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PREFACE

It is with great pleasure that the Seshadripuram Journal of Social Sciences (SJSS) presents Volume 7, Issue 1, featuring scholarly contributions from the academic community of St. Claret College. This issue represents a meaningful academic collaboration dedicated to advancing research, knowledge creation, and scholarly exchange across diverse areas of the social sciences and allied disciplines. The contributions reflect the intellectual engagement of researchers and academicians in examining contemporary issues, emerging challenges, and evolving dimensions of society, economy, management, education, and related fields.

The Seshadripuram Research Foundation (SRF) and the Editorial Board of SJSS sincerely acknowledge the Management, Principal, faculty members, researchers, and contributing authors of St. Claret College for their valued collaboration and, in particular, for the confidence placed in SJSS as a platform for disseminating their scholarly work. We greatly appreciate the collective commitment demonstrated throughout the publication process and extend our gratitude to the reviewers, editors, and institutional coordinators whose expertise, constructive observations, and academic diligence have supported the quality, integrity, and scholarly value of this issue.

We trust that this volume will serve as a valuable academic resource for researchers, academicians, practitioners, and students, while encouraging further dialogue, interdisciplinary inquiry, and meaningful research collaboration. The collaboration between St. Claret College, SRF, and SJSS reflects a shared commitment to strengthening the culture of research and responsible scholarly communication. We once again express our sincere appreciation to all contributors and look forward to continued academic engagement and future scholarly collaborations.

With sincere gratitude and best wishes for continued academic collaboration.



Editor In Chief

Dr. S. N. Venkatesh

About Seshadripuram Educational Trust (SET)

The Seshadripuram Educational Trust (SET) is one of Karnataka's oldest and most respected educational charitable trusts, with a legacy that began in 1930 and a formal establishment in 1980. SET today manages a comprehensive network of institutions offering education from pre-school to postgraduate and research levels. Guided by its vision of "*Service to Education*," the Trust is committed to providing equitable, high-quality learning opportunities to students from diverse backgrounds. With its emphasis on academic excellence, value-based education, and societal progress, SET has played a transformative role in shaping thousands of learners across Bengaluru and beyond. The Seshadripuram Research Foundation (SRF) and the Seshadripuram Journal of Social Sciences (SJSS) operate under the Trust's academic framework, embodying its mission to foster research, innovation, and the advancement of knowledge in the social sciences.

About Seshadripuram Research Foundation (SRF)

Seshadripuram Research Foundation (SRF) is the dedicated research arm of the **Seshadripuram Educational Trust (SET)**, established to nurture a strong culture of research among students, faculty, and research scholars. SRF facilitates and supports interdisciplinary research activities across various domains by coordinating research projects, workshops, conferences, publications, and scholarly collaborations. It provides essential resources, academic guidance, financial support for meritorious research proposals, and opportunities for intellectual engagement with experts at national and international levels. Through its initiatives, including the publication of peer-reviewed journals such as the *Seshadripuram Journal of Social Sciences (SJSS)*, SRF seeks to enhance research capabilities, address contemporary societal challenges, and contribute meaningfully to the creation and dissemination of knowledge.

About Seshadripuram First Grade College (SFGC)

Seshadripuram First Grade College (SFGC), located in Yelahanka New Town, Bengaluru, is a distinguished higher education institution affiliated with Bengaluru City University and accredited with NAAC A+ Grade status for its quality academic programs. Established in 1992, SFGC is committed to providing value-based education that fosters academic excellence, personal growth, and professional competence among its students. The college offers a diverse range of undergraduate and postgraduate programs in disciplines such as Commerce, Management, Computer Applications, and Sciences, supported by experienced faculty and robust infrastructure that includes state-of-the-art laboratories, library resources, and learning facilities. SFGC emphasizes holistic development through industry-academia interaction, co-curricular activities, and placement support, preparing students to become competent professionals, researchers, and responsible citizens capable of contributing meaningfully to society and the nation.

From the Desk of the Honorary General Secretary, SET



Nadoja Dr. Wooday P. Krishna

Honorary General Secretary of Seshadripuram Educational Trust

Dear Readers,

Welcome to the *Seshadripuram Journal of Social Sciences (SJSS)*, the flagship journal of the **Seshadripuram Research Foundation (SRF)**, the dedicated research wing of the **Seshadripuram Educational Trust (SET)**.

Housed within the vibrant academic environment of **Seshadripuram First Grade College (SFGC)** SET's NAAC A+ accredited institution SJSS is committed to fostering, promoting, and disseminating innovative and impactful research in the field of social sciences. The journal strives to bridge the gap between theory and practice by providing a platform that encourages rigorous inquiry, contemporary analysis, and meaningful intellectual engagement.

Over the years, SJSS has earned the interest and confidence of scholars across India and abroad, emerging as a valued forum for conceptual, theoretical, and applied research. In an era marked by rapid transformation, SJSS remains responsive to present-day challenges while proactively engaging with emerging academic directions. Guided by a commitment to quality, integrity, and inclusivity, the journal upholds an editorial policy that is fair, transparent, and responsible, ensuring balanced, insightful, and objective content.

I extend my sincere gratitude to the Editorial Board, the reviewers, and all contributing authors whose dedication and scholarship enrich every issue of this journal. I trust that this volume will be a meaningful and rewarding academic experience for our readers. Your comments, feedback, and future scholarly contributions are most welcome and will greatly support our ongoing journey toward academic excellence.

**Happy Reading,
Dr. Wooday P. Krishna**

Introduction To The Issue



Dr. S. N. Venkatesh

Principal, Seshadripuram First Grade College

Director, Seshadripuram Research Foundation (SRF)

Dear Readers,

It gives me great pleasure to present the latest issue of the *Seshadripuram Journal of Social Sciences (SJSS)*, the research journal of the **Seshadripuram Research Foundation**. This volume brings together a collection of high-quality research papers that thoughtfully address contemporary challenges and emerging directions within the social sciences. Each contribution is well-researched, insightful, and academically enriching.

The papers featured in this issue highlight the evolving dynamics of their respective disciplines and underscore the need for continued exploration, innovation, and interdisciplinary engagement. SJSS continues to play an important role in fostering scholarly discourse and strengthening research culture by offering a credible platform for academic discussions and knowledge dissemination.

I extend my sincere appreciation to the Editorial Team, reviewers, authors, and readers for their unwavering dedication and support in advancing this academic initiative. Their collective efforts contribute significantly to the growth, quality, and impact of this journal.

**Happy Reading,
Dr. S. N. Venkatesh**

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Article

NGOs as Catalysts for Women's Empowerment: Facilitating Change Through Education

Article History

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Abstract:

Education serves as a powerful tool to transform the lives of women and girls in multifaceted ways. Educating a woman is equivalent to educating the whole family, for she assumes the role of a significant stakeholder in a family's development. The facilitating role of government and NGOs through advocacy and gender-equitable-focused interventions through education has significantly contributed to women's empowerment. The study, based extensively on a literature review, seeks to understand the impactful role played by NGOs and government organizations in the lives of women across India. Based on an extensive literature review, four organizations working on women's empowerment were revisited, and their interventions were examined from a social work lens. The case studies examined the driving factors behind the interventions and the impact on women beneficiaries post-intervention. The findings reveal the emancipatory role played by organizations through awareness workshops, skill-based interventions, financial literacy sessions, and capacity-building sessions. The interventions have had a remarkable impact on women in terms of enhancing their social and economic independence. Yet, the findings reveal that such interventions have come at a certain cost. Women's struggles with patriarchy

continue as the larger society continues to impose restrictions on their mobility and economic independence. The study recommends that organizations enhance their counselling initiatives to support women with psycho-social concerns post their engagement with patriarchy. It suggests enhancing gender sensitization sessions to engage both men and women to create gender equitable societies.

Key Words: Women's Empowerment, Gender, Civil Society, Patriarchy, Education

Introduction:

Education has long been acknowledged as the foundation of women's empowerment, providing women with the knowledge, skills, and confidence necessary to participate actively in social, political, and economic spheres. In India, despite progressive policies and legal reforms, gender inequality remains a significant challenge, especially within marginalized communities. Non-Governmental Organizations (NGOs) play a vital role in bridging these gaps by promoting education, advocacy, and awareness tailored to women's needs. This paper explores how NGOs act as catalysts for change by empowering women through education-based interventions. It draws on case studies of Kudumbashree (Kerala), Jagori Rural Charitable Trust (Himachal Pradesh), Shishu Mandir (Bangalore), and SEWA (Gujarat) to demonstrate how educational and livelihood programs translate into meaningful social transformation. The study also addresses the challenges NGOs face in overcoming deep-rooted patriarchy and structural inequalities.

Review of Literature:

Scholars such as Reshi, Sudha, and Dar (2022) emphasize education as a powerful tool for enabling women's participation across all sectors. Singh, Saini, and Bhardwaj (2025) describe education as a transformative process that nurtures women's self-belief and agency. Hiremath (2021) highlights the multifaceted role NGOs play by integrating education, protection, and economic empowerment, assisting women to transition "from victim to survivor to active citizen." Empirical evidence from Margaret and Kala (2013) confirms that participation in NGO programs significantly improves women's confidence, income, and social standing. Khushboo Singh (2016) describes education as the "master key" to freedom and development, while Ahamad, Hemlata, and Narayana (2015) focus on the synergies between NGOs and Self-Help Groups (SHGs) as a holistic approach to rural empowerment. Collectively, these studies affirm that NGOs fill crucial gaps between government policy and grassroots realities by fostering education, leadership, and self-reliance among women.

Objectives of the Study:

- To analyse the role of NGOs in facilitating women's empowerment through education and capacity building.
- To assess the impact of NGO-led interventions on women's social, economic, and psychological development.

- To identify challenges faced by NGOs in implementing gender-equitable educational programs.
- To explore the contribution of education to sustainable and inclusive development.
- To propose recommendations for strengthening NGO-led empowerment initiatives.

Research Methodology:

This qualitative and descriptive study relies on secondary data sourced from scholarly literature, NGO reports, case studies, and government documents. A multiple-case study approach was employed, focusing on four NGOs: Kudumbashree, SEWA, Jagori Rural Charitable Trust, and Shishu Mandir. Thematic analysis was conducted to explore the approaches, functional areas, and outcomes of education-centered NGO interventions.

Importance of the Study:

This study underscores the indispensable role of NGOs as catalysts of women's empowerment in India. It highlights the transformative power of education—not merely as formal schooling, but as a tool that fosters self-reliance, gender equality, and social justice. The findings offer valuable insights for integrating educational and economic strategies into development planning, ultimately promoting inclusive and sustainable progress.

Overview of Women's Empowerment:

Women's empowerment refers to expanding women's ability to make strategic life choices and increasing their control over resources and decision-making. It encompasses economic, social, political, cultural, and psychological dimensions. In India, empowerment is closely linked with education, employment, and rights awareness. NGOs and social movements have been instrumental in addressing critical issues such as gender-based violence, reproductive health, and equitable access to education and work opportunities.

Effective Interventions by NGOs:

1. **Kudumbashree (Kerala):** Since its launch in 1998, Kudumbashree has focused on poverty eradication by integrating microcredit, entrepreneurship, and education through Self-Help Groups (SHGs). This initiative has notably improved women's income, decision-making power, and participation in local governance.
2. **SEWA (Gujarat):** Founded by Ela Bhatt in 1972, SEWA champions women in the informal sector by providing education, financial inclusion, and skill development. Innovative programs such as SEWA Bank and climate-resilience micro-insurance empower women economically and socially.

3. **Jagori Rural Charitable Trust (Himachal Pradesh):** Operating since 2003, Jagori works across 160 villages, focusing on gender justice, menstrual health education, and leadership development for women and adolescent girls through programs like AWAJ and AAGAJ.

4. **Shishu Mandir (Bangalore):** Established in 1983, Shishu Mandir offers free holistic education and livelihood training, including the E-Auto Project, which equips women and transgender individuals with driving skills, financial literacy, and sustainable income opportunities.

These initiatives share core principles: education, capacity-building, and economic independence—all of which cultivate confidence, leadership, and self-determination.

Recommendations:

- Integrate gender sensitization programs for both men and women to dismantle patriarchal mindsets.
- Strengthen NGO -government partnerships to ensure better policy alignment and resource sharing.
- Incorporate counseling and mental health support within empowerment programs.
- Expand vocational and digital literacy initiatives to improve employability.

- Develop frameworks for monitoring empowerment outcomes using clear, measurable indicators.

Functional Areas of NGOs:

NGOs working toward women's empowerment operate across various domains:

- **Education and Literacy:** formal, non-formal, and vocational education.
- **Health and Reproductive Rights:** awareness on menstrual hygiene, maternal health, and nutrition.
- **Economic Development:** self-employment, microfinance, and entrepreneurship.
- **Legal Support and Advocacy:** legal literacy, rights awareness, and campaigns against violence.
- **Environmental Sustainability:** promotion of eco-friendly livelihoods and agricultural practices.
- **Community Leadership:** encouraging women's participation in governance.

Roles and Functions of NGOs:

- **Educator:** Providing formal and informal education to women and girls.
- **Facilitator:** Connecting women to government welfare schemes and financial services.
- **Mobilizer:** Organizing SHGs and collectives to build solidarity.
- **Advocate:** Campaigning for gender-just laws and policies.

- **Change Agent:** Challenging social norms and patriarchal structures.
- **Support System:** Offering crisis intervention and rehabilitation for survivors of violence.

Need for Women's Education in Empowerment:

Education transcends literacy; it is a transformative process that empowers women to question discrimination, assert their rights, and seize economic opportunities. Educated women contribute more effectively to family welfare, community leadership, and national development. NGOs, through their grassroots presence, make education accessible to marginalized groups and integrate essential life skills with learning.

Constitutional Provisions Supporting Women's Empowerment:

The Indian Constitution guarantees gender equality and equal opportunities through:

- Article 14: Equality before the law.
- Article 15(3): State's power to make special provisions for women and children.
- Article 16: Equal opportunity in public employment.
- Article 39(a) and (d): Equal livelihood and equal pay for equal work.
- Article 42: Just and humane conditions of work and maternity relief.

Special Laws and National Policies:

- Protection of Women from Domestic Violence Act (2005)
- Dowry Prohibition Act (1961)
- Sexual Harassment of Women at Workplace Act (2013)
- National Policy for the Empowerment of Women (2001)
- Beti Bachao Beti Padhao Scheme (2015)
- National Education Policy (2020) emphasizes gender inclusion and equity.

Hypothesis:

NGOs play a catalytic role in facilitating women's empowerment through education by enhancing awareness, self-reliance, and socio-economic participation among marginalized women.

Findings and Discussion:

NGO interventions significantly improve women's literacy, income, and leadership capabilities. Education-centered programs increase awareness of health, rights, and financial independence. Empowered women actively contribute to community development and family welfare. Nevertheless, entrenched patriarchal norms restrict women's autonomy and mobility. Effective collaboration among NGOs, government agencies, and corporate CSR initiatives enhances the reach and impact of empowerment efforts.

Level of Empowerment:

Empowerment among women beneficiaries can be assessed across five dimensions:

- **Economic:** Increased income and entrepreneurship.
- **Social:** Greater participation in community affairs.
- **Political:** Representation in local governance.
- **Psychological:** Heightened confidence and self-esteem.
- **Cultural:** Shifting gender norms and promoting equality.

Suggestions for Future Work:

- Establish women's resource centers for continuous learning and digital literacy.
- Conduct impact evaluation studies to assess long-term empowerment outcomes.
- Develop public-private partnerships for sustainable funding.
- Promote eco-feminist education linking gender equality with environmental stewardship.
- Strengthen men's engagement programs to foster inclusive gender change.

Significance of Women's Education:

(Placeholder1) Women's education is central to human development and social progress. It enhances decision making, nurtures

leadership, and fosters self-reliance. Educated women contribute to better family health, child education, and economic stability, making education a powerful multiplier for generational change.

Women's Contribution to Sustainable Development:

Empowered women are critical to achieving the Sustainable Development Goals (SDGs), notably SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 8 (Decent Work and Economic Growth). Educated women advance environmental conservation, equitable growth, and community resilience, sustaining both people and the planet.

Conclusion:

NGOs serve as transformative agents by translating policy into practice through education-based interventions. The experiences of Kudumbashree, SEWA, Jagori Rural Charitable Trust, and Shishu Mandir clearly illustrate that educating women uplifts not only individuals but entire communities. However, empowerment is an ongoing journey requiring attention to psychological, social, and structural barriers. Future programs should integrate counseling, leadership training, gender sensitization, and sustainable livelihood models. By combining education with opportunity, NGOs can ensure women move from marginalization to mobilization becoming leaders, decision makers, and drivers of sustainable development

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The authors declare no conflict of interest with respect to the research, authorship, or publication of this article.

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Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

“Am I invisible to my partner?” A Study on the Psychological Toll of Being Phubbed in Romantic Relationships.

