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NAVIGATING CONNECTIONS: THE IMPACT OF SOCIAL MEDIA ON ADOLESCENT RELATIONSHIPS AND INTERACTIONS

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Abstract: The excessive use of social media has significantly reshaped how adolescents communicate, form relationships, and navigate their emotional worlds. While existing research has explored its effects on peer interactions and self-presentation, limited attention has been given to how social media influences multiple relational contexts, such as friendships, family dynamics, and peer group behaviour—within culturally diverse settings. Research is also sparse on the moderating role of digital literacy and the differential experiences of adolescents based on gender and socio-economic status (SES), particularly in the Indian context. This study addresses these gaps by examining the impact of social media on face-to-face communication and social anxiety Among adolescents aged 13–18 years, using a mixed-methods approach that combines quantitative surveys (n = 500) and qualitative focus group discussions (n = 35). Quantitative analyses revealed that while social media fosters online confidence and peer connectivity, it also contributes to reduced offline interactions, heightened social comparison, and increased social anxiety, effects more pronounced among girls and adolescents from lower SES groups. Thematic analysis of focus group data highlighted issues such as idealized self-presentation, digital peer pressure, and emotional disconnect, which converged with survey trends. These findings underscore the need for culturally sensitive digital literacy programs, targeted mental health interventions, and strategies to promote balanced media use, especially for socio-economically vulnerable adolescents navigating the challenges of the post-pandemic digital landscape.

Key-words*:* Adolescents, Social Media, Digital Communication, Social Anxiety, Socio-economic Status.

1. Introduction

Social media has become an indispensable part of adolescents' lives. It has transformed the dynamics of how young individuals form, maintain, and navigate their social domains. Over 90% of teenagers use social media every day, and sites like Instagram, Snapchat, and Facebook have a significant impact on how they communicate with one another and express themselves. (Woods and Scott 2016; Vuong et al. 2021). With this growing dependence on digital platforms, questions have emerged regarding their role in adolescent's psychosocial development. While these platforms offer various opportunities for social interaction, self-expression, and peer support,

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they also raise concerns about the erosion of face-to-face communication, development of social skills, and emotional well-being (Boyd 2014; Chou and Edge 2012; Valkenburg et al. 2017).

The literature reflects this dual nature of social media's impact. On the one hand, social networking sites allow adolescents to sustain friendships, expand their social circles, and engage in identity exploration (Subrahmanyam and Greenfield 2008; Lenhart 2015) . They also provide spaces for emotional support and shared experiences, particularly benefiting marginalized youth who may face barriers to in-person connection (Davis 2012; Pew Research Center 2013; Vasalou et al. 2008; Best et al. 2014). On the other hand, excessive use of social media has been associated with negative outcomes such as cyberbullying, social anxiety, loneliness, and reduced real-life interactions (Keles et al. 2020; Twenge and Campbell 2018). Adolescents heavily dependent on digital communication may exhibit reduced offline social skills and find it difficult to navigate real-world interactions (Uhls et al. 2014).

While research on adolescent social media use is expanding, much of it remains concentrated in Western contexts and focuses on either the benefits or the risks in isolation. Less is known about how these platforms shape multiple relational domains such as friendships, peer dynamics, and family interactions, within culturally diverse settings like India. While much of the existing research has been conducted in Western contexts, limited studies explore how Indian adolescents, situated in distinct cultural and socio-economic environments, navigate social media's influence on their relationships and emotional well-being.

1.1. Research Objectives

The specific objectives of the study are:

1. To examine the influence of social media on adolescent relationships, including friendships, family interactions, and peer dynamics.
2. To evaluate the impact of social media on face-to-face interactions and specific social skills, such as communication, conflict resolution, and emotional expression.
3. To explore whether demographic factors such as gender and socio-economic status shape adolescents' social media experiences and their relational and emotional outcomes.

These objectives are grounded in established theoretical perspectives, specifically, Social Comparison Theory and Uses and Gratifications Theory, which offer valuable insight into both the motivations behind adolescents' social media usage and its impact on their interpersonal interactions.

In order to provide solid foundation to these objectives, the subsequent section examines the theoretical and empirical literature on adolescent social media use.

2. Literature Review

The increasing integration of social media into adolescents' lives has drawn significant scholarly attention across multiple disciplines. Digital platforms are now central to how adolescents form relationships, communicate, and navigate social and emotional development. This literature review synthesizes existing research to provide a comprehensive understanding of the psychological and relational impacts of social media on adolescents.

The section begins by discussing the theoretical background that underpin this study. Social Comparison Theory and Uses and Gratifications Theory, which explain both the psychological consequences and the motivations driving adolescents' digital engagement. Following this, the review explores empirical studies that highlight the positive and negative effects of social media, paying particular attention to gender and socio-economic disparities. The moderating role of

digital literacy and algorithmic influences is also examined to understand how adolescents' skills and online environments shape their experiences.

2.1 Theoretical Background

This study is grounded in Social Comparison Theory (Festinger 1954) and Uses and Gratifications Theory (Katz et al. 1973) which together provide a dual perspective on adolescent social media engagement. These theories offer insight into both the psychological effects of social media and the motivations behind its use.

2.1.1 Social Comparison Theory

Social Comparison Theory proposes that individuals evaluate themselves by comparing their abilities, achievements, and social status to others. Adolescents, in particular, engage in social comparison through social media, where they are continuously exposed to curated and idealized portrayals of their peers (Weinstein and James 2022; Nesi and Prinstein 2015). Research suggests that such comparisons can increase self-consciousness, social anxiety, and lower self-esteem (Vogel et al. 2014). Given that adolescent relationships are significantly shaped by perceptions of social acceptance and self-worth, this theory helps explain how social media affects face-to-face interactions and emotional well-being. This aligns with the study's objective of evaluating the impact of social media on adolescents' social skills, particularly their ability to communicate and engage in offline interactions.

