on what peers possess or experience. For DHH students, comparison might also involve access to social participation. A student might observe an activity online and perceive not only that others participated, but also that participation occurred in a communication environment from which the student was excluded. This interpretation connects Social Comparison Theory with the communication-access literature on DHH students (Antia et al., 2011; Olsson et al., 2021). Future research should test this possibility directly by measuring social comparison orientation, communication accessibility, perceived exclusion, and FoMO together.

CONCLUSION

This study examined active social media use, passive social media use, FoMO, perceived social isolation, and self-esteem among DHH students at Takoradi Technical University, with attention to gender and academic level. The findings showed that scores across the five variables were generally around the middle of their respective scales.

No statistically significant gender differences were found for active social media use, passive social media use, FoMO, perceived social

isolation, or self-esteem. Although female students reported higher FoMO than male students, the difference was not statistically significant. The effect size suggests a pattern worthy of further investigation in a larger sample.

Similarly, no statistically significant differences were found across academic levels. The findings therefore do not provide sufficient evidence that gender or academic level is associated with differences in the five study variables within the present sample.

Taken together, the study suggests that social media use and selected psychosocial experiences among DHH students should not be understood solely in terms of gender or academic level. The findings also show the importance of examining DHH students directly rather than if evidence from hearing student populations applies to them. Larger studies involving DHH students from several institutions are needed to provide stronger evidence and determine whether the patterns observed in this study are consistent across settings.

LIMITATIONS OF THE STUDY

First, the sample consisted of 34 DHH students from one technical university. The small, institution-specific sample limits the generalisability of the findings to DHH students in other universities in Ghana. Second, although an attempted census of the accessible population was conducted, six eligible students did not provide usable responses. The findings therefore represent the students who participated rather than the entire accessible population. Third, the academic-level groups were small and unequal. The four groups contained between six and 11 students. This reduced the statistical sensitivity of the ANOVA comparisons and limited the precision of the effect-size estimates. Fourth, the cross-sectional design provides information at one point in time. It does not show how social media use or psychosocial experiences change as students progress through university. Academic-level differences therefore should not be interpreted as developmental changes. Finally, the study focused on five selected constructs. It did not examine other factors such as communication accessibility, perceived social support, institutional inclusion, communication modality, or quality of online relationships. These factors might influence social media use and psychosocial experiences among DHH students.

IMPLICATIONS OF THE STUDY

For university practice, social media literacy programmes should be accessible to DHH students. Such programmes should address responsible social media use, online interaction, privacy, social comparison, and the possible psychosocial effects of online experiences. For student support services, universities should provide accessible counselling and psychosocial support for DHH students. Support should not be restricted to a particular gender or academic level because the present study did not identify statistically significant subgroup differences. For communication and inclusion, universities should continue improving accessible communication within academic and social activities. Social media provides useful communication opportunities for DHH students, but digital communication should complement rather than replace accessible face-to-face interaction and institutional support. The observed gender pattern in FoMO also has implications for future assessment. Although the difference was not statistically significant, female students reported higher FoMO and the effect size was larger than for the other gender comparisons. Larger studies should examine whether this pattern is consistent among DHH students.

For future research, studies should involve larger samples from several Ghanaian universities. Longitudinal research would help determine how social media use and psychosocial experiences change over time. Future studies should also examine communication accessibility, social support, institutional inclusion, social comparison, and the quality of online relationships. Further validation of the adapted measures among DHH students would also strengthen future research.

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