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Abstract:

Phubbing is a form of technoference that has recently gained popularity among researchers to understand the psychological toll it takes on people. It is defined as the act of ignoring someone in favour of using a smartphone during a conversation. The word has been derived from the word phone snubbing. In this process, the one who gets ignored, because of the smartphone, is called the phubbee, i.e., someone who is getting phubbed. The present study aims to examine the effect of being phubbed on couple satisfaction in a romantic relationship. Previous studies highlight how phubbing and smartphones as a whole has been a predictor of increased conflicts and feelings of neglect. It creates a technoference (interference because of technology) and interruptions in both everyday and vital social communications. The study was conducted on 72 young adults from the urban cities of Bangalore and Kolkata through convenience sampling. Using the Pearson's coefficient test it was found out that there is a significant relationship between the variables and they

are negatively correlated. This means, that higher the frequency of being phubbed lower the couple's satisfaction. Therefore, the results suggest that being phubbed is significantly associated with reduced relationship satisfaction in the sample.

Keywords: *Phubbing, being phubbed, relationship quality, couple satisfaction, romantic relationship*

Introduction:

The era of smartphone technology has revolutionised the landscape of human connectivity, streamlining communication and offering unprecedented access to global networks, professional opportunities, and diverse forms of entertainment (Zhang et al., 2014). From facilitating remote work to providing immersive online gaming experiences, these devices have become indispensable tools in the modern era (Kurt et al., 2018; Mérelle et al., 2017). However, the convenience of constant digital access comes with a high psychological and social cost. A growing body of literature has identified a range of adverse effects on mental health, physical well-being, and the quality of face-to-face social dynamics resulting from excessive device use (Baron and Campbell, 2012; Campbell and Kwak, 2010; Choliz,

2010; Ha et al., 2008; Khan, 2008; Lee et al., 2014). Research suggests that young people are particularly susceptible to developing addictive patterns with their devices, making them a critical demographic for examining how technology-driven habits reshape human interaction (Savci and Aysan, 2017). This is why the present study has been conducted on young adults only.

Within the intimate sphere of romantic relationships, the pervasiveness of smartphone technology has fundamentally altered how couples navigate presence and emotional connection. The role of technology in these relationships is dual-natured; while digital tools can be utilised to bolster relationship satisfaction through affectionate messaging and constant contact (Luo & Tuney, 2015), they also introduce "technoference", the persistent disruption of interpersonal time and activities by technological intrusions (McDaniel & Coyne, 2016). **When this interference manifests during shared time, it often takes the form of "phubbing", a portmanteau of "phone" and "snubbing."** Specifically, partner phubbing occurs when an individual ignores their

significant other in favour of their smartphone, effectively prioritising digital stimuli over the physical presence of their partner (Roberts & David, 2016).

The relational consequences of being "phubbed" are both profound and damaging. Phubbing acts as a primary predictor of romantic dissatisfaction because it signals a withdrawal of attention and a lack of investment in the current moment. When a partner engages with their device during a conversation, the "phubbee" (the person being ignored) often experiences a loss of exclusive attention. This neglect can trigger a cascade of negative emotions, including heightened feelings of jealousy and a marked decrease in relational cohesion (Krasnova et al., 2016). Beyond immediate irritation, the presence of mobile phones in romantic contexts has been linked to increased domestic conflict and a perceived loss of autonomy, as partners may feel controlled by the digital demands placed upon their time together (Miller-Ott et al., 2012).

Ultimately, when an individual feels undervalued or secondary to a device, the foundation of the relationship begins to erode. Chronic phubbing does not merely

impact the quality of the partnership; it also diminishes the phubbee's overall life satisfaction and psychological well-being, often contributing to increased depressive symptoms (Roberts & David, 2016).

Despite the prevalence of this behaviour in modern society, it has become somewhat socially normalised, leaving a gap in our understanding of why it persists even when it causes clear interpersonal harm. There is still limited clarity regarding the internal psychological processes and the long-term emotional toll on the individual being "phubbed." Consequently, the present study aims to investigate the emotional impact of phubbing from the perspective of the neglected partner, seeking to understand how it leads to decreased relationship satisfaction in an increasingly digital world.

Review of Literature:

Smartphones have transformed the way people communicate in their day-to-day lives. Although they aid us in our interaction with other people in the world, they tend to interfere with face-to-face communication by a behaviour known as phubbing (ignoring someone by checking your phone). Since

phubbing and being phubbed are increasingly becoming prevalent in society (Haigh, 2015), scientists are examining the psychological and relationship implications of the behaviour.

The Social Norms of Phubbing

Reciprocity and Phubbing. One of the questions that the researcher is supposed to ask is how a behaviour that appears dismissive has come to be normal. According to Haigh (2015), phubbing has become a common occurrence in nearly all sections of the society. This acceptance may also be accounted by the concept of reciprocity, which is a fundamental concept in the social psychology (Cialdini, 1993; Falk and Fischbacher, 2006). Reciprocity implies that individuals tend to react to the actions of others, regardless of whether they are good or bad (Berg et al., 1995; Keysar et al., 2008). Concerning a romantic relationship, when one of the partners prefers to use the phone instead of talking to the other one, the other partner will feel undervalued, neglected and disregarded. This bad social interaction usually provokes a retaliatory or defensive reaction in which the phubbee uses the phone as well, to find an external connection or as a

retaliatory social interaction (tit-for-tat) (Pelaprat and Brown, 2012). This reciprocity cycle has an impact on the degree of perceived phubbing acceptability. Although in most cases, the traditional social norms take decades to be established (Sherif, 1936; Axelrod, 1986), in the modern societies, the norms are changing at rapid rates, particularly in terms of technology (Sunstein, 1996). Since norms are based on observable behaviour (Miller & Prentice, 1996), the visibility of phubbing makes people become phubbers, thus forming a feedback loop that requires reduction of the perceived rudeness of the act as well as degrading the quality of communication.

Impact on Relationship Quality and Couple Satisfaction

The shift of phubbing as a social habit to a relational stressor is well-documented. Studies show that phubbing considerably affects the quality of interpersonal relationships. When a partner gives a smartphone more priority than the significant other, then it sends a message of indifference or non-valuing the person, and this directly affects the relationship satisfaction. A seminal study was carried out by Roberts and

David (2016) on the US adults, where the authors discovered that partner phubbing is not an innocent practice but a toxic one. Their results indicate that phubbing results in discordance over phone use leading to reduced rates of relationship satisfaction reported. More importantly, this discontent is not internalized in the relationship, it serves as a gateway to more psychological anguish. Likewise, Wang and colleagues (2017) examined Chinese married adults and confirmed these results, stating that phubbing by a partner reduces the level of relationship satisfaction, which, in turn, predisposes the participant to depression.

Psychological Consequences

Phubbing has always been associated with adverse mental health conditions, especially in young adults. It has been estimated that every five emerging adults experiences depression with a higher rate of female prevalence (Cairns et al., 2014; Angold et al., 2002). Since the deteriorated interpersonal relationships are a recognized precursor of depression (Hammen, 2018), phubbing is a contemporary trigger of this loss. Several empirical studies have reported that being phubbed is a direct predictor of depression

(Davey et al., 2018; Stockdale, Coyne, and Padilla-Walker, 2018). These nuances are further discussed in the study by Xie, Wang, et al., which analyzes the possibility of these factors such as forgiveness or self-esteem to mediate the damage. They state that being phubbed endangers self-worth and belonging. When a person begins to think that he/she is worse than a phone screen, his/her self-worth declines, and a good environment is formed to develop depressive symptoms. Although there is an increasing amount of evidence about the adverse consequences of smartphone interference, there is a research gap. Recent research has put much emphasis on the phubber or the phone user as well as the overall prevalence of use of technology. Nonetheless, the actual phenomenon of being phubbed (the phubbee) is much less studied. The majority of studies consider being phubbed as the dependent variable or the byproduct of the addiction of the phubber. The internal lived experience of the phubbee, that is, the experience of finding their way around the emotional labour of being ignored and the long-term cumulative consequences of these micro-rejections on their dedication to the relationship, lacks depth. Although we understand that it leads to dissatisfaction,

further studies are required in order to understand what the exact psychological mechanisms the phubbee employs in order to cope or does not cope until the relationship becomes irreparably dissatisfied.

Methodology

Aim

To study the effect of being phubbed on relationship satisfaction among romantic couples

Hypothesis

Null Hypothesis (H_0): There will be no significant relationship between the frequency of being phubbed by a partner and couple satisfaction.

Variables

Independent Variable (IV): The perception of being phubbed

Dependent Variable (DV): The level of couple relationship satisfaction

Sampling

The sample was selected based on Convenience sampling. For that, a total of 70 individuals ($n = 70$) took part, of which 37

were females ($n = 37, 60\%$) and 120 were males ($n = 120, 50\%$). The sample zone was limited to the urban cities of Bengaluru and Kolkata. The individuals below the age of 25 were included. The study was conducted on 60 undergraduate and postgraduate students through sampling within the age group of 18 to 25

1. Inclusion criteria

- a. Participants should be between the ages of 18 and 25 years
- b. Participants should be in a romantic relationship for more than 1 year.
- c. Participants in long-distance relationships.
- d. The other partner should have access to a phone and be digitally active
- e. Participants should be able to comprehend and understand English

2. Exclusion criteria

- a. Individuals who are married
- b. Individuals in situationship
- c. Individuals with any psychiatric illness

Tools used

- d. **Generic Scale of Being Phubbed.** The GSBP scale is a measure of the experience of being phubbed in social interactions developed by Chotpitayasunondh, V., & Douglas, K.M. (2018). Development and validation of a generic scale of being phubbed (GSBP) has high internal consistency (Cronbach's $\alpha > 0.70$), construct validity, and test-retest reliability.
- e. **The Couples Satisfaction Index: CSI-16:** It is a 16-item, psychometrically optimised, self-report scale assessing relationship satisfaction. The CSI-16 was developed by analysing items from eight well-validated relationship satisfaction scales (Funk & Rogge, 2007). The CSI-16 demonstrates very high internal consistency with a Cronbach's α of .98, indicating excellent reliability (Funk & Rogge, 2007) and strong convergent validity with established relationship satisfaction scales, with correlations ranging from .85 to .98

Procedure

Once the inclusion and exclusion criteria

were determined. Those individuals who fulfilled the inclusion criterion were briefed about the study objectives. Participants, before the data collection, n were given general instructions to complete the instruments to clear any doubt. It took 10 minutes to complete the questionnaire set, and after the completion, n the participants were appreciated for their time and assistance.

Ethical Considerations

Ethical guidelines were strictly followed throughout the study. Participation was voluntary, and informed consent was obtained before data collection. Participants were assured of confidentiality and anonymity. They were also informed of their right to withdraw from the study at any point without penalty.

Analysis and Findings

Data Analysis

Pearson Correlation was conducted using Jamovi software to find the correlation between the groups.

Results

A Pearson correlation coefficient was used to examine the relationship between being phubbed and couple satisfaction. The analysis revealed a moderate, statistically significant negative correlation between the two variables, $r(67) = -0.414, p < .001$.

This finding indicates that higher levels of perceived phubbing were associated with lower levels of couple satisfaction among participants. The scatter plot (see Figure 1) visually confirms this inverse relationship, with the regression line demonstrating a clear downward trend. Given that the p-value is less than .001, the null hypothesis that there is no relationship between phubbing and satisfaction is rejected with a high degree of confidence. These findings suggest that phubbing is a significant factor in predicting relationship quality within the current sample.

Discussion

The main purpose of the study was to explore the connection between "phubbing" (snubbing a partner and using a smartphone instead of the partner) and subjective rates of couple satisfaction in 72 young adults. The results showed that there was a significant moderate negative relationship between

smartphone-related neglect and avoidance behavior ($r = -0.414, p < .001$), which supports the assumption that smartphone-related neglect is a type of avoidance behavior that interferes with the relational bonds (Funk and Rogge, 2007). This negative correlation is consistent with a study by Yam (2023) who discovered that partner phubbing is a negative predictor of relationship satisfaction as well as perceived romantic quality, which reduces life satisfaction overall. Focusing on a device over a partner, young adults can unwillingly indicate that they are not willing to invest in the relationship, thus undermining the perceived reward and emotional stability of the relationship (Roberts and David, 2016).a

This present but absent dynamic (Aljasir, 2022) probably causes a downward spiral of a rising conflict and reduction of meaningful interaction (Wang and Zhao, 2023). In the developmental scenario of young adulthood, where intimacy formation is a fundamental activity, this kind of digital intrusion can increase romantic insecurity and put the formation of a stable relationship at risk (David and Roberts, 2021; Mosley and Parker, 2023). Taken together, these findings highlight the importance of phubbing as a

major stressor undermining emotional intimacy and that promoting mindfulness with respect to using phones is vital to preserving relationship well-being in the digital era.

Limitation

The limitation of the study are mainly due to the nature and the design of the data collection. To begin with, the sample size (N=67) is small thus limiting the statistical power of the findings, and is not easily applicable to the general population. Second, the researchers did not evaluate dyads but rather assessed individual people; a better understanding of the direct effect of phubbing behaviors on shared satisfaction would have been to evaluate two partners in the same couple. Third, the research was not specific to marital couples, whose long-term commitments and domestic interactions might react to phone-related snubbing differently to more casual dating couples. Lastly, it was not controlled in the analysis that would consider moderating factors, including attachment styles, relationship duration, or baseline communication quality, as they might dramatically change the

strength or effect of the relationship between phubbing and satisfaction.

Implication

These findings carry significant weight for clinical and counseling practices. They suggest that relationship counselors should consider incorporating "digital hygiene" as an exercise or setting healthy boundaries around phone use into couples therapy interventions. Further researches can be taken place using this to find out the moderating variables or using it in other significant population.

Conclusion

The study examined the effect of being phubbed on couple satisfaction among romantic partners, and it was found that individuals who reported a higher frequency of being phubbed had experienced a lower level of couple satisfaction. Overall, the results suggest that being phubbed is significantly associated with reduced relationship satisfaction in the sample.

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3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review Editing

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Article

Impact of Digital Immersion on Psychological Well-Being Among College Students

Article History

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Abstract:

In contemporary digital learning settings, background music has become a common auditory backdrop for students completing their academic tasks. Prior research indicates that music tempo may exert potential effects on an individual's concentration, attention allocation, information processing efficiency, and even cognitive decision-making performance. For this reason, this study conducts an empirical exploration of this association. We divided study participants into three groups, each exposed to one of three auditory conditions: no music, slow-tempo music at approximately 60 BPM, and fast-tempo music at approximately 120 BPM. We recorded all participants' accuracy and reaction time when completing a designated decision-making task, and used the Kruskal-Wallis test for data analysis. The study found observable differences in performance across the three groups: the slow-tempo group achieved higher accuracy with moderate reaction times; the fast-tempo group responded faster but recorded lower accuracy; the no-music group had stable performance but the slowest reaction speed. The intergroup differences reached a moderate level of statistical significance. This result confirms that music tempo can influence cognitive function and decision-making behavior, highlights the importance of the auditory environment in digital learning scenarios, and suggests that slow-tempo music can support balanced cognitive performance during learning activities.

Keywords: *Background music, music tempo, cognitive performance, decision-making, response time, digital learning environments*

Introduction

In recent years, digital learning environments have spread rapidly across the global education field. Online learning platforms, digital classrooms, educational applications, and virtual learning spaces have become core components of modern education systems. Alongside this trend, a large number of students have formed the habit of using background music as part of their study processes, in an attempt to improve their concentration, learning motivation, and task efficiency. As a result,

music has become a key environmental variable that influences cognitive function in academic settings. This paper first puts forward clear definitions for three core professional concepts: Cognitive performance refers to an individual's level of information processing when completing academic tasks; music tempo uses beats per minute (BPM) as its standardized measurement unit; the decision-making

process is the complete cognitive chain through which an individual screens options and produces judgments when faced

with academic problems. Existing research in the field of psychology has accumulated a large body of findings on the cognitive impacts of various auditory stimuli, which confirms that differences in background music tempo can trigger significant changes in individuals' emotional arousal level, alertness, and brain processing speed. Meanwhile, students' perceptions of background music in real-world learning scenarios

show clear individual differences: some learners believe music can strengthen their concentration and task engagement, while others become distracted by music and suffer from declines in their academic performance. Conclusions of past relevant studies contain significant contradictions: some researchers propose that background music can boost concentration and task efficiency by improving mood

and reducing study stress, while others argue that music distracts attention and interferes with the cognitive processing of high mental-load tasks. Among all factors, the influence

of tempo is the most critical, as it directly changes an individual's level of physiological activation and cognitive alertness. Based on this research gap, the core goal of this study is to explore the impact of different

background music tempos on students' decision-making accuracy and reaction time. By setting up three comparison conditions- slow-tempo music, fast-tempo music, and no music- this study systematically analyzes the effect of the auditory environment on cognitive efficiency in digital learning scenarios, filling the research gap in this specialized subfield.