2.1.2 Uses and Gratifications Theory

The Uses and Gratifications Theory (UGT) (Katz et al. 1973) asserts that media users are active agents who selectively engage with media to satisfy specific psychological and social needs. Unlike earlier media theories that viewed audiences as passive recipients, UGT emphasizes purposeful media consumption, where individuals seek out media for information, entertainment, personal identity, and social integration (Whiting and Williams 2013).

UGT is especially relevant in understanding adolescents' use of social media platforms, as these digital spaces offer opportunities for self-expression, peer connection, emotional regulation, and identity exploration (Keles et al. 2020; Hogan and Quan-Haase 2010). For instance, adolescents often use Instagram and WhatsApp not only for communication but also for crafting a public persona and receiving social validation.

In this study, UGT guided the development of survey items addressing why adolescents use social media (e.g., to feel connected, express themselves, or cope with loneliness), and shaped the interpretation of both survey and focus group findings. It helps explain the emotional outcomes observed, such as increased confidence in online interactions and anxiety related to peer validation, as adolescents actively navigate social platforms to meet evolving psychosocial needs (Keles et al. 2020). This framework directly guided survey item construction, such as questions on adolescents' motivations for using social media to 'feel connected,' 'cope with loneliness,' or 'express themselves,' ensuring theoretical alignment with the empirical tools of the study.

2.2 Digital Literacy and Algorithmic Influences

Recent studies emphasize the critical role of digital literacy in moderating adolescents' experiences with social media. Digital literacy involves the ability to critically assess online content, understand digital risks, manage privacy, and interpret the social norms of online engagement (Livingstone and Blum-Ross 2020; Ng et al. 2021). Adolescents with higher levels of

digital literacy are more likely to navigate social media safely and meaningfully, mitigating its potential harms.

Moreover, emerging research on digital media discourse highlights how social media platforms function as socio-cultural environments where adolescents construct identity, seek validation, and are exposed to algorithmically curated content (Äijälä et al. 2023). These algorithmic influences may intensify social comparison, reinforce performance-based self-presentation, and heighten emotional strain, particularly when adolescents encounter idealized portrayals of peers or influencers.

By integrating these perspectives, the study not only explores the emotional and psychological consequences and motivations behind social media use but also acknowledges the evolving digital ecosystem in which adolescent development occurs. Together, these theories provide a robust foundation for examining how social media affects relationships, communication skills, and well-being in today's youth.

2.3 Empirical Studies

While theoretical perspectives offer foundational insights, empirical studies provide a grounded understanding of adolescents' lived experiences with social media. The influence of social media on adolescents has been a central theme in contemporary research, reflecting the pervasive role of digital platforms in shaping social dynamics. This review synthesizes findings from key studies to provide a comprehensive understanding of the positive and negative impacts of social media on adolescent relationships and interactions. Building on the theoretical insights discussed above, these empirical findings resonate with the propositions of Social Comparison Theory, which explains the heightened sensitivity to peer feedback, and Uses and Gratifications Theory, which highlights adolescents' active pursuit of social connection and identity expression through digital platforms.

2.3.1 Social Media and Adolescent Development

Adolescence is a critical period for social and emotional development, during which relationships play a pivotal role. Recent studies show that the post-COVID digital surge has intensified adolescents' dependency on social media for emotional regulation and peer connection. Kelly et al. (2021) reported increased anxiety and sleep disturbances among teens who used social media heavily during lockdown. Similarly, Maryani et al. (2020) linked frequent Instagram use to elevated self-worth sensitivity and peer validation-seeking behavior, particularly among adolescent girls. Social media platforms, such as Instagram, Snapchat, and TikTok, have become integral to adolescents' lives, influencing how they interact and present themselves. (Lenhart 2015) highlights that adolescents use social media extensively for self-expression and maintaining connections, with nearly 90% reporting daily use. However, while digital platforms offer opportunities for networking and support, they also present challenges, including cyberbullying, privacy concerns, and excessive screen time (Pew Research Center 2013).

2.3.2 Positive Effects of Social Media

Several studies underscore the benefits of social media in enhancing adolescent relationships. Social media provides a platform for maintaining long-distance friendships, exploring identity, and accessing emotional support, particularly for marginalized groups (Boyd 2014). Valkenburg and Peter (2009) emphasize that online interactions can complement offline relationships by providing additional avenues for communication and self-disclosure. Furthermore, adolescents often find communities of interest online, which can foster a sense of belonging and reduce

feelings of isolation (Ellison et al. 2007). Additionally, Craig et al. (2022) found that LGBTQ+ adolescents used social media platforms as a refuge to safely explore their identities, engage in supportive communities, and access mental health resources unavailable offline.

2.3.3 Negative Effects of Social Media

Conversely, extensive use of social media has been linked to adverse outcomes. Adolescents frequently engage in social comparison, leading to feelings of inadequacy and anxiety (Chou and Edge 2012). Research by Vasalou et al. (2008) reveals that the pressure to curate an idealized self-image often results in heightened stress and lower self-esteem.

Recent studies have further emphasized the evolving impact of social media on adolescent well-being in the post-pandemic digital age. Recent studies have further emphasized the nuanced and evolving impact of social media on adolescent well-being in the post-pandemic digital age**.** For instance, Madigan et al. (2022) found that increased screen time during COVID-19 lockdowns correlated with rising levels of anxiety, sleep disturbances, and feelings of isolation among adolescents. Similarly, Maryani et al. (2020) reported that frequent engagement with social media platforms contributed to performance-based self-worth and increased sensitivity to peer feedback, especially among girls. A study by Turel and Bechara (2021) highlighted neurocognitive disruptions in adolescents with problematic social media use, affecting their ability to focus and regulate emotions in offline settings.