Review of Literature

This paper reviews core empirical studies, explanatory theories, and research needs emerging in the new context of digital learning within the field of links between music and cognition over the past two decades. Over these

twenty years, the scale of research in this field has expanded substantially, spanning three core disciplines: psychology, neuroscience, and education. Its core research directions center on the impacts of auditory stimuli on learning, memory,

attention, and decision-making abilities. Within the existing research landscape, Hallam et al.'s 2002 study of student groups, which

examined task performance with background music, found that calm, structured music can improve academic efficiency and reduce disruptive interfering behaviors under specific conditions; Angel et al.'s 2010 study pointed out that the effect of music on cognitive performance is moderated by three categories of variables: task complexity, listener preference, and the inherent characteristics of the music itself. Auditory

stimuli of medium familiarity are suited to simple cognitive tasks, while high-stimulation music can instead undermine performance on high-demand tasks; Kämpfe et al.'s 2011 meta-analysis of adult listeners showed that conclusions across studies are inconsistent. The impact of music is shaped by the joint interaction of variables including personality traits, arousal levels, and task demands, and only musical tempo is

a variable that can stably influence attention and information processing; Thompson et al.'s 2001 study found that music that elicits positive emotions can improve spatial

reasoning ability and cognitive efficiency, which supports the core view that emotional responses to auditory stimuli influence psychological performance; Lesiuk's 2005 study of workplace populations proposed that employees who listen to music during work report better moods and higher

perceived productivity. Arousal theory, the core explanatory mechanism in this field, posits that moderate levels of physiological arousal can boost attention and performance, while both excessively low and excessively high arousal will impair cognitive function. This aligns with the aforementioned empirical findings that slow-tempo music fosters a state of focused attention, while fast-tempo music causes overstimulation

that reduces response accuracy. When extended to the current new context of digital learning, where students widely use headphones, participate in online lectures, and engage with multimedia content, background sound conditions directly affect learning outcomes. As such, the academic community urgently needs to identify the auditory conditions that support optimal attention and cognitive performance.

In particular, research must prioritize special cognitive tasks such as decision-making: these tasks are uniquely sensitive to attentional control and processing speed. While fast-tempo music can trigger rapid responses, its overstimulating effect leads to impulsive, inaccurate decisions. Unlike fast-tempo music, slow-tempo music can promote the formation of reflective thinking and support detailed information assessment, and the balance between speed and accuracy is a key factor influencing

cognitive performance; most existing studies have centered on the impacts of music on memory, concentration and emotion, while very few have examined the role of music tempo in decision-making accuracy and reaction time within digital media learning scenarios. This study intends to fill this gap by carrying out experimental comparisons across three types of auditory conditions.

Objectives of the Study

1. To examine the effect of background music tempo on decision-making accuracy.
2. To analyse the influence of background music tempo on response time.

3. To compare cognitive performance across slow tempo music, fast tempo music, and no music conditions.
4. To understand the role of auditory environments in digitally mediated learning settings.

Hypotheses

H1: There will be a significant difference in decision-making accuracy among participants exposed to different music tempo conditions.

H2: There will be a significant difference in response time among participants exposed to different music tempo conditions.

Methodology

Research Design

The present study adopted an experimental research design to examine the influence of background music tempo on cognitive performance.

Participants

Participants were divided into three groups:

Group 1: No music condition

Group 2: Slow tempo music condition (approximately 60 BPM)

Group 3: Fast tempo music condition (approximately 120 BPM)

Sampling Technique

A convenience sampling method was used to recruit participants for the study.

Variables

Independent Variable

Background music tempo:

1. No music
2. Slow tempo music
3. Fast tempo music

Dependent Variables

1. Decision-making accuracy
2. Response time

Procedure

Participants completed a series of decision-making tasks under different auditory conditions. Response time and accuracy were recorded for each participant. The environment was maintained consistently to minimize distractions.

Statistical Analysis

The collected data were analysed using the Kruskal-Wallis test to compare differences between the three groups.

Results

The cognitive experiment in this study found significant differences in cognitive performance among participants across the three auditory conditions: the slow-tempo music group had the highest accuracy and moderate reaction time, which could balance mental stimulation and concentration; the fast-tempo music group recorded the fastest response speed but saw a decline in accuracy; the no-music group had stable performance but the slowest reaction time. This study obtained a moderate level of statistical significance, leading to the inference that the tempo of background music may influence cognitive efficiency and decision-making behavior.

Table 1: Comparison of Cognitive Performance Across Conditions

Condition	Response Speed	Decision-Making Accuracy	Overall Cognitive Performance
No Music	Slow	Moderate to Stable	Stable

Slow Tempo Music	Moderate	High	Balanced and Effective
Fast Tempo Music	Fast	Lower	Rapid but Less Accurate

Discussion

This study uses the digital learning environment as its research setting, and primarily examines the effect of background music tempo on individuals' decision-making accuracy and reaction time. It first proposes the core functional mechanism: music tempo can influence cognitive processing by affecting individuals' level of arousal, concentration, and attentional control. This study designs three groups of controlled experiments, and the results show that: subjects in the slow-tempo music group achieved higher decision-making accuracy and had a medium reaction speed, which aligns with the conclusion that calm auditory stimuli improve cognitive stability; the fast-tempo group reacted faster but had lower accuracy, as excessive physiological activation gave rise to impulsive responses; the no-music control group had the slowest reaction time but stable performance, since silence reduces interference but lowers

alertness and slows processing speed due to the lack of auditory stimulation. This study highlights the application value of environmental psychology in digital learning scenarios, and its findings can help students build efficient learning environments. However, while the observed trends hold, they lack sufficient support from statistical significance, which may be caused by the limited sample size and individual differences among subjects.

Implications of the Study

1. Students may benefit from using slow tempo background music while studying.
2. Educational institutions may consider the influence of auditory environments on learning performance.
3. The study contributes to psychological research examining environmental influences on cognition.
4. The findings highlight the importance of sensory stimuli in digital education.

Limitations of the Study

1. The sample size was limited.
2. Individual music preferences were not controlled.

3. The study focused only on tempo and not genre or lyrics.
4. External factors such as mood may have influenced performance.
5. The experimental setting may not fully represent real-life study environments.

Suggestions for Future Research

1. Future studies may include larger participant samples.
2. Researchers may examine the combined effects of genre, lyrics, and tempo.
3. Longitudinal studies may analyse long-term cognitive effects of music.
4. Future research may explore personality differences and music preferences.
5. Neuropsychological methods may be used to investigate brain responses to auditory stimulation.

Conclusion

This empirical study focuses on the impact of background music tempo on cognitive performance in digitally mediated learning environments. Auditory conditions influence cognitive indicators such as decision-making accuracy and reaction time by altering levels of concentration, arousal, and information processing efficiency. Results

from three parallel experimental groups show that the slow-tempo group achieved higher accuracy with moderate reaction speed; the fast-tempo group reacted faster but saw a decline in accuracy; the no-music group had relatively slow reaction times but stable performance. The conclusions of this study can guide students to optimize their digital learning scenarios and improve their learning efficiency.

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2. Conflict of Interest Statement:

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3. Ethics Approval:

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4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

- ☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft
- ☐ Author 2: Data Curation, Formal Analysis, Writing – Review Editing

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*Article***Sustainability In Business, Finance & Commerce Corporate Social Responsibility (csr) And Business Ethics***Article History*

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INTRODUCTION:

Globalisation has undoubtedly played the significant role in expansion and redistribution of prosperity the nations that once were struggling with the difficult economic setbacks, mainly after the World War 2. The relationship which is the interconnectedness of the global markets allowed countries to rebuild their economies and join into a larger international framework of trade and development.

In India, the year 1991 saw a major turning point with the intro of the economic liberalisation. This made them to open up the Indian economy to global markets, reduced the government control over industries or companies, and encouraged people to invest privately. As a result, the private sector industry grew as a major beneficiary of these changes. Corporate organisations and the service based industries began to sustain, taking advantage of the new economic environment that motivated for innovation, competition, and growth.

With this revolution in economic progress, Indian companies began to experience a drastic increases in productivity, profitability, and over all the market value. However, along with financial success came the thought provoking realisation of the importance of Business having some ethics

which is a set of moral principles and standards which the company or the industries should have that guide their behaviour within their organisations. Business ethics ensure that companies conduct their operations with integrity, fairness, transparency, and respect for all the stakeholders, including employees, customers, investors, and the communities.

As organisations expanded and increased their influence, the need to balance in profit-making with social responsibility became increasingly responsible. This led to the establishment of Corporate Social Responsibility (CSR) which explains about a concept that encourages businesses to go beyond the profit and contribute positively to the society. CSR reflects an ethical responsible commitment by companies to give back the respected number amount to the community, while protecting the environment, and support sustainable development.

Over time, the ethical investments and a philanthropic approach have become an essential parts of responsible business structures. Companies are now expected not only to get wealth but also to confirm that their profits or wealth benefits the society as a whole. Globalisation, therefore, has not only transformed economies but has also have reshaped the very base of how businesses should operate as a whole by promoting the community where success is measured not just in profit, but in purpose and positive impact towards the society.

CORPORATE SOCIAL RESPONSIBILITY (CSR):

The government of India has recognised already about the importance of combining the Business Ethics and Corporate Social Responsibility (CSR) into the nation's economic and industrial framework. Understanding that sustainable growth requires more than just financial performance, the government has introduced specific legal provisions under the Section 135 of the Companies Act, 2013. This legislation made in India is one of the first countries in the world to mandate CSR, thereby it institutionalised the responsibility of businesses to contribute to the social and environmental development.

The idea of CSR as a distributed responsibility between the public and private sectors was first seen and highlighted by Dr. Manmohan Singh, who was the former Prime Minister of India, during an annual general meeting of the Confederation of Indian Industry (CII). In his speech, Dr. Singh explained that the developmental progress should not be seen as the single duty of the government. He manifested that corporate industries, being a major financial beneficiaries of society's resources and economic systems, also take and carry a moral statement to give back to the communities that make them sustainable. This made a significant change in India's economic philosophy from profit-oriented business models to be socially conscious and ethically driven corporate practices.

In today's competitive international market, the companies that perform in responsible and ethical business practices tend to achieve greater brand image and long-term profitability. Consumers are increasingly get to organisations that shows a genuine commitment to social and environmental well-being, rather than merely focusing on maximising the profits. Thus, the combination of Business Ethics and the CSR is not just a moral choice but has become a tactical importance given for the businesses getting to survive in a conscious and interconnected world.

IMPORTANCE OF CORPORATE SOCIAL RESPONSIBILITY (CSR) AND BUSINESS ETHICS:

1. Building Customer Loyalty

A loyal customer base is one of the most important assets for making sure of the long-term business success. When customers trust that a company works with honesty, and transparency, they are more likely to return and continue supporting its products or services. On the other hand, if consumers feel that they have been treated unjustly like being cheated, misled, or provided with low-quality goods, they are unlikely to return, and the company risks losing not only existing customers but also actual ones.

A strong fame for ethical business practices helps to create a good brand image in the market. This, in turn, attracts the new customers through spreading of the word by recommendations and builds long lasting relationships based on belief.

2. Discretionary Responsibility

Discretionary responsibility refers to the deliberate actions that a company undertakes to contribute effectively to the society, beyond its legal and economic commitments. Engaging in Corporate Social Responsibility (CSR) activities reflects a company's true commitment towards social welfare and its craving to be recognised as a responsible corporate citizen. These new plans may include supporting education, promoting healthcare, protecting the environment, or empowering and needing a voice to underprivileged communities.

Such activities are not mandated by law but stem from a company's ethical values and sense of compassion toward society. By actively participating in community development, corporations enhance their reputation and build goodwill among stakeholders. Moreover, when a business demonstrates that it genuinely cares for the welfare of the community, it strengthens its relationship with customers, employees, and the public. This in turn creates a positive cycle of trust and respect, helping the organization maintain a consistent and respected status in society.

3. Ethical Responsibility

Ethical responsibility refers to the moral obligation of both employers and employees to act with integrity, fairness, and honesty in all aspects of their professional conduct. It is rooted in the principle of doing what is right and avoiding harm not only to individuals within the organization but also to society at

large. Every decision made within a company, whether big or small, carries ethical implications. Therefore, acting ethically means respecting human rights, ensuring fairness in business transactions, maintaining transparency, and upholding commitments to customers, partners, and the community.

When businesses foster a culture of ethical responsibility, they create an environment of trust and mutual respect. Employees are more likely to feel proud of their workplace and perform better when they know their organization values integrity over profit. Moreover, ethical leadership inspires accountability and helps prevent unethical practices such as corruption, discrimination, or exploitation. Ultimately, adhering to ethical principles strengthens an organization's credibility and positions it as a trusted and responsible player in the marketplace.

4. Avoiding Legal Problems

In the competitive pursuit of higher profits, some companies may be tempted to overlook or bend rules whether by cutting corners on safety measures, violating labour laws, neglecting environmental regulations, or using substandard materials in their products. While such shortcuts may seem profitable in the short term, they often lead to serious consequences. Non-compliance with laws can result in heavy penalties, lawsuits, fines, or sanctions imposed by government authorities.

5. Legal and Economic Responsibility

Every business organization has a fundamental duty to operate within the boundaries of the law and to contribute positively to the economy. Legal

responsibility ensures that companies comply with all applicable laws, regulations, and policies set forth by the government ranging from labor laws and environmental standards to taxation and consumer protection. By adhering to these legal frameworks, businesses help maintain fairness, transparency, and accountability within the corporate environment, which in turn builds public trust and social stability.

Alongside legal compliance, economic responsibility emphasizes the obligation of businesses to remain financially viable and profitable. Profitability is not merely a measure of success but a key driver of national development.

ADVANTAGES OF THE CORPORATE SOCIAL RESPONSIBILITY AND BUSINESS ETHICS:

Enhanced Brand Image and Reputation:

When a company operates responsibly and ethically, it builds more than just products, it builds trust. People remember and respect organizations that care about their employees, customers, and the environment. Ethical behavior and meaningful CSR efforts shape a company's identity in the eyes of society. Over time, this sincerity translates into a stronger reputation, where the brand is seen as dependable, honest, and socially conscious. Such goodwill cannot be bought through marketing alone; it is earned through consistent ethical action.

Improved public image:

CSR initiatives create a positive perception among the public. When a company invests in education, environmental protection, or community welfare, it demonstrates empathy and responsibility. This not only attracts customers but also earns the appreciation of the broader society. A company that gives back is viewed as a partner in progress, not just a profit-making entity. The public feels proud to be associated with such a brand, strengthening its relationship with consumers and communities alike.

Attraction of Investors:

Modern investors look beyond financial reports and they seek ethical integrity and long-term stability. Businesses that follow strong CSR and ethical principles are seen as lower-risk and more sustainable investments. Ethical governance, transparency, and accountability build investor confidence. Socially responsible investors are drawn to companies that combine profitability with purpose, knowing that such organizations are better prepared to adapt to future challenges while maintaining credibility.

Long-Term Profitability and Sustainability:

Ethics and CSR are not costs; they are investments in lasting success. Companies that prioritize fairness, transparency, and environmental responsibility tend to enjoy customer loyalty, operational stability, and steady growth. Responsible business practices reduce risks, prevent scandals, and foster efficiency. Over time, this leads to sustainable profits a balance between economic gain and moral duty that ensures long-term survival in a competitive market.

Stronger Community and Government Relations:

CSR helps businesses build meaningful bonds with local communities and governments. When a company contributes positively to society, it earns goodwill and cooperation. Authorities view it as a responsible partner rather than a self-serving entity. This mutual respect can lead to smoother operations, community support, and easier collaboration in future initiatives.

Improved Organisational Culture:

Business ethics and CSR cultivate a workplace environment rooted in respect, trust, and empathy. Employees feel proud to work for a company that values integrity and purpose. This sense of belonging enhances motivation, teamwork, and productivity. A positive culture not only retains talent but also attracts individuals who share similar values, strengthening the organization from within.

Contribution to Sustainable Development:

Ultimately, CSR and ethics connect corporate goals with humanity's broader purpose and sustainability. By addressing environmental, social, and economic issues responsibly, businesses become active contributors to global progress. They help create a world where growth and compassion coexist, ensuring that success today does not compromise the well-being of tomorrow.

LITERATURE REVIEW:

The concepts of Business Ethics and Corporate Social Responsibility (CSR) are often interlinked and used interchangeably to describe the moral and social dimensions of business conduct. While business ethics refers to the moral principles, beliefs, and values that guide corporate behavior, CSR encompasses a company's responsibility toward the society and environment in which it operates.

According to Crane and Matten (2010), business ethics serves as a framework for decision-making that goes beyond legal compliance. It ensures that organizations operate with integrity, transparency, and accountability while maintaining respect for stakeholders. Similarly, Carroll (1991) emphasized that CSR involves a hierarchy of responsibilities that is economic, legal, ethical, and philanthropic that collectively define a company's social obligations. His CSR Pyramid remains one of the most influential models in understanding corporate accountability.

Many Indian companies, such as Infosys, Wipro, and Reliance Industries, have since adopted structured CSR policies focusing on education, environmental conservation, healthcare, and rural development reflecting an evolving corporate culture that intertwines ethics with sustainability.

Critically analyzing the current landscape, it is evident that while numerous companies promote CSR as part of their brand image, the depth of their ethical commitment varies. Some organizations integrate CSR into their strategic core, ensuring it aligns with long-term business objectives and societal needs. Others, however, treat CSR as a compliance requirement or marketing tool, leading to what Banerjee (2008) describes as "symbolic responsibility" where CSR activities exist more in reports than in tangible social outcomes.

OBJECTIVES OF THE STUDY:

- To assess the level of awareness about Business Ethics and Corporate Social Responsibility (CSR) among employees and management within the selected company, and to understand how these concepts are

perceived in everyday business operations.

- To identify the specific areas and initiatives where the selected company invests its CSR funds, and to analyze how these activities contribute to social development and community welfare.
- To explore employees' perceptions and attitudes toward the company's ethical practices and CSR initiatives, and to understand how these values influence their motivation and workplace behavior.
- To study the impact of Business Ethics and CSR on the company's performance, particularly focusing on how these practices have contributed to increased profitability, improved turnover, and long-term sustainability.

RESEARCH METHODOLOGY:

The present study was undertaken to examine the relationship between Business Ethics and Corporate Social Responsibility (CSR) practices within selected companies, and to understand how these concepts are perceived and implemented in real organizational settings.

To collect relevant information, both primary and secondary data were utilized. The primary data was gathered through a structured questionnaire designed and distributed using Google Forms. The questionnaire included a combination of closed and open-ended questions aimed at understanding employees' awareness, perceptions, and experiences related to business ethics and CSR initiatives within their organizations.

The design of the questionnaire was informed by secondary data, which was obtained from various credible sources such as research articles, company reports, and information available on the Internet. This helped ensure that the questions were grounded in existing theories and prior studies on the subject.

The sample size for the study consisted of 15 respondents, selected through a random sampling method. The respondents were employees working in well-known companies such as Amazon, Infosys, IBM, and CGI, located in and around Bangalore. This diverse selection provided insights into how multinational corporations operating in India interpret and implement ethical practices and CSR activities within their business framework.

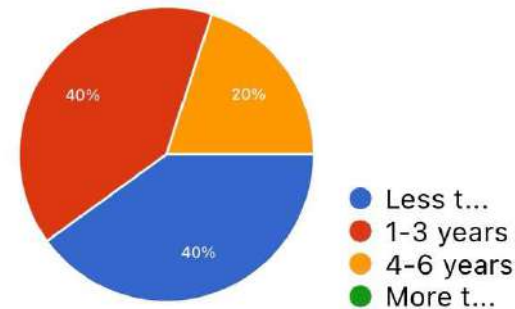
The data collected was then analyzed to draw meaningful conclusions about the awareness levels, perceptions, and outcomes of business ethics and CSR implementation in these organizations.

LIMITATIONS:

The present study is limited to the companies located in Bangalore, and therefore the findings may not fully represent all organizations. Although every effort was made to keep the data as objective as possible, variations in individual responses could have influenced the results. Additionally, due to time constraints, the sample size remained limited, which may have restricted the broader scope and depth of analysis.

Analysis and interpretation of the data:

Table 1: Years of experience in the company

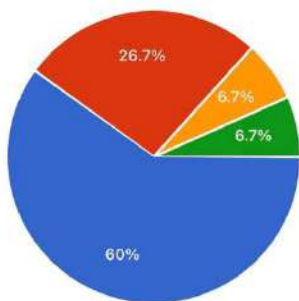


Scale	No. Of respondents	Percentage
Less than 1 year	06	40%
1-3 years	06	40%
4-6 years	03	20%
More than 6 years	00	0%

The data reveals that the 80% of the employees in the company have less than three years of experience, showing a relatively new workforce. Only 20% have 4–6 years of experience, showing limited long-term retention within the company.

Table 2: Familiarity with the concept of corporate social responsibility (CSR)

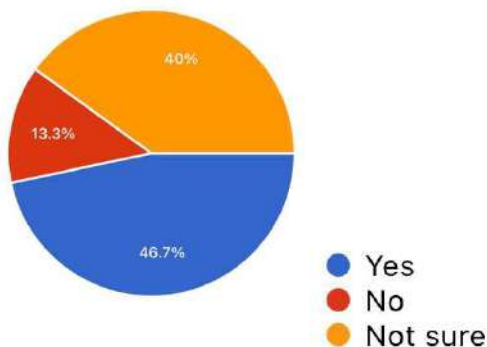
Scale	No. Of respondents	Percentage
Very familiar	09	60%
Somewhat familiar	04	26.7%
Heard of it	01	6.7%
Not familiar at all	01	6.7%



The data shows that a majority of the employees (60%) are very familiar with the concept of CSR, while the 26.7% have a basic understanding. Only a small group (13.4%) have little or no awareness, showing overall strong familiarity among respondents.

Table 3: Does the company have clear CSR policies or programs

Scale	No. Of respondents	Percentage
YES	07	46.7%
NO	06	40%
Not sure	02	13.3%

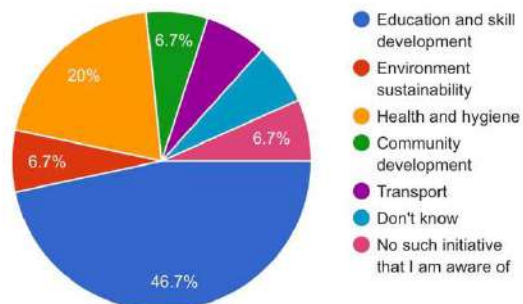


The data indicates that 46.7% of employees believe their company has clear CSR policies or programs, while 40% disagree. Around 13.3% do not know or uncertain, suggesting

that CSR communication and awareness within the organization can be improved.

Table 4: Areas in which the company focuses its initiatives:

Scale	No. Of respondents	Percentage
Education and skill development	07	46.7%
Environment sustainability	01	6.7%
Health and hygiene	03	20%
Community development	01	6.7%
Transport	01	6.7%
Don't know	01	6.7%
No such initiative I'm aware of	01	6.7%

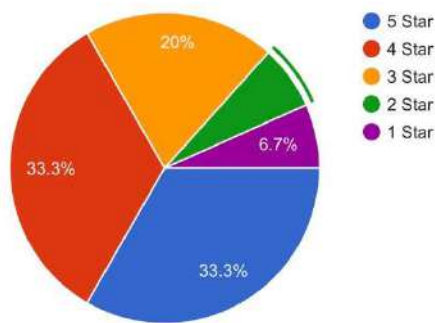


The data reveals that a majority of the company's CSR initiatives are directed towards education and skill development (46.7%), indicating a strong commitment to enhancing employability and capacity-building among communities. Around 20% of respondents stated that the company focuses on health and hygiene, showing concern for public health and well-being.

A smaller group (each 6.7%) mentioned initiatives related to environmental sustainability, community development, and transport, suggesting these areas receive relatively less attention. Additionally, 6.7% of respondents were unaware of any such initiatives, highlighting a possible gap in CSR communication or visibility.

Table 5: Company's spending on CSR

Scale	No. Of respondents	Percentage
5 star	05	33.3%
4 star	05	33.3%
3 star	03	20%
2 star	01	6.7%
1 star	01	6.7%

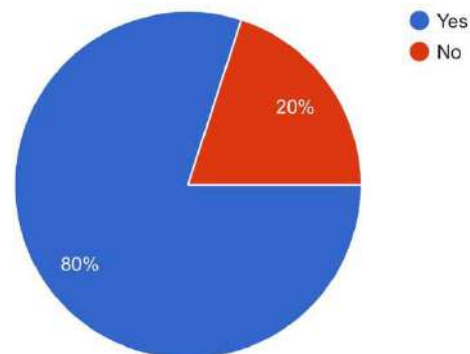


The data indicates that the majority of respondents think the company's spending on CSR to be high, with 33.3% rating it as 5-star and another 33.3% rating it as 4-star. This suggests that nearly two-thirds (66.6%) of the respondents believe the company invests significantly in social responsibility activities.

Around 20% of respondents rated the company's CSR spending as 3-star, showing moderate investment, while a small proportion (6.7% each) rated it as 2-star and 1-star, showing lower levels of expenditure.

TABLE 6: Did the code of ethical conduct and CSR has benefited the following persons
I.e stakeholders, employees, society etc...

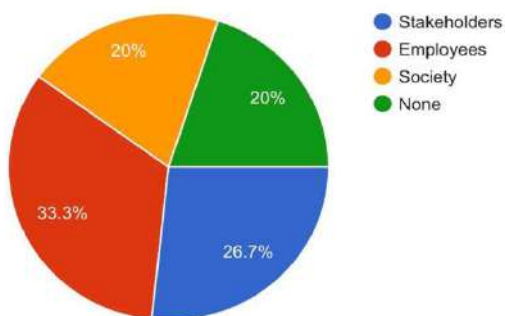
Scale	No. Of respondents	Percentage
Yes	12	80%
No	03	20%



According to the data 12 respondents (80%) answered "Yes", indicating that they believe the company's Code of Ethical Conduct and Corporate Social Responsibility (CSR) initiatives have provided tangible benefits to stakeholders, employees, and society. 3 respondents (20%) answered "No", suggesting a less people who feel that these initiatives have not had a significant positive impact.

TABLE 7: If yes, who has it benefited

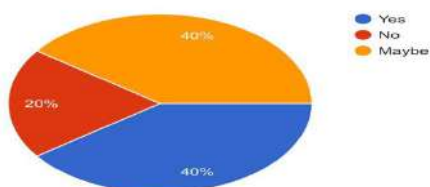
Scale	No. Of respondents	Percentage
Stakeholders	04	26.7%
Employees	03	20%
Society	05	33.3%
None	03	20%



The data show that CSR and ethical conduct have mainly benefited society (33.3%), followed by stakeholders (26.7%) and employees (20%), while 20% felt no benefit. This indicates CSR efforts are seen as most useful on society.

TABLE 8: Implementation of CSR brought significant change in turnover

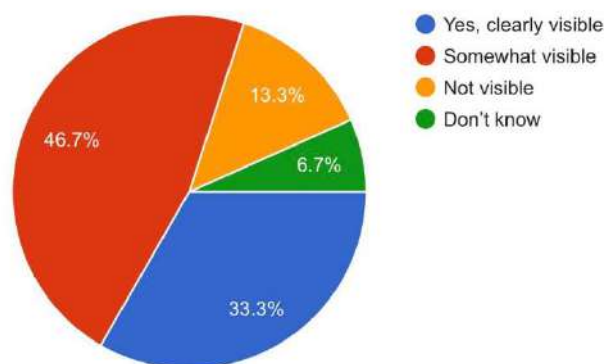
Scale	No. Of respondents	Percentage
Yes	06	40%
No	03	20%
Maybe	06	40%



The results show that 40% of respondents believe CSR implementation brought a significant change in turnover, 40% were unsure, and 20% felt it did not. This indicates that while many see a positive link between CSR and turnover, a large portion remain uncertain about its exact impact.

TABLE 9: Noticed any visible impact of the company CSR spending in the community or workplace.

Scale	No. Of respondents	Percentage
Yes, clearly visible	05	33.3%
Somewhat visible	07	46.7%
Not visible	02	13.3%
Don't know	01	6.7%

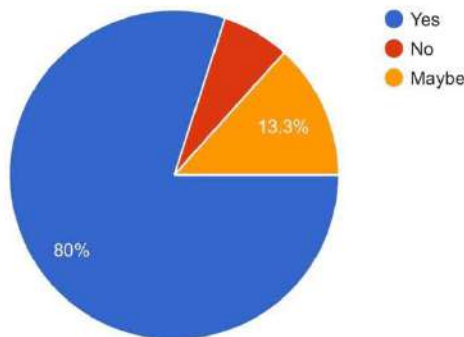


The data shows that a majority of respondents (80%) perceive the company's CSR efforts as having a visible impact which is either clearly or somewhat visible that is indicating that the company's CSR initiatives are making a positive difference in the community or workplace. Only a small portion of people (13.3%) found no visible impact, while 6.7%

were unsure, suggesting overall awareness and appreciation of CSR activities among respondents.

Table 10: Should the company increase the CSR budget in the future

Scale	No. Of respondents	Percentage
Yes	12	80%
No	01	6.7%
Maybe	02	13.3%



The data shows that the majority of respondents (**80%**) believe the company should **increase its CSR budget** in the future. Only **6.7%** disagreed, while **13.3%** were uncertain.

Findings:

- **Young Workforce:** The majority of employees (80%) have less than three years of experience, indicating a

relatively new and developing workforce with limited long-term retention.

- **Strong CSR Awareness:** Most employees (60%) are very familiar with the concept of CSR, showing good overall awareness and understanding within the organization.
- **Focus on Education and Skill Development:** The company's CSR initiatives primarily target education and skill development (46.7%), highlighting a commitment to community capacity-building and employability enhancement.
- **Visible CSR Impact:** Around 80% of respondents noticed a visible impact of CSR activities in the community or workplace, reflecting the effectiveness and reach of the company's CSR efforts.
- **Support for Increased CSR Budget:** A large majority (80%) of respondents believe the company should increase its CSR budget in the future, showing strong employee support for expanding social responsibility initiatives.
- **Society Benefits the Most:** CSR activities are seen as most beneficial to society (33.3%), followed by stakeholders (26.7%) and employees (20%), highlighting external community impact.
- **Unclear CSR Policies:** While 46.7% believe their company has clear CSR policies, 40% disagree, and 13.3% are unsure—indicating a need for clearer

communication and visibility of CSR strategies.

RECOMMENDATIONS:

The findings reveal that while the company has made visible progress in implementing Corporate Social Responsibility (CSR) initiatives, there is still room for improvement in communication, employee involvement, and strategic focus. Both employees and employers play crucial roles in enhancing the effectiveness and sustainability of CSR.

So here are the suggestions given through this research and it's divided into two parts, that is:

Suggestions for Employees:

Employees play a vital role in transforming CSR from a corporate initiative into a shared value system. With 86.7% of respondents already familiar with CSR concepts, employees are well-positioned to act as ambassadors of social responsibility within and outside the organization. They should actively participate in CSR programs, volunteer for community service projects, and share innovative ideas for social impact with management.

Employees can also take a proactive approach by forming CSR committees or volunteer groups within the workplace. Such employee-led initiatives can promote collaboration, build a sense of purpose, and strengthen the relationship between the organization and the community. Moreover, employees should view CSR not just as a company obligation but as a personal and

collective responsibility that contributes to ethical business practices and sustainable growth.

Continuous learning is equally important. Employees should seek opportunities to enhance their understanding of CSR trends, sustainability practices, and ethical conduct. Training programs, workshops, and knowledge-sharing sessions can empower them to contribute more meaningfully to the company's social mission.

Suggestions for employers:

Employers should continue to strengthen the company's CSR framework by aligning it more closely with both organizational goals and community needs. The data shows that 46.7% of respondents believe the company has clear CSR policies, but a significant portion either disagrees or remains uncertain. This indicates the need for greater transparency and internal communication. Management should ensure that CSR goals, budgets, and outcomes are clearly shared with all employees through newsletters, meetings, or internal reports. When employees are informed, they feel a sense of ownership and are more likely to support CSR activities actively.

The company's strong focus on education and skill development is commendable, as it contributes to long-term social empowerment. However, the relatively low emphasis on environmental sustainability and community development suggests the need for a more diversified CSR strategy. Employers should consider expanding CSR initiatives into areas like environmental conservation, health and wellness, and local entrepreneurship support. This would not only broaden the impact but also align with

global sustainability trends and stakeholder expectations.

Given that 80% of respondents believe CSR has a visible impact and the same percentage recommend increasing the CSR budget, employers should consider incrementally raising CSR funding and allocating resources to high-impact projects. However, this should be done strategically by focusing on initiatives that deliver measurable social and economic returns. Establishing partnerships with NGOs, educational institutions, and community organizations can further enhance the effectiveness and reach of CSR programs.

Additionally, employers should take steps to integrate CSR values into the company culture. This means embedding social responsibility into everyday business decisions, employee performance evaluations, and corporate ethics. Recognizing and rewarding employees who contribute to CSR projects can also foster motivation and participation.

Conclusion:

Corporate Social Responsibility (CSR) has evolved beyond a corporate obligation into a moral commitment to a bridge between business growth and societal well-being. The findings from this study present a comprehensive view of how CSR is perceived, implemented, and experienced within the company. It reflects both achievements and opportunities for deeper human connection and purposeful engagement among all stakeholders.

The data clearly shows that the organization has a relatively young workforce, with 80% of employees having less than three years of experience. This indicates an energetic and dynamic team that holds great potential for

innovation but also highlights the importance of nurturing long-term retention and organizational loyalty. With proper guidance and exposure, these employees can become future leaders who carry forward the company's ethical and social vision.

The study indicates that while the company has established programs and policies, there remains room for greater clarity and communication. For CSR to be truly effective, every employee should not only know that the company supports such initiatives but also feel personally connected to their outcomes. Ultimately, CSR is not just about what a company gives back but it's about how it connects, listens, and uplifts. The future of corporate responsibility lies in humanizing business practices, where profit and purpose coexist harmoniously. This study reaffirms that when organizations and their people work together with empathy and intention, they don't just create a better company but also they help build a better world.

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2. Conflict of Interest Statement:

The authors declare no conflict of interest with respect to the research, authorship, or publication of this article.

3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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*Article***An empirical study on impact of music in mood regulation***Article History*

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Introduction

Music has been an important part of human life across cultures and generations. Beyond entertainment, music plays a significant role in influencing emotions, thoughts, and behaviors. Individuals often use music in their daily lives to relax, reduce stress, improve concentration, express emotions, and cope with difficult situations. Due to its emotional influence, music has increasingly become an important area of study in psychology and behavioral sciences.

Mood regulation refers to the process through which individuals manage, maintain, or modify their emotional states. People use various coping strategies to regulate emotions, including social interaction, physical activity, meditation, and music listening. Among these, music is considered one of the most accessible and commonly used methods of emotional regulation, particularly among adolescents and young adults. Music has the ability to evoke positive emotions, reduce negative emotional states, and provide psychological comfort during stressful situations.