A study by Shawcroft et al. (2022) demonstrated that problematic social media use among adolescents correlated with impaired impulse control and emotional regulation, factors linked to increased vulnerability to online peer pressure and risky behaviors. Furthermore, excessive social media use can detract from face-to-face interactions, weakening interpersonal skills and reducing the quality of real-world relationships (Best et al. 2014) , while simultaneously promoting the formation of virtual relationships, thereby undermining the real-life social skills and emotional and psychological well-being of today's youth (Kaur 2021; Elsayed 2020). Studies also indicate that adolescents from lower socio-economic backgrounds are more vulnerable to the negative impacts of social media, including increased social anxiety and reduced access to supportive online networks (Livingstone and Helsper 2007). Moreover, a recent study by John (2022) highlighted that adolescents from lower SES households were less likely to receive parental guidance on safe online behavior, and they often lacked the digital literacy needed to critically assess harmful content. These adolescents were more prone to misinformation, cyberbullying, and addictive usage patterns.

2.3.4 Gender and Socio-Economic Disparities

Research highlights significant gender and socio-economic disparities in how adolescents experience social media. Girls are more likely to experience anxiety, self-esteem issues and social comparison stress due to the idealized portrayals prevalent on platforms like Instagram and Snapchat (Chou and Edge 2012; Valkenburg et al. 2017; Vasalou et al. 2008; Best et al. 2014). Furthermore, girls tend to internalize peer feedback and engage in rumination loops, particularly around likes, comments, and appearance-based validation, as shown in a meta-analysis by Nesi et al. (2020). However, not all gender-related outcomes are negative. Several studies have shown that adolescent girls use social media as a tool for empowerment, creative expression, and activism (Nesi et al. 2018). Chae (2018) found that girls engaged in online campaigns, art-sharing communities, and peer mentoring groups, which fostered leadership skills, social awareness, and resilience.

In contrast, boys are more likely to engage in risky or competitive online behaviors, including gaming-based aggression, digital bravado, and participation in online challenges (Coyne et al. 2021). Boys often use social platforms for status assertion and social dominance, which, while sometimes fostering camaraderie, can also expose them to risky online interactions. However, positive patterns also emerge. Research by Marengo et al. (2022) indicated that boys increasingly utilize online communities for skill-sharing, collaborative gaming, and peer support, reflecting a more nuanced engagement beyond stereotypical risk behaviors. Also Jackson et al. (2011) observed that boys often use online gaming communities to develop teamwork, problem-solving abilities, and long-term peer connections that extend offline.

Socio-economic status (SES) further shapes adolescents' digital experiences. Adolescents from lower-income families may lack digital literacy skills, making them more vulnerable to online risks, misinformation, and harmful content (Livingstone and Helsper 2007). They may also face reduced parental guidance in navigating online spaces (John 2022). At the same time, digital platforms can act as equalizers, enabling lower-SES adolescents to access educational content, scholarship information, and skill-building opportunities otherwise unavailable offline (Banaji and Buckingham 2009). Selwyn (2010) reported that adolescents from disadvantaged backgrounds who actively sought online educational resources demonstrated improved academic confidence and expanded career aspirations.

These disparities underscore the importance of designing interventions that promote healthy digital engagement while ensuring equitable access to skills, resources, and supportive networks. By recognising that both risks and opportunities coexist, researchers and educators can better address the nuanced realities of adolescent social media use across gender and socio-economic lines.

Despite the growing body of research, three notable gaps persist. First, much of the existing literature is based on Western populations, with limited exploration of how social media shapes adolescent relationships in non-Western contexts such as India. Second, most studies focus on short-term effects, overlooking the long-term psychological and relational consequences of sustained digital engagement. Third, there is limited understanding of how gender, socio-economic status, and digital literacy intersect to influence adolescents' online and offline experiences. Addressing these gaps, the present study adopts a mixed-methods design to examine the complex and context-specific ways in which social media affects adolescent relationships, communication skills, and emotional well-being.

Building on these theoretical insights and empirical findings, the next section outlines the methodological framework used in this study, detailing the research design, sampling strategy, instruments, and analytical approaches.

3. Methodology

3.1. Research Design

This study adopted a *mixed-methods research design*, combining quantitative and qualitative approaches to comprehensively explore the impact of social media on adolescent relationships, face-to-face communication, and social skills. Surveys were used to collect large-scale quantitative data, while focus groups provided deeper qualitative insights into adolescents' social media experiences.

The mixed-methods design was chosen to ensure both breadth and depth of understanding. While the quantitative survey captured general patterns in social media use and relational outcomes, the

qualitative focus groups provided richer insights into adolescents' subjective experiences and contextual nuances that could not be captured through closed-ended responses alone. This integration allowed for triangulation and a more holistic view of the research problem.

3.2. Sample

This study employed a stratified random sampling design to ensure balanced representation of adolescents aged 13 to 18 years, stratified by gender and socio-economic status (SES). The final sample comprised 500 adolescents (240 males and 260 females) from urban and semi-urban areas of Punjab, India.

Participants were recruited through school outreach in selected government and private schools, as well as online platforms such as youth forums and social media groups. The districts of Ludhiana, Patiala, and Jalandhar were chosen for their digital accessibility and socio-economic diversity, offering a representative adolescent population.

Stratification into low, middle, and high SES categories was based on a composite index derived from three indicators:

1. Parental education,
2. Parental occupation, and
3. Monthly household income

This classification followed the Revised Kuppuswamy Socio-Economic Status Scale, which is widely used in India to assess SES in both urban and semi-urban populations (Saleem 2020; Sharma 2017). The scale incorporates education, occupation, and income to generate a composite score that categorizes families into low, middle, and high SES groups. To ensure contextual accuracy, the categorization framework was reviewed by five field experts. Demographic data were collected via open-ended survey items and systematically coded for analysis.

After finalizing the sampling framework, a pilot test was conducted to validate the questionnaire for clarity and age appropriateness.

3.3. Pilot Testing and Instrument validation

Two different instruments were developed and validated for this mixed-methods study:

3.3.1 Structured Questionnaire for Quantitative Survey

The main survey instrument consisted of 38 closed-ended items designed to collect quantitative data on adolescents' social media use, face-to-face interaction, self-esteem, and social anxiety. This tool was pilot-tested with 30 adolescents to ensure clarity, relevance, and age-appropriateness. Based on the feedback, 7 items were reworded, and some sections were reordered to improve the logical flow of the questionnaire.

- *Reliability* was assessed using *Cronbach's alpha ($\alpha = 0.81$),* indicating strong internal consistency.
- *Content validity* was established through expert review by three specialists in psychology, education, and digital media studies.
- Pilot participants were drawn from schools not included in the final sample to avoid response bias. Brief follow-up interviews were also conducted to confirm item comprehension.

3.3.2 Semi-Structured Focus Group Interview Guide

A separate *semi-structured guide* was designed for the focus group discussions. This tool included open-ended questions on topics such as peer interactions, emotional well-being, social comparison, and perceived pros and cons of social media use.

The guide was reviewed by subject experts for appropriateness and conceptual alignment with the study objectives. Questions were phrased in age-appropriate language and piloted informally with a small group of adolescents (n = 5) to confirm comprehensibility and flow.
These validation procedures ensured that both tools were psychometrically sound, culturally sensitive, and appropriate for the target population of adolescents aged 13–18 years.

3.4. Data Collection Methods

3.4.1 Survey Instrument

A structured questionnaire was developed to collect quantitative data, comprising primarily closed-ended items with a few open-ended questions. The questionnaire was divided into the following sections:

- ***Demographics***: Included information on age, gender, type of school, and socio-economic background (parental education, occupation, and household income).
- ***Social Media Use***: Captured frequency of use (e.g., multiple times per day, daily, weekly), duration, preferred platforms (e.g., Instagram, WhatsApp, YouTube), and types of content consumed (e.g., entertainment, academic, peer interaction).
- ***Relational Contexts***: Focused on adolescents' perceptions of how social media has influenced family communication, friendships, and peer interactions—such as whether in-person conversations have decreased, improved, or remained unchanged.
- ***Face-to-Face Communication and Social Skills***: Included self-assessments of confidence in real-life conversations, emotional expression, listening skills, and conflict resolution abilities.
- ***Social Anxiety***: This section assessed emotional and behavioural symptoms related to both online and offline social anxiety. Items addressed discomfort in face-to-face interactions (e.g., "I feel nervous speaking in front of peers") as well as digital triggers such as fear of missing out (FOMO) and preoccupation with online validation (e.g., "I feel anxious when I don't get likes or replies quickly"). Responses were recorded using a mix of yes/no and frequency-based options (e.g., "often," "sometimes," "rarely").
- ***Digital Literacy and Online Behaviour***: Assessed students' awareness of online privacy, critical thinking about digital content, and understanding of responsible and ethical social media use.

3.4.2 Focus Group Discussions

To complement the survey data, focus group discussions were conducted with a purposive subsample of 35 adolescents drawn from the initial survey participants. Variation in gender, socio-economic status (SES), and intensity of social media use was ensured during participant selection. Each of the five focus groups consisted of 6–8 participants and lasted approximately 45–60 minutes. Discussions were conducted online and moderated by a trained facilitator using a semi-structured interview guide. The virtual format allowed for geographical convenience, enhanced anonymity, and promoted more candid participation, especially since adolescents were already familiar with online communication due to previous remote learning experiences during the pandemic.
Parental consent and participant assent were obtained, and all ethical protocols for conducting research with minors were strictly adhered to.
Key discussion themes included:

- Perceived benefits and drawbacks of social media
- Experiences with online peer interactions

- Feelings of inclusion, exclusion, or pressure on digital platforms
- Impact on self-esteem, identity formation, and real-life communication

All sessions were audio-recorded, transcribed verbatim, and analysed using Braun and Clarke's (2006) six-phase method of thematic analysis.

3.5. Data Analysis

3.5.1 Quantitative Analysis

Survey data were analysed using *SPSS (Version 26).* Both descriptive and inferential statistical techniques were applied to address the study's core objectives, examining social media usage patterns, relational impacts, and demographic variations.

- **Descriptive statistics** (frequencies and percentages) were used to summarize demographic characteristics (age, gender, socio-economic status) and key trends related to social media use, face-to-face interaction, confidence in communication, and reported feelings of anxiety or loneliness. Differences across gender and SES were also explored descriptively before conducting inferential analyses.
- **Chi-square tests (χ^2)** were applied to determine significant associations between categorical variables, particularly to assess differences in social anxiety levels across gender and socio-economic groups.
- **Independent sample t-tests** were used to compare mean scores of social anxiety among participants from different socio-economic backgrounds. This enabled analysis of whether SES significantly influenced social anxiety levels.