Research suggests that music can influence emotional experiences by affecting psychological and physiological processes. Listening to music may help reduce stress, anxiety, and emotional discomfort while promoting relaxation and positive mood states. According to Roy et al. (2008), music can reduce unpleasant emotional experiences and contribute to emotional relief. Similarly, coping theories proposed by Carver et al.

(1989) explain that individuals adopt different strategies to manage emotional stress, and music can function as an emotion-focused coping strategy.

Young adults frequently use music as a means of emotional expression and mood management. Possible spelling mistake found. and Erica (2007) emphasized that music serves multiple emotional regulation purposes, such as relaxation, distraction, emotional expression, and mood enhancement. Music may also help individuals process emotions and develop better emotional awareness. Since emotions are closely associated with psychological well-being, understanding the role of music in emotional regulation has become increasingly important.

Emotional intelligence refers to the ability to perceive, understand, manage, and express emotions effectively in oneself and others. Individuals with higher emotional intelligence are generally better at recognizing emotional experiences and coping with emotional challenges. Music may contribute to emotional intelligence by enhancing emotional awareness, empathy, self-expression, and emotional understanding. Listening to emotionally meaningful music may help individuals become more aware of their feelings and regulate emotions more effectively.

Previous studies have explored the relationship between music, emotions, stress reduction, and psychological well-being. Labbé et al. (2007) reported that music can be an effective coping strategy during stressful situations. Sharman and Dingle (2015) found that music listening is commonly used for emotional regulation and mental well-being. Although several studies have examined the psychological effects of music, limited research has focused on the relationship

between music in mood regulation and emotional intelligence among the general population, particularly in the Indian context.

Therefore, the present study aims to examine the role of music in mood regulation and to identify the relationship between music in mood regulation and emotional intelligence among individuals from the general population. The study also attempts to examine whether there are gender differences in music-based mood regulation and emotional intelligence.

Review of literature.

Patrik N. Juslin and colleagues (2008) performed an experience sampling study with Swedish college students to explore emotional responses to music in daily life. The research involved 32 individuals whose ages ranged from 20 to 31 years. The results showed that emotional reactions to music are shaped not only by the music itself but also by the listener and the context in which it is experienced. The researchers determined that emotional responses while listening to music cannot always be solely linked to the music itself.

Lydia Schneider and others (2020). investigated the impact of active music interventions within therapeutic environments. The research indicated that participation in music activities elevated mood, diminished anxiety, boosted divergent thinking skills, and improved overall well-being. The results indicated that interventions involving music could be beneficial in psychological and treatment strategies.

J. W. Osborne (1981) Osborne carried out two experiments with undergraduate students to examine emotional and cognitive reactions to music. Participants engaged with synthesized music and expressed their experiences through written descriptions.

The findings indicated that imagery-related reactions were more prevalent than thoughts, feelings, or sensations, implying that music significantly activates imagination and mental visualization.

Patrik N. Juslin (2015) addressed emotional responses to music and clarified how music can affect emotional experiences via psychological processes. The research highlighted that music has the ability to elicit various emotions based on personal differences and contextual factors. and Jaczko Erica (2007) examined how music influences mood regulation in adolescents. Their research indicated that people utilize music for relaxation, expressing emotions, distraction, and improving mood. The research suggested that music serves as a significant means for managing one's emotions.

Methodology

Aim

The aim is to measure how people use music to regulate their moods. It helps assess the different ways in which individuals turn to music to enhance, maintain, or change their emotional states. The scale typically includes items that reflect various strategies, such as using music for relaxation, distraction, or emotional expression. The aim is to understand the role of music in emotional self-regulation and how it can be effectively utilized in everyday life to manage emotion

Research design:

Quasi experimental ex-post factor Research Design

Sampling design

Simple random sampling method

Sample

Individuals aged between

- Below 18
- 18-24
- Above 24

Variables

Independent Variables: Gender: males and females

Dependent Variables : Mood Regulation.

Hypothesis

- Ho1: There is no significant difference in music-based mood regulation across gender.
- Ho2: There is no significant difference in emotional intelligence across gender.
- Ho3: There is no significant relationship between music in mood regulation and emotional intelligence.

Tools used

The B-MMR Questionnaire

Description:

The primary tool used in the study was the Brief Music in Mood Regulation Scale (B-MMR), which is a self-report questionnaire consisting of items related to different strategies of mood regulation through music.

Format:

Participants responded to the items using a Likert scale ranging from 1 = strongly disagree to 5 = strongly agree, indicating how frequently or effectively they use music for mood regulation.

The reliability value of the scale is 0.70

- The scale is valid

Brief emotional intelligence scale

The Brief Emotional Intelligence Scale (BEIS-10; Davies et al, 2010) is a

shortened self-report measure of emotional intelligence based on Salovey and Mayer's (1990) conceptualization. It is a brief 10-item version

It has moderate reliability and validity

Procedure

The rapport was established. After obtaining consent from the participants, the Brief Music in Mood Regulation Scale and the Brief Emotional Intelligence Scale were administered. The data were collected through a simple random sampling technique.

RESULT ANALYSIS

In this chapter, the sample description and statistical parameters such as frequency, maximum, minimum, mean, and standard deviation of the dependent variables are included. Independent samples t-tests and Pearson correlation analyses for all hypotheses are presented, and the interpretations are discussed

Table 1. Statistical parameters of the dependent variables, music in mood regulation

gender	N	Mean	Std, deviation	Std, Error Mean
1.00	21	76.8095	14.17258	3.09271
2.00	29	77.0345	13.50260	2.50737

Table 2. Statistical parameters of the dependent variable, emotional intelligence

gender	N	Mean	Std, deviation	Std. Error Mean
1.00	21	35.9524	3.84026	.83801
2.00	29	39.3103	5.08572	.94439

Table 3. showing the result of t – test music in mood regulation

Variance Assumption	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI Lower	95% CI Upper
Equal variances assumed	0.056	0.814	-.057	48	0.955	-0.22496	3.95008	-8.16712	7.71720
Equal variances not assumed	—	—	-.057	41.978	0.955	-0.22496	3.98143	-8.25993	7.81001

Interpretation

Levene's Test for Equality of Variances showed a significance value of 0.814, which is greater than 0.05. Therefore, equal variances were assumed. The independent samples t-test revealed that there was no significant difference between the groups, $t(48) = -0.057$, $p = .955$. Since the significance value was greater than 0.05, the hypothesis 1 was retained.

Table 4. showing the result of t – test in emotional intelligence

Variance Assumption	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI Lower	95% CI Upper
Equal variances assumed	0.273	0.604	-2.543	48	0.014	-3.35796	1.32031	-6.01263	-0.70330
Equal variances not assumed	—	—	-2.660	47.888	0.011	-3.35796	1.26260	-5.89674	-0.81919

Interpretation

Levene's Test for Equality of Variances showed a significance value of 0.604, which is greater than 0.05. Therefore, equal variances were assumed.

The independent samples t-test revealed that there was a significant difference in emotional intelligence across gender, $t(48) = -2.543, p = .014$. Since the significance value was less than 0.05, Hypothesis 2 was rejected.

Table. 5 showing the result of Pearson correlation between music in mood regulation emotional intelligence

Variables	Pearson Correlation (r)	Sig.(2-tailed)	N	Interpretation
B-MMR and Emotional Well-being	0.409**	0.003	50	Significant Positive Correlation

Interpretation

Levene's Test for Equality of Variances showed a significance value of 0.604, which is greater than 0.05. Therefore, equal variances were assumed.

The independent samples t-test revealed that there was a significant difference in emotional intelligence across gender, $t(48) = -2.543, p = .014$. Since the significance value

was less than 0.05, Hypothesis 2 was rejected.

Result Discussion

The current study looked at how music helps people manage their emotions and how it is connected to intelligence. The results showed that there is no difference between men and women when it comes to using music to regulate their moods. This is probably because both men and women listen to music every day to relax express their feelings reduce stress and have fun. Nowadays music is easy to access on our phones, media and music streaming apps. People often listen to music when they are studying, working, exercising or dealing with stress. So it makes sense that men and women do not use music in different ways to manage their emotions.

The study also found that men and women are different when it comes to intelligence. This difference may be because men and women express their emotions understand their emotions and communicate with others in ways. Another important thing the study found is that music helps people manage their moods and this is connected to intelligence. People who use music to manage their emotions may be better at understanding and managing their feelings. Music helps people recognize how they feel manage stress and become more aware of their emotions. Other studies have also shown that music is good for our health. For example Labbé and others found in 2007 that music can help people deal with stress. Similarly "Saarikallio and Erkkilä" found in 2007 that music helps people manage their emotions by relaxing, distracting and expressing themselves.

The study suggests that music is good for our well-being and emotional intelligence so using music as a tool may help young adults manage their emotions and improve their health. Music can really make a difference, in

people lives. The music we listen to can help us feel better and understand ourselves more. Music and emotional intelligence are connected in ways. Music helps us manage our emotions and music is a part of our lives.

Conclusion

The present study examined the relationship between music in mood regulation and emotional intelligence among individuals from the general population.

The study concluded that:

- There is no significant gender difference in music-based mood regulation.
- There is a significant gender difference in emotional intelligence
- There is a significant relationship between music in mood regulation and emotional intelligence

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3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

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The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

□ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

Social Media Use and Loneliness: A Conditional, Bidirectional, and Behaviorally Contingent Relationship

Article History

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Abstract:

Social media has become a major part of daily life, especially among adolescents and young adults, leading to increasing concerns about its psychological impact. One of the most debated issues is whether social media contributes to loneliness or helps reduce it by promoting social connection. This conceptual paper examines the relationship between social media use and loneliness by reviewing existing empirical literature from multiple cultural and demographic contexts. The analysis suggests that the relationship is not simple or unidirectional. Instead, the impact of social media depends on how individuals use these platforms, their psychological characteristics, and their offline social environment. Passive scrolling, compulsive use, upward social comparison, cybervictimization, and dependence on online validation are consistently linked with increased loneliness. In contrast, active communication, supportive online interaction, and the maintenance of existing

relationships through communication-oriented platforms are associated with reduced loneliness and improved social connectedness. Longitudinal studies also indicate a reciprocal relationship in which loneliness can lead to problematic social media use, while problematic use can further intensify loneliness. This paper highlights the need to move beyond simplistic assumptions that all social media use is harmful and instead focus on usage patterns, individual vulnerability factors, and contextual influences. The findings have implications for educators, mental health professionals, and policymakers seeking to promote healthier digital engagement.

Keywords: *social media, loneliness, social comparison, problematic social media use, psychological well-being*

Introduction

Loneliness has become one of the most significant psychological concerns in modern society. It is commonly understood as the distressing emotional experience that occurs when there is a gap between the social relationships an individual desires and the relationships they actually experience. Unlike social isolation, which refers to an

objective lack of social contact, loneliness is subjective and can occur even when individuals are surrounded by others. In recent years, increasing attention has been given to loneliness because of its effects on emotional well-being, mental health, academic functioning, and overall quality of life.

At the same time, social media has transformed the way individuals communicate, build relationships, and seek emotional support. Platforms such as Instagram, Facebook, WhatsApp, Snapchat, Tik-Tok, and Twitter have become central to social interaction, especially among young people. Social media offers opportunities for communication, connection, self-expression, and access to communities across geographical boundaries. However, concerns have also emerged regarding excessive use, emotional dependency, comparison with others, and reduced face-to-face interaction.

Public discussions often present social media as a major cause of loneliness, suggesting that increased screen time replaces meaningful human interaction and creates emotional disconnection. While this perspective appears reasonable, research

findings present a more complex picture. Some studies suggest that social media contributes to loneliness through compulsive use, cybervictimization, social comparison, and emotional dependency. Other studies indicate that social media can reduce loneliness by helping users maintain relationships, receive emotional support, and stay socially connected.

The mixed findings suggest that the relationship between social media and loneliness is not straightforward. Rather than having a universally positive or negative effect, social media appears to influence loneliness depending on several factors, including the type of engagement, individual psychological characteristics, the nature of online interactions, and offline social support systems.

This conceptual paper aims to examine the relationship between social media use and loneliness through a review of existing literature. The paper explores both harmful and protective aspects of social media use, identifies major psychological mechanisms influencing outcomes, and discusses how the relationship may be reciprocal rather than one-directional. By understanding these

complexities, a more balanced perspective on social media and psychological well-being can be developed.

Review of Literature

Negative Effects of Social Media Use:

Research has shown that excessive and problematic social media use is associated with higher levels of loneliness. Although social media was originally designed to improve communication and connection, its excessive use may create emotional dependency, reduce meaningful interaction, and increase psychological distress. Many users rely on online platforms as a substitute for real-life connection, which may intensify feelings of loneliness rather than reduce them.

Youssef et al. (2020) found that problematic social media use was significantly associated with loneliness, anxiety, depression, stress, and sleep difficulties. Individuals experiencing loneliness often turn to social media for emotional relief, but this coping strategy may become unhealthy when online engagement replaces meaningful interpersonal interaction. Similarly, Islam and Kumar (2019) reported that students who

spent more time on social media experienced greater loneliness and poorer academic performance, suggesting that excessive use may interfere with daily functioning and real-world relationships.

During the COVID-19 pandemic, the relationship became even more visible. Boursier et al. (2020) found that loneliness increased excessive social media use during lockdown, which further increased anxiety. This suggests a cycle in which loneliness drives online engagement, but online dependency may worsen psychological well-being.

However, harmful effects are not caused by social media itself but by unhealthy patterns of use such as compulsive checking, emotional dependency, and replacing offline relationships with virtual interaction.

Positive and Protective Effects of Social Media

Despite the negative findings, several studies show that social media can reduce loneliness when used in healthy ways. Social media provides opportunities for maintaining relationships, receiving emotional support,

and staying connected with others, especially when physical interaction is limited.

Pittman (2015) found that social media platforms such as Instagram and Twitter were associated with lower loneliness among university students when used for positive engagement. Users who interacted with friends and consumed socially meaningful content felt more connected.

Social media also appears beneficial for older adults. Kusumota et al. (2022) reported that digital communication reduced loneliness among older individuals by helping them maintain family contact and social participation. For populations with limited mobility or geographical separation, social media can act as a valuable communication tool.

Matthews et al. (2025) found that WhatsApp was associated with lower loneliness because it supports direct communication with known contacts rather than passive content consumption. This suggests that communication-focused platforms may strengthen relationships more effectively than broadcast-based platforms.

Thus, social media can act as a protective factor when used for meaningful communication rather than passive dependence.

Active Versus Passive Social Media Use

One of the most important distinctions in the literature is between active and passive social media use. Active use includes direct interaction such as messaging, commenting, posting with engagement, and maintaining relationships. Passive use includes endless scrolling, viewing others' profiles, and consuming content without meaningful interaction.

Yang (2016) found that interactive engagement reduced loneliness, while broadcasting content without genuine response increased loneliness. This indicates that simply being active online is not enough; the quality of engagement matters.

Passive scrolling often exposes individuals to idealized content without providing emotional connection. This can create feelings of exclusion, dissatisfaction, and loneliness. In contrast, direct communication creates a sense of belonging and emotional closeness.

This distinction explains why some individuals benefit from social media while others experience negative outcomes.

Social Comparison and Emotional Impact

Social comparison is a major psychological factor influencing loneliness. Social media exposes users to carefully curated portrayals of others' lives, achievements, relationships, and appearance. Frequent comparison with these idealized images can create feelings of inadequacy and isolation.

Yang (2016) reported that individuals with high social comparison orientation experienced less benefit from social media interaction. Even when engaging actively, comparison-based thinking reduced emotional satisfaction.

Kou (2024) also found that young adults often experienced loneliness due to superficial online support and comparison-based distress. Positive feedback improved emotional well-being, whereas criticism and negative comparison increased loneliness.

Platforms focused heavily on visual self-presentation may intensify this problem. Users may perceive others as happier, more successful, or more socially connected,

which may distort self-perception and reduce life satisfaction.

Therefore, the emotional meaning users attach to online content strongly influences whether social media becomes supportive or harmful.

Problematic and Addictive Use

Problematic social media use refers to compulsive, uncontrolled engagement that interferes with daily functioning. Individuals may repeatedly check notifications, neglect responsibilities, and become emotionally dependent on online validation.

Mitropoulou (2024) found that loneliness positively predicted social media addiction, while self-esteem and self-compassion acted as protective factors. Individuals with poor emotional coping resources were more vulnerable to problematic engagement.

Matthews et al. (2025) similarly showed that compulsive technology use was strongly linked with loneliness, even after controlling for prior mental health conditions.

Problematic use appears to create a cycle where loneliness leads to excessive engagement, and excessive engagement deepens loneliness.

Methodology

This paper adopts a conceptual review design to examine the relationship between social media use and loneliness. A conceptual study focuses on analyzing and synthesizing existing research literature rather than collecting new empirical data. The purpose of this approach is to identify recurring themes, theoretical explanations, and patterns in prior studies to develop a clearer understanding of the topic.

Relevant literature was identified through academic databases including Google Scholar, PubMed, ResearchGate, and PsycINFO. Keywords used during the literature search included social media and loneliness, social media addiction and mental health, active versus passive social media use, social comparison and loneliness, digital communication and well-being, and problematic social media use.