3.5.2 Qualitative Analysis

Focus group transcripts were analysed using *Braun and Clarke's (2006) six-phase thematic analysis* framework:

1. Familiarization with the data
2. Generation of initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the final report

Coding was done independently by two researchers, with an inter-coder agreement rate of 85%. Discrepancies were resolved through consensus. Emerging themes included *Idealized Self-Image*, *Social Comparison and Self-Esteem*, *Support and Connectivity*, and *Anxiety and Mental Health*. These themes encompassed areas such as conformity pressure, fear of judgment, feelings of inadequacy, peer bonding, digital community engagement, and the emotional strain of constant connectivity. To ensure comprehensive analysis, these qualitative themes were systematically cross-referenced with quantitative survey results, enabling identification of patterns of convergence and divergence between the two datasets. Direct quotations from adolescent participants were integrated to provide contextual depth and illustrate key experiences in their own words. This mixed-methods triangulation strengthened the study's credibility by combining the statistical generalizability of quantitative findings with the rich, contextual insights from qualitative narratives.

3.6. Variable Measurement and Operationalization

To ensure analytical transparency, the study's primary variables were operationally defined and measured as follows:

3.6.1 Social Anxiety

Social anxiety was assessed using four researcher-developed self-report items addressing discomfort in both online and offline contexts (e.g., 'I feel nervous speaking in front of peers,' 'I feel anxious when I don't get likes or replies quickly'). Responses were recorded on a three-point frequency scale ('often,' 'sometimes,' 'rarely'). Participants endorsing two or more items as 'often' were classified as high social anxiety, while others were categorized as low or no social anxiety.

3.6.2 Socio-Economic Status (SES)

Socio-economic status (SES) was measured using a composite index of parental education, occupation, and monthly household income, based on the Revised Kuppuswamy's Socioeconomic Status Scale (Sharma 2017). Participants were categorized into low, middle, and high SES groups. This classification was reviewed and validated by five field experts for contextual relevance.

3.6.3 Social Media Use

Frequency was assessed via the item: "How often do you use social media?" (Response options: multiple times per day, once daily, few times a week, rarely). Additional items explored primary purposes of use (e.g., entertainment, peer interaction, academic engagement), reflecting categories consistent with Uses and Gratifications Theory.

3.6.4 Social Relations and Communication

Items explored perceived changes in family communication, friendships, and peer interactions due to social media. Responses were recorded on a 3-point Likert scale ('increased,' 'no change,' 'decreased') and recoded into positive, neutral, and negative categories. These items offered insight into how adolescents perceived the impact of digital platforms on their interpersonal dynamics.

3.7. Ethical Considerations

This study adhered to standard ethical guidelines for conducting research involving minors. Informed consent was obtained from the parents or guardians of all participants, and assent was received from the adolescents themselves prior to participation.

Participants were fully informed about the purpose of the study, their right to withdraw at any point without penalty, and the confidentiality and anonymity of their responses. All data were treated with strict confidentiality to ensure the privacy and well-being of the participants.

4. Results and Discussion

4.1 Descriptive Statistics

This section summarizes demographic characteristics and key patterns of social media usage among adolescents.

Table 1. Demographic Profile of Participants

Total Participants	Age Range	Gender Distribution		Socio-Economic Status		
500	13-18 years	Female	Male	Low Income	Middle Income	High Income
		52% (n=260)	48% (n=240)	30% (n=150)	40% (n=200)	30% (n=150)

This diverse sample ensured balanced representation across age, gender, and socio-economic status (SES). The equal gender split and stratification across SES groups provide a robust foundation for examining digital behavior in varying adolescent contexts.

Table 2: Frequency of Social Media Usage

Frequency of usage	Percentage	Frequency (n)
Multiple times per day	85%	425
Once daily	10%	50
Rarely (1–2 times/week)	5%	25

Most adolescents (85%, n= 425) reported accessing social media multiple times daily, reinforcing the platform's centrality in their routines. Only 5% (n=25) engaged infrequently, highlighting the near-ubiquitous nature of social media use among this age group.

Table 3: Impact of Social Media on Face-to-Face Interactions

Impact on Interactions	Percentage (%)	Frequency (n)
Decreased	45%	225
No Change	40%	200
Increased	15%	75

Nearly half of the adolescents (45%, n=225) noted a reduction in offline communication, indicating a displacement effect. This is concerning, as interpersonal communication skills are crucial during adolescence. However, a meaningful portion (15%, n=75) felt that online interactions led to increased offline engagement, suggesting nuanced experiences.

Table 4: Feelings of Confidence and Loneliness

Feeling	Percentage (%)	Frequency (n)
More Confident Online	70%	350
Less Confident Online	30%	150
Experience Loneliness	50%	250
Do not experience Loneliness	50%	250

The data presents a paradox. While most adolescents (70%, n= 350) feel more confident online, an equal number (50%, n=250) experience loneliness. This duality points to complex psychological effects — digital platforms may bolster confidence but fail to alleviate deeper emotional needs.

Table 5: Gender and Socio-Economic Status Differences

Factor	Significant Difference ($p < 0.05$)
Gender	Yes
Socio-Economic Status	Yes

These results suggest that both gender and SES play significant roles in shaping adolescents' social media experiences. For instance, girls (n=260) and adolescents from lower SES backgrounds (n=150) were more vulnerable to adverse outcomes like anxiety and social comparison.

4.2 Inferential Statistics

To investigate the relationship between social media use and demographic characteristics, both chi-square and independent t-tests were conducted. In this analysis, gender and socio-economic status (SES) functioned as *independent variables*, while social anxiety levels and face-to-face communication outcomes served as *dependent variables*. These statistical tests were employed to assess whether adolescents' emotional and social experiences related to social media usage varied significantly across different demographic groups.

4.2.1 Chi-Square Test Results

To examine whether adolescents' social media experiences varied across gender and socio-economic groups, chi-square and independent sample t-tests were conducted.

Table 6: Chi-Square Test for Gender and Social Media Impact on Social Anxiety

Variable	χ^2 Value	p-Value	Significance
Gender	14.2	< 0.01	Significant
Socio-Economic Status	12.8	< 0.05	Significant

The chi-square analysis revealed that adolescents' experiences of social anxiety linked to social media usage vary significantly across gender and SES groups. Female participants and those from lower SES backgrounds reported higher social anxiety, indicating that these groups may be more emotionally vulnerable to the pressures of online interaction.

Interpretation

This aligns with previous findings (Twenge and Campbell 2018) that adolescent girls are more susceptible to social comparison, and adolescents from lower SES groups may have fewer coping mechanisms or parental mediation related to digital use. These findings suggest that female adolescents and those from lower SES backgrounds are more prone to experiencing digital stress and social anxiety, likely due to heightened pressures around self-presentation and reduced access to supportive offline resources. In practical terms, girls may face greater scrutiny and comparison online, while adolescents from economically disadvantaged backgrounds may lack digital literacy, parental mediation, or safe digital environments, exacerbating anxiety. These demographic differences point to the need for gender-sensitive and SES-targeted mental health interventions and digital wellness education in schools**.** These patterns were echoed in the qualitative findings, where female participants and adolescents from lower SES backgrounds frequently expressed emotional fatigue, performance anxiety, and body image concerns.

4.2.2 Independent Sample T-Test Results

Table 7: Independent Sample T-Test for Social Anxiety Scores Based on Socio-Economic Status

Group	Mean Social Anxiety Score	Comparison Group	t-Value	p-Value	Significance
Lower Socio-Economic Background	32.5	Higher Socio-	4.3	< 0.001	Significant

		Economic Background			
Lower Socio-Economic Background	32.5	Middle Socio-Economic Background	2.5	< 0.05	Significant
Middle Socio-Economic Background	30.4	Higher Socio-Economic Background	2.2	< 0.05	Significant

Interpretation:
The independent sample t-test results further highlight the influence of socio-economic status on adolescents' experiences with social anxiety. Adolescents from lower SES backgrounds reported significantly higher levels of social anxiety compared to their middle and high SES peers. This pattern suggests a cumulative disadvantage, where limited access to emotional, social, and technological resources may heighten vulnerability to digital stress. In real-life terms, adolescents from low-income families may have less parental supervision, fewer structured offline activities, and limited guidance on healthy digital habits. These conditions can contribute to feelings of isolation, pressure to fit in online, and fear of judgment, that are key factors associated with social anxiety.

4.3 Focus Group Results

In addition to survey data, qualitative insights from five focus group discussions (n = 35 adolescents) helped contextualize adolescents lived experiences with social media.

4.3.1 Thematic Coding Procedure

The qualitative data were analysed using Braun and Clarke's (2006) six-phase method of thematic analysis. Transcripts were independently coded by two researchers, achieving an intercoder agreement of 85%. The codes were clustered into themes through constant comparison and iterative refinement. This rigorous process ensured both reliability and depth in capturing adolescents' digital experiences.
The thematic analysis generated four major themes that reflect adolescents' perceptions, emotions, and behaviors related to social media use, as presented in Table 8.

Table 8: Identified Themes along with Sub-themes and Illustrative Quotes

Themes Identified	Sub-themes	Illustrative Quotes
Idealized Self-Image	Conformity pressure, fear of judgment	"I feel like I have to be perfect online or people will judge me." "Everyone tries to look perfect. If you don't, you feel invisible." "I always check my photos ten times before posting. If I don't get enough likes, I delete it."
Social Comparison and Self-Esteem	Inadequacy, envy, distorted self-worth	"Seeing others' perfect posts makes me feel like I'm not doing enough." "Even though I know most of it is fake, I still compare myself." "When I see influencers with perfect skin or bodies, I sometimes hate how I look."
Support and Connectivity	Peer bonding, digital community	"My best friend shifted to another city, but we still talk every day on Instagram."

		"Sometimes I can't talk to my parents, but I find people online who understand." "I don't have many friends in school, but online I feel like I belong."
Anxiety and Mental Health	FOMO, sleep disruption, emotional stress	"I can't sleep properly because I keep checking my phone for replies." "Sometimes I post and keep checking for likes... it makes me restless." "If I don't check my messages, I feel like I'm missing something important."

Interpretation:
These narratives illustrate that adolescents' online behaviours are strongly tied to identity construction, emotional regulation, and the pursuit of social validation. The compulsive nature of social media engagement often results in performance pressure and mental fatigue, particularly among girls and those from lower socio-economic backgrounds.

Support from survey data:

- 225 adolescents (45%) reported a decline in face-to-face communication, mirroring focus group accounts of feeling less confident in offline interactions.
- 350 adolescents (70%) said they felt more confident online, yet 250 (50%) also experienced loneliness — a duality echoed in group discussions.

Focus group-specific frequencies (out of 35):

- 22 adolescents said they *regularly edit or filter images* before posting to avoid negative judgment.
- 18 adolescents expressed *worry about peers' reactions* to their online content.
- 25 adolescents admitted *comparing their lives* with peers online.
- 20 adolescents described *feeling inadequate* after scrolling through social media posts.
- 21 adolescents reported *feeling anxious* when not checking their phones.
- 16 adolescents mentioned *sleep disruption* due to late-night scrolling.
- 27 adolescents emphasized that social media *helped them stay connected* with friends.
- 22 adolescents felt *emotionally supported* through online communities.

Together, the survey and focus group findings underscore a dual reality, while social media fosters connectivity and inclusion, it simultaneously amplifies anxiety, social comparison, and reduced real-world interaction skills.