Studies included in this review were selected based on the following inclusion criteria:

- Peer-reviewed journal articles
- Studies examining the relationship between social media use and loneliness

- Cross-sectional, longitudinal, review, and structural equation modeling studies
- Research published in English
- Studies involving adolescents, university students, adults, or older adults

Exclusion criteria included:

- Non-English publications
- Studies unrelated to loneliness
- Research focusing exclusively on unrelated digital behaviors
- Duplicate publications

A total of relevant studies were reviewed to identify major themes concerning the psychological effects of social media use. The selected literature was analyzed thematically, focusing on harmful effects, protective benefits, problematic use, social comparison, psychological mediators, and reciprocal relationships between loneliness and online engagement.

Because this is a conceptual review, no human participants were directly involved, and ethical approval was not required.

Discussion

The literature suggests that social media's effect on loneliness is conditional rather than universally harmful or beneficial. The strongest conclusion is that outcomes depend on usage patterns, individual psychological characteristics, and the surrounding social environment.

Social media can strengthen connection when used to maintain relationships, communicate directly, and access emotional support. However, compulsive use, emotional dependency, passive scrolling, and social comparison are associated with loneliness.

Another important finding is the bidirectional nature of the relationship. Loneliness does not simply result from social media use; it may also motivate individuals to seek online interaction as a coping mechanism. Wu et al. (2024) demonstrated this reciprocal relationship, showing that loneliness predicted problematic use while problematic use predicted increased loneliness over time.

The literature also highlights the role of psychological mediators. Factors such as low self-esteem, low self-compassion, emotional dysregulation, and anxiety increase vulnerability to harmful digital engagement.

Limitations

Several limitations exist in the current literature:

- Many studies use cross-sectional designs, limiting causal interpretation.
- Self-reported screen time may be inaccurate.
- Student populations dominate the literature.
- Rapid platform evolution may reduce the relevance of older studies.
- Cultural differences remain underexplored.

These limitations suggest the need for more longitudinal, culturally diverse, and behaviorally measured research.

Conclusion

The relationship between social media use and loneliness is complex and multidimensional. Social media does not automatically increase loneliness, nor does it consistently reduce it. Instead, outcomes depend on how platforms are used, why individuals engage with them, and what psychological and social conditions surround their use.

Healthy engagement characterized by communication, support, and relationship maintenance can reduce loneliness. In contrast, compulsive use, passive comparison, emotional dependency, and replacing offline interaction with online substitutes may increase loneliness.

Future research should focus on contemporary platforms, longitudinal evidence, and culturally diverse populations. Understanding digital behavior more deeply will help educators, clinicians, and policymakers promote healthier online engagement.

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3. Ethics Approval:

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4. Informed Consent:

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5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review Editing

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Article

Promoting Mental Health and Well-Being Across All Ages: The Power of Social Support Systems

Article History

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Abstract

Mental health and well-being are essential for people to live with dignity, manage daily stress, build relationships, learn, work, and participate in society. Mental health concerns are now seen not only as individual health problems but also as family, community, and social development concerns. This paper discusses the importance of social support systems in promoting mental health and well-being across different age groups. It explains how support from family members, friends, peer groups, teachers, workplaces, community organisations, health workers, and digital platforms can reduce loneliness, improve coping, and encourage early help-seeking. The paper is based on a narrative review of published literature, World Health Organization reports, Indian mental health sources, and practice-based social work reflections. The discussion highlights the role of emotional, practical, informational, and community-based support in protecting mental health. It also examines common barriers such as stigma, lack of awareness, cost, shortage of professionals, confidentiality concerns, gender expectations, rural-urban service gaps, and limited access to age-appropriate care. From a social work perspective, the paper argues

that mental health promotion must move beyond treatment alone and include prevention, awareness, family strengthening, peer support, school and college-based initiatives, workplace support, community outreach, referral networks, and rights-based care. The paper concludes that strong social support systems can make mental health care more humane, accessible, and acceptable when they are guided by empathy, dignity, inclusion, and community participation.

Keywords: *Mental health, well-being, social support, social work, community mental health, stigma, resilience, peer support*

Introduction

Mental health is an important part of overall health. It influences how people think, feel, behave, relate to others, make decisions, handle stress, study, work, and take part in family and community life. The World Health Organization describes mental health as a state of well-being that helps people cope with the stresses of life, realise their abilities, learn well, work well, and contribute to their community (World Health Organization [WHO], 2025a). This understanding is important because mental health is not only the absence of illness. A person may not have a diagnosed mental disorder, but still experience emotional pain, loneliness, fear, stress, helplessness, or loss of meaning. Similarly, a person living with a mental health condition can still lead a meaningful life when the right support is available.

Across the world, mental health concerns are increasing in visibility. A large cross-national

study using surveys from 29 countries reported that nearly half of people may experience at least one mental disorder by the age of 75, with many conditions beginning during childhood, adolescence, or young adulthood (McGrath et al., 2023). This finding reminds us that mental health support should not begin only when a crisis occurs. Support must be available throughout life, from early childhood to old age.

In India, mental health is a major public health and social welfare concern. The National Mental Health Survey reported a high treatment gap, meaning that many people who need care do not receive timely or adequate support (Gautham et al., 2020). This gap is not only due to shortage of psychiatrists, psychologists, and psychiatric social workers. It is also linked with stigma, lack of awareness, cost of care, fear of being judged, family pressure, myths about mental illness, and difficulty reaching services in rural and underserved areas. The Government of India has expanded access through programmes such as Tele-MANAS, which provides 24x7 tele-mental health support across states and union territories (Press Information Bureau, 2026). However, formal services alone cannot meet every mental health need. Families, schools, colleges, workplaces, peer groups, neighbourhoods, religious and cultural spaces, self-help groups, and community-based organisations also have a meaningful role to play.

Social support is one of the most practical and humane ways to promote mental health. It refers to the care, encouragement, guidance,

practical help, and sense of belonging that people receive from others. Social support can be emotional, such as listening with empathy; practical, such as helping with transport or hospital visits; informational, such as guiding a person to a counsellor; or social, such as including a lonely person in group activities. When people feel supported, they are more likely to speak about their problems, seek help early, and recover with dignity.

From a social work perspective, mental health must be understood within the person's environment. Stress may come from poverty, unemployment, academic pressure, migration, family conflict, discrimination, loneliness, violence, grief, illness, disability, or social isolation. Therefore, mental health promotion cannot depend only on medicines or individual counselling. It also requires safe relationships, supportive families, aware communities, accessible services, and policies that protect dignity and rights. Social workers are trained to connect individuals with families, institutions, communities, and services. This makes social work an important profession in building mental health support systems across all age groups.

Review of Literature

Research has consistently shown that social relationships are closely connected with mental health. Kawachi and Berkman (2001) explained that social ties can support psychological well-being by reducing stress, creating a sense of belonging, and helping people access help during difficult times.

Cohen and Wills (1985) also showed that social support can protect people from the harmful effects of stressful life events. In simple words, support does not remove every problem, but it can make problems feel less lonely and more manageable.

Social support is especially important because mental distress often grows in silence. People may hide sadness, anxiety, fear, addiction, self-harm thoughts, or family problems because they are afraid of being judged. Corrigan (2004) noted that stigma can stop people from seeking mental health care even when services are available. Stigma can come from society, family, workplace, education systems, and sometimes from the person's own internal fear. For this reason, mental health awareness must focus not only on information but also on changing attitudes. People need to hear that seeking help is a sign of strength and not a shameful act.

The literature also highlights that mental health is shaped by age and life stage. Children and adolescents need safety, attachment, encouragement, school support, and adults who can identify early signs of distress. A study among early adolescents in Darjeeling, India, found that social support and self-efficacy were linked with better mental well-being and fewer psychological symptoms (Cherewick et al., 2024). Young adults and students often face academic stress, financial pressure, relationship concerns, career uncertainty, and social media-related comparison. For them, peer support, teacher support, family

communication, and accessible counselling services can reduce feelings of isolation. Among university students, perceived social support has been identified as a helpful resource for maintaining mental health along with self-efficacy and mindfulness (Guzman Villegas-Frei et al., 2024).

Adults may experience mental health challenges due to work stress, unemployment, debt, marital conflict, parenting responsibilities, caregiving roles, illness, and social expectations. In many families, adults are expected to stay strong and silent, especially men and caregivers. This silence may delay help-seeking. Older adults may face loneliness, grief, reduced mobility, chronic illness, financial dependence, and fear of becoming a burden. For older persons, family contact, community groups, religious and cultural participation, health services, and respectful caregiving can protect emotional well-being. Thus, mental health promotion must be planned across the life course rather than limited to one age group.

Peer support has received growing attention in mental health practice. Shalaby and Agyapong (2020) described peer support as support provided by people who have lived experience of mental health difficulties or recovery. Peer support can reduce isolation, build hope, and make mental health conversations more natural. The WHO guidance on community mental health services also supports peer support and person-centred services that respect human rights and recovery (WHO, 2021). Recent

studies on peer support implementation show that such models can be adapted across high-, middle-, and low-income countries when they are planned carefully and supported by trained workers and supervision (Hiltensperger et al., 2024).

Community-centred approaches are also important. Community programmes can build trust, reduce stigma, and reach people who may not approach hospitals or clinics. Baskin et al. (2021) found that community-centred interventions can contribute to public mental health, especially when they are culturally relevant and connected with local needs. In India and other low-resource settings, task-sharing approaches are also important. Task-sharing means trained non-specialist workers, such as community health workers or lay counsellors, provide basic support under professional supervision. This approach can improve access in areas where specialist services are limited (Hoeft et al., 2018).

Digital mental health support has become more visible after the COVID-19 pandemic. Helplines, mobile applications, online counselling, psychoeducation videos, and moderated support groups can reach people who may not easily access in-person services. Digital services are useful when they are confidential, affordable, language-friendly, and linked with professional referral. At the same time, digital support cannot replace all face-to-face care. It should be seen as an additional pathway, especially for early support, crisis listening, awareness, and follow-up. In India, Tele-MANAS is one

example of a public mental health support system that attempts to make help available at any time and across different languages (Press Information Bureau, 2026).

Overall, the reviewed literature shows that social support works best when it is caring, timely, respectful, and connected with services. Support should not be limited to giving advice. It must include listening, accepting, guiding, protecting, and linking the person with appropriate care. This understanding matches the social work value of meeting people where they are, respecting their dignity, and strengthening their natural support systems.

Objectives of the Study

- To explore how social support systems help people of all ages maintain and improve their mental health and well-being.
- To identify the common barriers that prevent people from seeking or accessing mental health care.
- To suggest practical ways to improve mental health and well-being through positive social support, both in person and online.
- To discuss the role of social work practice in strengthening family, peer, institutional, community, and digital support systems.

Methodology

This paper is based on a narrative review method. A narrative review brings together

important ideas from published studies, reports, and practice experiences to explain a topic in a clear and meaningful way. The paper reviewed peer-reviewed journal articles, World Health Organization reports, Indian mental health sources, and studies related to social support, stigma, peer support, community mental health, task-sharing, digital mental health, and social work practice.

The review included both global and Indian sources so that the discussion would be relevant for wider publication as well as useful in the Indian social work context. Priority was given to sources that were recent, widely cited, or directly related to mental health support systems. Classic studies on social support and stigma were also included because they continue to guide present mental health practice.

The paper does not present primary data from participants. It is a review paper supported by academic literature and social work practice reflections. Practice reflections are used only in a general way and do not include names, personal stories, confidential details, or any information that can identify individuals. This is important because mental health writing must protect privacy and dignity.

The analysis was organised around the main themes already present in the paper: the importance of social support, barriers to mental health care, effective interventions, recommendations, and conclusion. Each theme was expanded using academic literature and social work understanding. The

language was kept simple, humane, and publication-oriented so that the paper can be useful for students, practitioners, educators, and community workers.

Importance of Social Support

Social support is important because human beings do not live in isolation. A person's mental health is closely connected with family relationships, friendships, school and college life, work atmosphere, community belonging, cultural identity, and access to care. When support is strong, people feel that they are not alone. This feeling can reduce fear and give courage to face difficulties.

Emotional support is one of the most important forms of help. It includes listening patiently, showing care, accepting the person's feelings, and avoiding judgement. Many people experiencing mental distress do not expect immediate solutions. They first need someone who will listen without blaming them. A supportive conversation can reduce emotional heaviness and help the person take the next step, such as talking to a counsellor, visiting a doctor, or discussing the issue with family.

Practical support is equally important. A person may know that help is needed but may not be able to reach services because of money, travel, fear, or lack of information. Practical support can include accompanying someone to a hospital, helping them contact a helpline, supporting treatment follow-up, helping with childcare, or reducing workload during periods of distress. For students, practical support may include academic

flexibility, mentoring, fee guidance, or hostel support. For older adults, it may include transport, medication support, home visits, and regular social contact.

Informational support helps people understand mental health in a correct way. Many families still misunderstand depression, anxiety, addiction, self-harm, or psychosis as weakness, laziness, attention-seeking, lack of faith, or poor discipline. Correct information can reduce fear and blame. Social workers, teachers, health workers, peer leaders, and community organisations can explain warning signs, available services, rights, treatment options, and ways to support recovery. This type of support is very useful in schools, colleges, workplaces, primary health centres, and community settings.

Social support also builds belonging. Belonging is a protective factor because people who feel included are more likely to share problems and less likely to suffer alone. Group activities, clubs, self-help groups, youth groups, elderly groups, parent groups, and support circles can help people connect with others. These spaces should be safe, respectful, and non-judgemental. They should not force people to share personal issues, but they should create an environment where help-seeking becomes normal.

The importance of support differs across age groups. Children need safe adults, predictable care, play, affection, and protection from abuse or neglect. Adolescents need trusted adults, peer acceptance, school support,

identity support, and guidance around emotions, body image, relationships, and digital life. Young adults need support with education, career, finances, relationships, and life transitions. Middle-aged adults need support with work-life balance, parenting, caregiving, health problems, and financial responsibilities. Older adults need respect, companionship, health support, meaningful roles, and protection from neglect and isolation.

From a social work perspective, support systems are not only personal resources but also social resources. A family that understands mental health, a college that provides counselling, a workplace that respects emotional well-being, a community that does not shame people, and a health system that is affordable and accessible are all part of mental health promotion. Social workers can strengthen these systems through casework, group work, community organisation, advocacy, referral, crisis support, awareness programmes, and policy-level participation.

Barriers to Mental Health Care

Even when mental health care is available, many people do not seek help. Stigma is one of the strongest barriers. People may fear that others will call them weak, unstable, dangerous, or incapable. Students may fear that teachers or friends will treat them differently. Employees may fear that mental health disclosure will affect their job. Families may hide mental health problems because of marriage concerns, reputation, or

social judgement. This silence can increase distress and delay treatment.

Lack of awareness is another major barrier. Many people do not recognise early signs of mental distress. Sadness, anger, sleep problems, fear, substance use, social withdrawal, self-harm thoughts, and poor concentration may be ignored until they become severe. In some families, emotional pain is treated only as a personal issue rather than a health concern. When people do not understand mental health, they may seek help very late or choose harmful coping methods.

Cost and availability also affect care. Mental health services can be expensive, and regular follow-up may be difficult for low-income families. In rural and semi-urban areas, there may be fewer psychiatrists, psychologists, psychiatric social workers, and counsellors. Travel distance, lack of public transport, loss of wages, and long waiting time can discourage people from seeking help. This is why community-based support and task-sharing models are important.

Confidentiality concerns prevent many young people and adults from asking for help. They may worry that personal information will be shared with parents, teachers, employers, neighbours, or community members. Confidentiality is especially important in colleges, workplaces, and small communities where people know each other. Services must clearly explain privacy rules so that people feel safe to speak openly.

Cultural beliefs and gender expectations can also become barriers. Some people are told to pray more, adjust more, stay strong, or keep quiet instead of seeking support. Spiritual and cultural resources can be helpful when they provide comfort and meaning, but they should not replace needed mental health care. Men may be discouraged from expressing sadness or fear. Women may be expected to tolerate emotional burden silently. Children and older adults may not be taken seriously when they express distress. These patterns can increase vulnerability.

Digital barriers should also be considered. Online counselling and helplines can improve reach, but not everyone has a smartphone, private space, internet access, digital literacy, or language-friendly services. Some people may also feel unsafe sharing personal issues online. Therefore, digital interventions must be designed carefully and should be linked with local referral systems.

In social work practice, barriers are understood as both personal and structural. A person may want help but may be blocked by poverty, distance, stigma, lack of services, gender norms, family pressure, or weak policy implementation. Therefore, social workers have a responsibility not only to support individuals but also to work for service access, awareness, inclusion, and rights.

Effective Interventions

Effective mental health promotion requires support at different levels: individual, family, school, college, workplace, community,

health system, and policy. No single intervention can meet the needs of all people. A person in crisis may need immediate professional care, while another person may need counselling, peer support, family guidance, group work, or community connection. The best approach is to create many safe pathways for help.

Family-focused education is an important intervention. Families often become the first source of help, but they may not know how to respond. Family awareness sessions can teach basic signs of distress, supportive communication, referral options, suicide warning signs, and ways to reduce blame. Families should be encouraged to listen, validate feelings, avoid shaming, and support treatment. Family support is especially important for children, adolescents, persons with severe mental illness, older adults, and people recovering from addiction.