4.4 Literature Alignment:
These findings echo prior research(Vasalou et al. 2008; Best et al. 2014; Chou and Edge 2012; Valkenburg et al. 2017)but provide contextualized insights within the Indian adolescent population, particularly on how socio-economic conditions exacerbate digital vulnerability.
The focus group discussions provided in-depth insights into adolescents' experiences with social media. Key findings include:

Theme 1: Idealized Self-Image: Adolescents expressed pressure to present a perfect version of themselves online, driven by the fear of negative evaluation. This theme was marked by a fear of judgment, obsession with likes and comments, and the tendency to curate an idealized digital identity.
In the focus groups, *22 out of 35 adolescents* reported regularly editing or filtering images before posting, and *18 out of 35* expressed concerns about how peers would react to their online content. For example, a 14-year-old girl shared: *"I always check my photos ten times before posting. If I don't*

get enough likes, I delete it." Another participant explained: *"Everyone tries to look perfect. If you don't look good or post trendy things, you feel invisible."* A high-SES participant reflected: *"Sometimes I feel I'm living for the camera, not for myself."*

These responses illustrate how adolescents' self-worth is often tied to online validation. This finding is consistent with Vasalou et al. (2008), who noted that adolescents frequently engage in online self-presentation strategies that diverge from offline realities.

Theme 2: Social Comparison and Self-Esteem: Participants reported that viewing idealized posts of peers led to feelings of inadequacy, envy, and self-doubt. Many adolescents expressed that constantly seeing curated and glamorous portrayals of others' lives on platforms like Instagram made them question their own worth or accomplishments.

For instance, one participant shared: *"Seeing others' perfect posts makes me feel like I'm not doing enough."* Another 16-year-old girl from an urban private school explained: *"It's like everyone is going on vacations or winning awards — I feel like I'm stuck while others are moving ahead."* A male participant from a middle-income background admitted: *"Even though I know most of it is fake or exaggerated, I still compare myself. I feel behind in life sometimes."*

These accounts reflect a pervasive sense of comparison-induced pressure, often tied to self-image and achievement. For some adolescents, this resulted in reduced confidence and a reluctance to share their own lives online out of fear of judgment or "not being good enough."

Focus group responses reinforce theme: *25 out of 35 adolescents* admitted to comparing their lives with peers online, and *20 out of 35* reported feeling inadequate after scrolling through social media.

Such outcomes support prior studies such as Chou and Edge (2012), who found that prolonged exposure to idealized digital content led to distorted social perceptions and self-evaluation. The qualitative data from this study deepens that insight, revealing not just the existence of social comparison, but the emotional toll it exacts on adolescents' daily lives — including feelings of exclusion, invisibility, and lowered self-worth.

Furthermore, comparisons were not always limited to lifestyle or academic achievements. Some adolescents highlighted body image and physical appearance as major sources of distress. As one 15-year-old participant from a government school confessed: *"When I see influencers with perfect skin or bodies, I sometimes hate how I look in the mirror."*

These findings underscore the importance of digital literacy interventions that help adolescents critically evaluate online content and differentiate between real life and digital fiction.

Theme 3: Support and Connectivity: Despite the pressures, adolescents also acknowledged that social media provides a valuable space for connection, especially when in-person contact is limited due to distance or busy schedules.

For instance, one participant shared: *"My best friend shifted to another city, but we still talk every day on Instagram."* A girl from a low SES background added: *"Sometimes I can't talk to my parents, but I find people in online groups who understand."* Another adolescent explained: *"I don't have many friends in school, but online I feel like I belong."*

These narratives demonstrate that digital platforms can foster emotional support, particularly for adolescents who feel marginalized in their offline environments.

Focus group findings reinforced this trend: *27 out of 35 adolescents* reported that social media helps them stay in touch with friends, and *22 out of 35* stated that they feel more emotionally supported through online communication.

These results align with Boyd (2014) and Valkenburg and Peter (2009), who emphasized that social media could serve as a supplementary space for emotional expression and belonging, particularly for adolescents navigating challenges of identity or social isolation.

Theme 4: Anxiety and Mental Health: While adolescents acknowledged the social benefits of digital media, many also discussed the emotional toll of constant connectivity. Participants described feeling overwhelmed by notifications, the need to respond immediately, and the fear of missing out (FOMO).

A participant from a middle-income group shared: *"I can't sleep properly because I keep checking my phone for replies."* Another adolescent revealed: *"If I don't check my status or messages, I feel like I'm missing something important."* One girl expressed: *"Sometimes I post something and just keep waiting for someone to comment or like it. It makes me restless."*

These feelings were not isolated. Focus group responses showed that *21 out of 35 adolescents* reported anxiety when not checking their phones, and *16 out of 35* experienced sleep issues linked to nighttime scrolling.

The emotional stress described by adolescents' mirrors findings from Best et al. (2014) and Twenge and Campbell (2018), who reported strong associations between excessive screen time and psychological distress. The focus group data deepen this understanding by showing how anxiety is tied not only to the volume of social media use but also to expectations of peer validation, performance pressure, and the compulsive cycle of checking updates.

The findings highlight the dual nature of social media's influence on adolescents. On one hand, digital platforms provide meaningful avenues for connection, emotional support, and self-expression, particularly for those navigating physical distance or social isolation. On the other hand, they introduce challenges such as heightened performance anxiety, reduced face-to-face interaction, and sleep disruption, especially among adolescents with limited digital literacy or from lower socio-economic backgrounds.

These results are consistent with prior research that documented both the positive and negative impacts of social media (Best et al. 2014; Pew Research Center 2013). However, this study extends the conversation by offering richer, context-specific insights through adolescents' own voices in focus group discussions. For instance, the findings affirm that social media can help sustain friendships (Chou and Edge 2012) and foster supportive online communities (Vasalou et al. 2008), particularly for those who feel disconnected in offline spaces.