School and college-based interventions can prevent problems from becoming severe. These may include mental health clubs, peer listeners, counselling cells, life skills education, stress management sessions, anti-bullying programmes, teacher training, exam stress support, and referral links with nearby mental health professionals. Students should be taught that mental health is part of normal life and that asking for help is acceptable. Peer support programmes should be supervised so that students are not burdened with problems beyond their capacity.

Workplace mental health support is also important. Adults spend a large part of their

life at work. Supportive workplaces can provide stress awareness, fair workload, respectful supervision, leave support, referral to counselling, and policies against harassment. Employers should understand that mental health support improves dignity, productivity, attendance, and staff retention. Social workers in employee assistance programmes, hospitals, industries, and organisations can help connect workers with suitable support.

Community-based interventions can reach people who may not approach formal services. Awareness campaigns, support groups, home visits, youth clubs, elderly groups, community counselling camps, self-help groups, and local referral networks can reduce stigma and improve early identification. Community leaders, religious leaders, teachers, Anganwadi workers, ASHAs, nurses, and volunteers can be trained to provide basic listening and referral support. However, training should be clear about limits, confidentiality, and emergency referral.

Peer support can be a powerful intervention when it is planned responsibly. A person who has experienced recovery can offer hope to another person. Peer support should not replace professional care, but it can make recovery feel possible and less lonely. Peer supporters need training, supervision, role clarity, and emotional safety. The goal is not to give advice, but to listen, share hope, support coping, and guide the person toward appropriate services when needed.

Digital interventions can support awareness, early help, and follow-up. Helplines, tele-counselling, mobile apps, online psychoeducation, and moderated support groups can be useful for people who fear direct contact or live far from services. In India, Tele-MANAS shows how public mental health support can be expanded through phone-based services. Digital support should be confidential, simple to use, available in local languages, and linked with emergency and in-person care.

Social work interventions are especially relevant because social workers are trained to work with both people and systems. A social worker can assess needs, provide emotional support, involve family, connect the person with services, advocate for rights, follow up treatment, build support groups, conduct awareness programmes, and address social problems that worsen mental distress. Social work practice also reminds us that care must be respectful and non-discriminatory. Mental health support should protect dignity rather than control or label people.

Recommendations

Based on the review and social work perspective, the following recommendations can strengthen mental health and well-being across all ages:

- Strengthen mental health awareness in schools, colleges, workplaces, health centres, and community spaces using simple language and culturally sensitive examples.

- Create mental health clubs, peer support networks, and safe discussion groups in educational institutions, but ensure proper training, supervision, and referral support.
- Train teachers, parents, community health workers, youth leaders, and volunteers to identify early signs of distress and respond with empathy instead of judgement.
- Improve family education so that families understand mental health, reduce blame, protect confidentiality, and support treatment and recovery.
- Expand access to affordable counselling and psychiatric social work services in both urban and rural areas, especially through schools, colleges, primary health centres, and community organisations.
- Promote help-seeking by normalising counselling, helplines, support groups, and professional care as part of healthy living.
- Use digital services such as helplines, tele-counselling, and mobile-based support, while also ensuring language access, privacy, emergency referral, and offline alternatives.
- Develop age-specific programmes for children, adolescents, young adults, working adults, caregivers, older adults, and families facing social or financial stress.
- Encourage workplaces to include mental health policies, stress support, anti-harassment measures, and referral pathways for employees.
- Strengthen community-based mental health care by connecting hospitals, NGOs, local bodies, schools, colleges, religious/community groups, and trained volunteers.
- Include persons with lived experience in planning support programmes, because their voices can make services more respectful and practical.
- Ensure that mental health services follow values of dignity, consent, confidentiality, inclusion, and non-discrimination.
- Increase the role of professional social workers in hospitals, schools, community settings, rehabilitation centres, NGOs, and policy-level mental health programmes.
- Support research and documentation on local mental health needs, social support systems, and community-level interventions in India.

Conclusion

Mental health and well-being are shared responsibilities. They are shaped not only by individual strength but also by the support people receive from families, friends, schools, colleges, workplaces, communities, services, and society. A person who feels heard and supported is more likely to cope

with stress, seek help early, and move toward recovery with dignity.

Social support systems are powerful because they make mental health care more human. They reduce loneliness, challenge stigma, build confidence, and connect people with services. Support does not mean solving every problem for the person. It means standing with the person, listening with respect, guiding without judgement, and helping them access the right care at the right time.

The social work perspective adds an important message to mental health promotion: people must be understood within their social environment. Poverty, discrimination, family conflict, academic pressure, work stress, migration, ageing, disability, illness, and isolation can all affect mental health. Therefore, mental health care must include prevention, awareness, community support, rights, advocacy, and service access along with clinical treatment.

For publication and practice, the central argument of this paper is simple: mental health support should be available across all ages and in everyday spaces where people live, study, work, and build relationships. When families, communities, institutions, professionals, and digital systems work together, mental health care becomes more accessible, acceptable, and compassionate. A society that values mental health is one that listens, supports, includes, and protects the dignity of every person.

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6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review; Editing

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Article

Is There a Significant Relationship Between Technostress and Psychological Well-Being?

Article History

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Abstract:

Digital technologies have become central to daily life, offering both convenience and challenges. One such challenge is technostress, which refers to the strain experienced when using information and communication technologies. This study explores whether technostress is linked to psychological well-being in today's digital society. Fifty participants completed questionnaires measuring technostress and well-being. Analysis using Pearson correlation found a weak, non-significant negative link ($r = -.18$, $p > .05$): higher technostress related to slightly lower well-being, but not significantly. These results highlight the need for further research to understand how digital literacy, coping skills, and individual differences may influence this relationship.

Keywords: *Technostress, Psychological Well-Being, Digital Technology, ICT, Correlational Research, Ryff's Model*

Introduction

Technostress means the mental stress and discomfort people feel because of their use of modern technologies, especially things like smartphones, computers, and the internet. The word was first used by Brod (1984), who called it a “modern disease of adapting” caused by not being able to handle new computer technologies well. As work and daily life use more digital tools, technostress has become an important idea in studies about psychology, work, and health.

In contemporary settings, technostress arises from multiple sources, including information overload, constant connectivity, frequent technological changes, and the pressure to quickly learn and adapt to new systems. While technology is designed to improve efficiency and convenience, its excessive or poorly managed use leads to negative outcomes such as anxiety, fatigue, reduced productivity, and decreased psychological well-being. Researchers have identified several dimensions of technostress, such as techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty (Tarafdar et al., 2007). These dimensions highlight how both the demands of technology and individuals’ coping abilities interact to produce stress.

Psychological well-being refers to the overall quality of an individual’s mental and emotional life, encompassing how people think, feel, and function in their daily experiences (Ryff, 1989). It goes beyond the mere absence of mental illness and focuses on positive aspects of human functioning, such as happiness, life satisfaction, personal growth, and a sense of purpose. Early perspectives, such as hedonic well-being, emphasize pleasure attainment and pain avoidance, highlighting happiness and life satisfaction as central components. In contrast, eudaimonic well-being, as proposed by Ryff (1989), focuses on meaningful living and self-realization.

The relationship between technostress and psychological well-being has become an important area of research in the context of increasing digitalization. Research consistently indicates a significant negative relationship between the two constructs, suggesting that as technostress increases, psychological well-being tends to decrease (Ayyagari et al., 2011; Ragu-Nathan et al., 2008). Given the increasing reliance on digital technologies in education, workplaces, and social life, understanding technostress is essential. The present study

aims to examine whether a statistically significant relationship exists between technostress and psychological well-being among regular technology users.

Review of Literature

A growing body of empirical research has explored the relationship between technostress and psychological well-being across diverse populations and contexts.

Azad et al. (2023) investigated the effect of technostress on the psychological well-being of 564 postgraduate students enrolled in Computer Science, Mathematics, and Education programs. Their findings indicated a significant link between technostress and psychological well-being, with techno-insecurity—the fear of being unable to keep up with technology—emerging as a particularly influential dimension. Notably, no significant gender differences were found in technology performance.

Rai (2025) examined the relationship between quality of work life, job satisfaction, technostress, and psychological well-being among 388 teachers using blended learning methods. Employing a moderated mediation model, the study found that job satisfaction

mediated the relationship between quality of work life and psychological well-being, while technostress negatively moderated this relationship, weakening the link between quality of work life and well-being when technostress was elevated.

Wang et al. (2022) studied 235 employees to understand how technostress affects well-being in digital work environments. The findings demonstrated that technostress reduced well-being primarily through the mechanism of work exhaustion. Additionally, workplace knowledge diversity was identified as a protective factor that buffered the negative effects of technostress on employee well-being.

Hang et al. (2022) examined the moderating effects of technostress inhibitors on the relationship between techno-stressors and employee well-being among 355 employees. The results indicated that organizational support mechanisms and technostress inhibitors significantly improved employees' psychological health by reducing the impact of techno-stressors.

Vallone et al. (2023) conducted a multi-country study involving 1,541 university students from five countries to explore the

indirect effects of technostress on psychological health through academic motivation. Techno-overload and work-home conflict were found to negatively affect psychological health, while techno-ease and intrinsic motivation served as protective factors. Academic motivation was found to mediate the relationship between technostress and symptoms of anxiety and depression.

Hebrean et al. (2023) studied 372 employees to examine how instant messaging-related technostress affects work performance and well-being. Frequent use of messaging applications was associated with increased feelings of techno-complexity, techno-overload, and techno-invasion, all of which negatively impacted both work performance and psychological well-being.

Srivastava et al. (2015) examined the impact of technostress on psychological well-being and the role of coping strategies among working professionals using a quantitative survey method. The study found that technostress negatively affects well-being by causing stress and fatigue; however, individuals with stronger coping skills

experienced less pronounced negative effects.

Califf and Brooks (2020) investigated the effect of technostress on well-being and the mediating role of work-life balance using an online survey administered to employees. The findings revealed that technostress reduces psychological well-being and disrupts work-life balance, which in turn further diminishes overall life satisfaction.

Methodology

Research Design

This study adopted a quantitative, correlational research design. The purpose was to examine whether a statistically significant relationship exists between technostress and psychological well-being without manipulating the variables. The design was cross-sectional in nature, with data collected at a single point in time. A five-point Likert scale questionnaire was used as the primary data collection instrument, and a survey method was employed to collect data from participants.

Research Objectives

The study aimed to:

(a) measure the level of technostress among participants, (b) assess their psychological well-being, and (c) determine whether a significant relationship exists between the two variables.

Hypothesis

There is a significant relationship between technostress and psychological well-being.

Variables

The independent variable (IV) was technostress, and the dependent variable (DV) was psychological well-being.

Participants

The target population comprised individuals who regularly use digital technology. A convenience sample of 50 participants (N = 50) was recruited. Participants were adults aged 20–30 years who were regular users of digital technology (e.g., smartphones, computers, internet) with a minimum daily usage of 2–3 hours, proficient in the survey language, and willing to provide informed consent.

To keep the results focused, people with severe mental health conditions (such as major depression or schizophrenia) were not

included, since these issues could influence psychological well-being in ways unrelated to technology use. The study also excluded anyone who rarely used technology, gave inconsistent answers, or did not finish the survey, to ensure the data accurately reflected the experiences of regular technology users.

Instruments

Technostress Creators' Inventory (TCI)

The Technostress Creators' Inventory (TCI), developed by Tarafdar et al. (2007), is a research tool used to measure sources of technostress across five dimensions: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. Respondents rated items on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with each dimension assessed through multiple items.

Ryff's Psychological Well-Being Scale (PWB)

Ryff's Psychological Well-Being Scale (PWB), developed by Ryff (1989), is a widely used measure of psychological well-being grounded in eudaimonic theory. The scale assesses six components of optimal

functioning: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. The 12-item version was used, with respondents rating items on a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).

Data Analysis

Data were analysed using SPSS and Microsoft Excel. Descriptive statistics (mean, standard deviation, frequency distribution) were calculated for both variables. Pearson product-moment correlation was used to test the hypothesis regarding the relationship between technostress and psychological well-being. The significance level was set at $p < .05$.

Results

Descriptive statistics indicated that the mean technostress score ($M = 61.68$, $SD = 2.19$) represented a moderate to relatively high level of technostress, with low variability across participants. The mean psychological well-being score ($M = 45.56$, $SD = 5.84$) indicated a moderate level of psychological well-being, with moderate variability.

Pearson correlation analysis revealed a weak negative relationship between technostress and psychological well-being ($r = -.18$, $N = 50$, $p = .197$). The correlation was not statistically significant at the .05 level ($p > .05$), indicating that the observed negative trend was insufficient to conclude a meaningful relationship between the two variables in this sample.

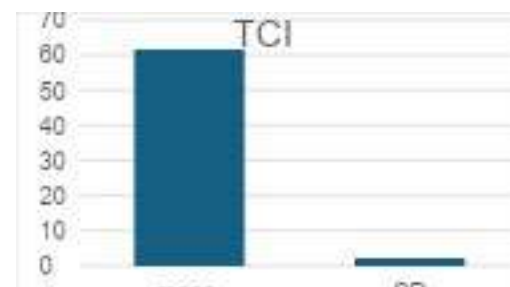
Table 1

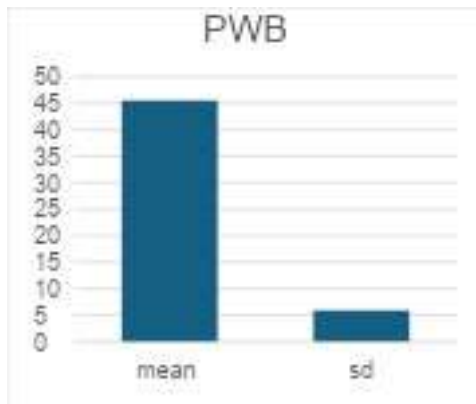
Pearson Correlation Between Technostress (TCI) and Psychological Well-Being (PWB)

Variable	<i>R</i>	<i>P</i>	N	Direction
PWB & TCI	-.18	.197	50	Negative

Note. TCI = Technostress Creators' Inventory; PWB = Psychological Well-Being Scale.

Table 3: shows mean and SD for psychological well-being.





Discussion

The present study examined the relationship between technostress and psychological well-being. Contrary to the hypothesized significant negative relationship, the findings revealed a weak, non-significant negative correlation ($r = -.18$, $p > .05$). Although the directionality of the correlation was consistent with prior literature (Ayyagari et al., 2011; Califf & Brooks, 2020), the magnitude of the effect was insufficient to support the hypothesis.

The non-significant result may reflect contemporary adaptations to technology use. Individuals today may have developed greater digital literacy and familiarity with ICTs, thereby reducing the perceived stressfulness of technology-related demands. What was once experienced as novel and overwhelming may now be routine and

manageable for many adults aged 20–30 years a generation that has grown up with digital technology.

Psychological well-being is a multidimensional construct (Ryff, 1989) influenced by a range of variables beyond technostress alone. Factors such as social support, coping strategies, personality traits, and life circumstances may exert stronger influences on well-being, potentially attenuating or overshadowing the effects of technostress in the present sample (Wang et al., 2022). It is also plausible that mediating or moderating variables such as digital competence, work environment, or ageshaped the relationship in ways not captured by the current design.

Methodological limitations also warrant consideration. The small, homogeneous sample ($N = 50$), restricted age range (20–30 years), and reliance on self-report measures may have constrained the statistical power of the analysis. Self-report data are susceptible to social desirability bias and subjective variation in participants' perceptions of technostress and well-being. These factors collectively reduce the generalizability of the findings and may have contributed to the

weak and non-significant correlation observed.

Despite these limitations, the findings have practical and theoretical value. They underscore the complexity of the technostress–well-being relationship and highlight the importance of considering individual differences and contextual factors in future research. The moderate levels of both technostress ($M = 61.68$) and psychological well-being ($M = 45.56$) observed in the sample suggest that participants were neither experiencing extreme distress nor high levels of flourishing, indicating a middle ground that warrants continued investigation.

Conclusion

The present study aimed to examine the relationship between technostress and psychological well-being. The findings indicated a weak negative correlation ($r = -.18$) that was not statistically significant ($p > .05$). Therefore, the hypothesis proposing a significant relationship between technostress and psychological well-being was not supported. The results suggest that, within this sample, technostress does not have a measurable impact on psychological well-

being, and that other personal, social, and contextual factors may play a more decisive role in determining individuals' psychological health in digitally immersive environments.

These findings contribute to an evolving understanding of technology-related stress and call for more nuanced, longitudinal, and multivariable investigations. Organizations, educational institutions, and policymakers are encouraged to implement digital wellness programs, promote healthy technology habits, and raise awareness about technostress, irrespective of its direct statistical relationship with well-being, as individual experiences of technology-related stress remain meaningful and context-dependent.

Limitations

The study may be limited by a relatively small sample, which restricts the generalizability of findings to a broader population. The reliance on a self-reported questionnaire introduces potential biases. The tools or scales used to measure technostress and psychological well-being may not fully capture the complexity of these constructs. Technology evolves quickly, so

findings may become outdated as new tools and work environments emerge. Differences in types of technology use (e.g., remote work tools, social media, or IT systems) are not always distinguished, which may affect the level and type of technostress experienced.