At the same time, the study contributes new empirical evidence on the ***emotional costs of online engagement*****,** including social fatigue, self-comparison, and identity stress, that often remain underexplored in the Indian adolescent context. These challenges were particularly pronounced among adolescents from lower SES groups, who reported greater vulnerability.

Furthermore, while previous studies (e.g., Valkenburg et al. 2017)have underscored gender differences in shaping social media outcomes, the current findings suggest that ***socio-economic status may serve as a stronger moderating factor***. This highlights the urgent need for targeted digital literacy initiatives and context-sensitive interventions that address the intersection of economic background and adolescent development in digital spaces.

5. Implications

This study set out to examine the impact of social media use on adolescents' face-to-face interactions**,** self-esteem-related outcomes**,** and social anxiety. Drawing from both quantitative

and qualitative findings, several key implications emerge for parents, educators, mental health professionals, and policymakers.

1. Promoting Balanced Online and Offline Interactions

With 225 adolescents (45%) reporting a decline in face-to-face communication due to social media, there is a clear need to cultivate balance between digital and offline social life. Parents and educators should promote intentional time management strategies and create opportunities for in-person interactions through extracurricular activities, family routines, and peer engagement. Reinforcing real-world social skills is essential to counter digital overdependence.

2. Addressing Emotional Costs of Online Engagement

The study highlighted not only anxiety and loneliness but also less frequently examined emotional costs such as social fatigue, compulsive checking, and identity stress. Programs should address these issues explicitly through awareness campaigns, peer mentoring, and reflective classroom activities. Adolescents must be supported in recognizing how digital performance pressures can drain emotional energy and distort identity, helping them build healthier boundaries with social media.

3. Building Resilience to Social Comparison

Focus group narratives revealed that idealized self-image and comparison with peers are key contributors to reduced self-esteem. Digital literacy programs must evolve beyond technical skills to include media literacy, emotional regulation, and critical thinking about online portrayals. Adolescents should be equipped to question curated digital realities, resist internalizing unrealistic standards, and develop resilience against self-doubt triggered by comparison.

4. Tailoring Interventions to Socio-Economic and Gender Differences

Statistical and qualitative results showed that both gender and socio-economic status significantly shape social media outcomes. While girls often faced appearance-based pressures, adolescents from lower SES backgrounds reported heightened vulnerability to anxiety, fatigue, and identity stress. Interventions should therefore be differentiated: for girls, programs may focus on countering appearance-related comparison, while for lower-SES groups, emphasis should be on building coping strategies, fostering safe online communities, and ensuring equitable access alongside guidance in navigating social platforms responsibly.

5. Informing Policy on Equitable and Safe Digital Engagement

The findings underscore the need for policies that bridge the digital divide while simultaneously addressing psychosocial risks. Policymakers should invest in digital infrastructure for under-resourced schools, ensure equitable access to devices and connectivity, and design age-appropriate guidelines for safe and ethical social media use. Importantly, policies must go beyond access to include provisions for digital literacy, mental health integration, and training for educators and families to guide adolescents toward balanced and safe digital engagement.

6. Conclusion

This study investigated the multifaceted impact of social media on adolescents' face-to-face interactions, self-esteem, and social anxiety through a mixed-methods approach, integrating survey data with qualitative insights from focus group discussions. The findings highlight the complex and dual nature of adolescents' digital experiences.

On the one hand, social media serves as a platform for connectivity, emotional expression, and identity formation, offering support to those navigating physical distance or social isolation. On the other hand, it contributes to reduced in-person communication, heightened social comparison,

and emerging emotional costs such as social fatigue, compulsive checking, and identity stress. These effects were particularly pronounced among vulnerable groups, notably girls and adolescents from lower socio-economic backgrounds.

By triangulating quantitative and qualitative data, this study enhances the internal validity of its findings and offers richer, context-specific insights into how digital engagement shapes adolescent development. Specifically, the study contributes to the existing literature by:

- Demonstrating that high-frequency social media use is associated with a decline in face-to-face interactions, suggesting a displacement effect in adolescent communication patterns.
- Providing empirical evidence that socio-economic status, alongside gender, acts as a critical moderating factor influencing social media's psychological outcomes.
- Documenting underexplored emotional costs of digital engagement, including social fatigue, self-comparison, and identity stress, that add nuance to the global discussion on adolescent digital well-being.
- Underscoring the value of mixed method approaches in capturing both the measurable patterns and lived experiences of adolescent social media use.

Overall, the study offers both theoretical and practical insights, emphasizing the need for context-sensitive interventions that address not only digital access but also the psychological and social challenges embedded within adolescent online behaviour.

6.1 Future Research Directions

Building on the present findings, future research can expand the scope and depth of understanding in several key areas:

- **Longitudinal Impact**: Examining long-term psychological and behavioral consequences of sustained social media use, including trajectories of anxiety, self-esteem, and offline relational patterns.
- **Cultural Contextualization**: Investigating how cultural norms, societal expectations, and value systems shape adolescents' interpretations of and responses to digital life, particularly in non-Western and underrepresented contexts such as India.
- **Targeted Interventions**: Designing, implementing, and evaluating intervention models tailored to the specific vulnerabilities of at-risk groups, including girls and adolescents from lower socio-economic backgrounds who face amplified risks of digital strain.

By prioritizing balanced digital engagement, fostering emotional resilience, and ensuring equitable access to digital literacy and support systems, future scholarship and practice can better equip adolescents to navigate the opportunities and challenges of the digital era.

6.2 Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request. The dataset includes anonymized survey responses (n = 500) and focus-group transcripts (n = 35) collected from adolescents in Punjab, India. In accordance with the standard academic protocols for studies involving minors, the data are not publicly available to protect participant confidentiality.

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