Implications

The findings contribute to existing literature by strengthening the understanding of how technostress influences psychological well-being. If a significant relationship is found, it supports stress theories and technology acceptance frameworks by highlighting the psychological costs of excessive or poorly managed technology use. It may also encourage further research into targeted interventions and organizational strategies aimed at mitigating technostress and promoting digital well-being.

Scope for Future Research

Longitudinal and Causal research tracks individuals over time to determine cause-and-effect. Moderating variables checks change strength of relationship like Age, gender, personality traits and mediator variables explain the mechanism. Future work can link technostress with theories from

occupational health psychology and positive psychology.

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The data that support the findings of this study are available upon reasonable request from the corresponding author.

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☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis,
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Article

**SOCIAL COMPARISON AND TYPES OF PASSION AMONG ATHLETES IN
NORTHEAST INDIA**

Article History

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Abstract

Social comparison and passion are two psychological constructs that strongly shape athletes' motivation, emotional experience, and engagement with sport. Guided by Festinger's Social Comparison Theory and Vallerand's Dualistic Model of Passion, the present study examined the relationship between social comparison and two types of passion harmonious and obsessive among 229 athletes from Northeast India, representing both individual and team sports. Participants completed the Iowa Netherlands Comparison Orientation Measure (INCOM) and the Passion Scale. Data were analysed using independent samples t-tests, one-way ANOVA, and Pearson correlation. Results revealed no significant overall relationship between social comparison and passion; however, ability-based comparison was significantly and positively associated with obsessive passion. Athletes competing in individual sports reported significantly higher social comparison than those in team sports, while passion levels did not differ by

sport type. A significant gender difference emerged for passion but not for social comparison. Harmonious and obsessive passion were moderately and positively correlated, indicating that athletes can experience both forms of passion simultaneously. These findings suggest that although social comparison does not broadly predict passion, comparing one's abilities specifically may foster a more pressured, obsessive form of sport engagement. Implications for coaches and sport psychologists working to support healthier athlete engagement are discussed.

Keywords: Social Comparison, Harmonious Passion, Obsessive Passion, Athletes, Northeast India, Sport Psychology 3

Introduction

Modern competitive sport demands not only physical skill but also considerable psychological resilience. Athletes invest substantial time and effort into training and competition, frequently judging their progress by measuring themselves against teammates, rivals, and other performers encountered in training, competition, or on social media. Such social comparisons can shape how athletes view their abilities, how

motivated they feel, and how they experience their sport.

Athletes also differ in the nature of their attachment to sport. Some participate because they find the activity personally enjoyable and meaningful, while others feel compelled to continue because of external pressure, financial stakes, or fear of failure. Vallerand et al. (2003) captured this distinction in the Dualistic Model of Passion, which differentiates harmonious passion a balanced, self-endorsed engagement with an activity from obsessive passion, a rigid and pressure-driven engagement that can conflict with other areas of life. Understanding what predicts each form of passion is important for supporting athletes' long-term well-being and performance.

The growing reach of social media has intensified opportunities for athletes to compare their performances, achievements, and lifestyles with others around the world. While this visibility can be motivating, it may also generate feelings of inadequacy and pressure. The present study investigates the relationship between social comparison and the two types of passion among athletes in Northeast India, a region whose athletes have achieved notable success despite facing

constraints such as limited resources and unequal access to training facilities. The study further examines whether social comparison and passion differ according to gender and type of sport (individual versus team).

Athletes in individual and team sports may also be exposed to different comparison structures. Individual sport athletes are typically evaluated on personal records, rankings, and scores, which may heighten the salience of self-referenced comparison, whereas team sport athletes share both the responsibility and the outcome of performance with teammates, potentially diluting the pressure of individual comparison. Examining these structural differences alongside gender allows for a more complete understanding of how the sporting environment shapes athletes' psychological experiences. Given the limited research on these constructs among athletes from

Northeast India, the present study aims to contribute region-specific evidence that can inform coaching practices, athlete support programmes, and future sport psychology research in the Indian context.

Review Of Literature

Social comparison, first theorised by Festinger (1954), describes the process by which individuals evaluate their own abilities and opinions by referencing others, particularly in the absence of objective standards. Sport offers an unusually visible context for this process because performance is frequently expressed through scores, rankings, and records. Research on professional soccer players found that athletes tend to favour self-enhancing comparisons, especially when performance standards are ambiguous (Vanypere, 1992). Work with tennis players similarly showed that comparison direction upward, downward, or lateral combined with match outcomes to influence athletes' self-esteem (Bardel et al., 2010). Qualitative research with older athletes has echoed this pattern, showing that downward comparison is often used to protect self-worth (Horton et al., 2019).

Studies examining the emotional consequences of comparison suggest the effects are not uniform. Diel et al. (2021), using experience sampling, found that upward comparison with slightly superior athletes increased motivation and effort, whereas comparison with markedly superior athletes produced disengagement; downward

comparison improved mood but reduced motivation to improve. Related work on student athletes found that the emotional tone of comparison benign versus malicious envy determined whether upward comparison enhanced or undermined effort (Rack, 2023).

Passion, as conceptualised in the Dualistic Model of Passion (Vallerand et al., 2003), distinguishes harmonious passion, which arises from autonomous engagement and coexists with other life domains, from obsessive passion, which arises from internal or external pressures and can dominate an individual's identity. Harmonious passion has consistently been linked to positive affect, enjoyment, and psychological adjustment (Philippe et al., 2010), whereas obsessive passion has been associated with conflict, aggression under self-threat

(Donahue et al., 2009), and poorer emotional regulation. Longitudinal and correlational work has further linked harmonious passion to lower burnout, largely because it satisfies athletes' needs for autonomy, competence, and relatedness, while obsessive passion does not offer this protective function (Curran et al., 2011, 2012; Lopes & Vallerand, 2020).

Gender has also been examined as a potential moderator of both constructs, though

findings remain mixed. Some research suggests that male athletes may be socialised toward more competitive, outcome-focused engagement with sport, which could predispose them toward obsessive rather than harmonious passion, while female athletes have sometimes reported comparatively balanced engagement patterns. However, other work has found no consistent gender differences in comparison tendencies, suggesting that exposure to competitive evaluation in sport may be similarly pervasive for male and female athletes regardless of underlying motivational differences. Similarly, type of sport has been proposed as a contextual factor shaping both comparison and passion, given that individual and team sports differ in how performance outcomes are evaluated and shared.

Comparatively few studies have examined social comparison and passion together. Recent research on fitness-technology users found that individuals high in obsessive passion reacted more negatively to unfavourable comparison data, whereas those high in harmonious passion tended to interpret comparisons as a source of motivation rather than threat (James et al., 2025). This suggests that the psychological

impact of social comparison may depend on an individual's underlying passion orientation rather than operating uniformly across athletes. Given the limited research on this relationship within the Indian context, and particularly in Northeast India, the present study addresses this gap.

Methodology

The study employed a quantitative, correlational, cross-sectional design to examine the association between social comparison and types of passion among athletes, and to test for differences based on gender and sport type.

Sample: A convenience sample of 229 athletes aged 18–30 years, representing individual sports ($n = 95$) and team sports ($n = 133$), was recruited from across Northeast India, including Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Arunachal Pradesh, and Sikkim. Eligible participants were currently active athletes competing at school, college, club, district, state, or national level who had provided informed consent. Non-athletes, individuals below 18 years, athletes outside Northeast India, and those with incomplete responses were excluded.

Measures: Social comparison was measured using the 11-item Iowa–Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999), which assesses comparison of abilities and comparison of opinions on a 5-point scale, with two items reverse-scored. Passion was measured using the 17-item Passion Scale (Vallerand et al., 2003), comprising 7 items each for harmonious and obsessive passion, rated on a 7-point scale, along with three additional criterion items. A demographic sheet collected information on gender and sport type.

Procedure: Data were collected through an online Google Form containing an informed-consent statement, demographic questions, and the two scales. The survey was distributed through social media, sports community groups, and personal networks. Anonymity and confidentiality were assured, and participation was voluntary. Incomplete responses were discarded prior to analysis.

Statistical Analysis: Data were analysed using Jamovi. Descriptive statistics summarised the sample; independent samples t-tests compared individual and team sport athletes; a 2×2 (gender $\times$ sport type) ANOVA examined effects on passion and

social comparison; and Pearson correlations examined associations among social comparison, ability comparison, opinion comparison, harmonious passion, and obsessive passion. Significance was set at $p < .05$.

ANALYSIS AND FINDINGS

Descriptive statistics showed broadly similar passion scores between individual sport athletes ($M = 65.5$, $SD = 16.86$) and team sport athletes ($M = 66.8$, $SD = 19.73$), whereas individual sport athletes reported higher social comparison ($M = 35.9$, $SD = 4.96$) than team sport athletes ($M = 34.1$, $SD = 5.23$).

Independent samples t-tests confirmed that passion did not differ significantly between individual and team sport athletes, $t(226) = -0.52$, $p = .60$. Social comparison, however, differed significantly by sport type, $t(226) = 2.57$, $p = .01$, with individual sport athletes reporting greater social comparison.

A weak, non-significant positive correlation emerged between overall social comparison and overall passion, $r = .125$, $p = .059$, indicating that social comparison was not a meaningful predictor of general passion in this sample.

The 2×2 ANOVA showed no significant effect of sport type on passion, $F(1, 224) = 0.01$, $p = .905$, but a significant effect of gender, $F(1, 224) = 4.14$, $p = .043$, with male and female athletes differing in passion levels; the gender $\times$ sport interaction was non-significant, $F(1, 224) = 0.02$, $p = .891$. For social comparison, sport type had a significant effect, $F(1, 224)$

$= 9.33$, $p = .003$, again favouring individual sport athletes, while gender showed no significant effect, $F(1, 224) = 0.47$, $p = .496$, and the interaction approached but did not reach significance, $F(1, 224) = 3.36$, $p = .068$.

The correlation matrix of specific comparison and passion subtypes offered a more nuanced picture. Ability comparison and opinion comparison were significantly and positively correlated, $r = .20$, $p = .003$. Ability comparison showed a significant positive correlation with obsessive passion, $r = .18$, $p = .006$, but no significant association with harmonious passion, $r = .04$, $p = .562$. Opinion comparison was not significantly related to either obsessive passion, $r = -.03$, $p = .663$, or harmonious passion, $r = .11$, $p = .108$. The strongest association in the matrix was between obsessive and harmonious passion, $r = .53$, $p < .001$, indicating that

athletes high in one form of passion often also reported elevated levels of the other. 8

Overall, these findings suggest that while broad social comparison tendencies are not strongly linked to passion, the specific tendency to compare one's abilities with others is associated with a more pressured, obsessive style of engagement with sport, whereas it bears no relationship to the more balanced, harmonious form.

Conclusion

This study examined the relationship between social comparison and types of passion among athletes in Northeast India. Overall social comparison was not significantly related to overall passion, suggesting that passion is shaped by a range of factors beyond comparison tendencies, such as personal enjoyment, intrinsic motivation, and coaching support. However, ability-based comparison specifically was positively associated with obsessive passion, indicating that athletes who habitually judge their skills against others may be more prone to a pressured, identity-consuming form of sport engagement. No comparable association was found between ability comparison and harmonious passion, nor

between opinion comparison and either form of passion.

Athletes in individual sports reported significantly higher social comparison than those in team sports, likely reflecting the more individualised evaluation structures of these disciplines, while passion levels did not differ by sport type. A significant gender difference was found for passion, though not for social comparison, suggesting that motivational and experiential differences between male and female athletes may not stem from differing comparison tendencies.

Several limitations should be considered when interpreting these findings. The use of convenience sampling means the results may not generalise to all athletes in Northeast India, and the reliance on self-report questionnaires may have introduced socially desirable responding. The cross-sectional design also precludes any causal interpretation of the relationship between ability comparison and obsessive passion; longitudinal designs would be better suited to establishing directionality. Finally, the study did not account for other psychological variables such as self-esteem, coping style, or coach and parental support that may also

shape how athletes experience comparison and passion.

These findings carry practical implications for coaches and sport psychologists: interventions aimed at reducing obsessive passion and its associated risks of burnout may benefit from addressing athletes' habitual ability comparisons specifically, rather than targeting social comparison broadly. Future research would benefit from larger, more representative samples beyond convenience sampling, inclusion of athletes from other Indian regions, longitudinal designs capable of establishing causal direction, and the incorporation of related constructs such as self-esteem, motivation, and coping strategies. Qualitative approaches may also help capture the lived experience of comparison and passion in greater depth. Overall, the study contributes to a limited body of research on Northeast Indian athletes and highlights the value of examining specific facets of social comparison, rather than a single global construct, when studying its psychological consequences for athletes.

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5. Data Availability Statement:

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6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original, Draft Data Curation, Formal Analysis, Writing – Review; Editing

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Article

COMPULSIVE INTERNET USE AND ANXIETY SENSITIVITY AMONG COLLEGE STUDENTS: A CROSS-SECTIONAL CORRELATIONAL STUDY

Article History

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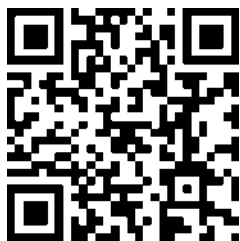
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ABSTRACT

Compulsive internet use has become increasingly common among college students and has been associated with various psychological difficulties. One psychological factor that may be related to excessive internet use is anxiety sensitivity, which refers to the fear of anxiety-related physical, cognitive, and social sensations due to beliefs that they may have harmful consequences. Understanding the relationship between compulsive internet use and anxiety sensitivity is important. The present study aims to examine the relationship between compulsive internet use and anxiety sensitivity among college students. A quantitative cross-sectional correlational research design was employed, with a convenience sample of 120 college students aged 18–25 years. Data were collected using the Compulsive Internet Use Scale (CIUS) and the Anxiety Sensitivity Index-3 (ASI-3) and analysed using descriptive statistics and Spearman's rank-order correlation. The findings revealed a significant positive

relationship between compulsive internet use and anxiety sensitivity, indicating that students with higher levels of compulsive internet use also reported higher levels of anxiety sensitivity. These findings contribute to a better understanding of the psychological factors associated with excessive internet use and may support the development of preventive interventions and mental health programs that promote healthier internet use and improved psychological well-being among college students.

Keywords:

Compulsive Internet Use, Anxiety Sensitivity, College Students, Psychological Well-being, Correlation.

INTRODUCTION

The internet has become a necessary component of daily life, college students who use it for social networking, communication, entertainment, and academic purposes (Pew Research Center, 2024). Although there are many advantages to using the internet, excessive and unrestrained use has become a rising mental health risk (Brand et al., 2019). The term "compulsive internet use" (CIU) describes excessive and ongoing internet use that is defined by an inability to manage online behavior even in the face of

detrimental effects on social, emotional, intellectual, and personal functioning (Meerkerk et al., 2009). People who use the internet obsessively frequently suffer from poor focus, disturbed sleep, decreased productivity, problems interacting with others, and elevated psychological anguish (Kuss & Lopez-Fernandez, 2016). College students may be especially susceptible to acquiring maladaptive online habits since they are in a developmental stage characterized by increased independence, academic pressures, and social adjustment (Anderson et al., 2017).

Anxiety sensitivity (AS) is a significant psychological component that may be linked to excessive internet use (Taylor, 2014). The fear of anxiety-related feelings due to the conviction that these feelings could have negative effects on one's body, mind, or social interactions is known as anxiety sensitivity (Reiss & McNally, 1985; Taylor et al., 2007). People who are highly sensitive to anxiety often see typical signs of anxiety, including elevated heart rate, lightheadedness, or trouble focusing, as dangerous or frightening (Taylor et al., 2007). Increased susceptibility to anxiety disorders and other psychological issues, avoidance behaviors, and emotional suffering can all be

consequences of this elevated dread (Naragon-Gainey, 2010). Because anxiety sensitivity contributes to the emergence and maintenance of several emotional illnesses, it has also been recognized as a transdiagnostic risk factor (Olatunji & Wolitzky-Taylor, 2009).

The inclination of people with elevated anxiety sensitivity to utilize the internet as a way to escape or control difficult emotional experiences may account for the correlation between obsessive internet use and anxiety sensitivity (Spada, 2014). Social media, gaming, streaming videos, and browsing are examples of online activities that might momentarily alleviate anxious thoughts and unpleasant feelings (Kardefelt-Winther, 2014). On the other hand, frequent use of the internet as a coping mechanism may progressively strengthen obsessive usage tendencies (Brand et al., 2019). Excessive internet use may increase psychological suffering by interfering with sleep, increasing social isolation, and decreasing opportunities for adaptive coping—all of which may increase anxiety sensitivity (Kuss & Griffiths, 2012). Both conceptions seem to share psychological mechanisms involving emotional regulation, avoidance, and maladaptive coping, even though the

direction of this relationship is still unknown (Brand et al., 2019).

Anxiety, despair, stress, loneliness, and decreased psychological well-being are among the mental health consequences linked to compulsive internet use, according to prior studies (Kuss & Lopez-Fernandez, 2016; Tokunaga, 2017). Similar to this, anxiety sensitivity has been extensively researched as a predictor of emotional distress, panic attacks, and anxiety disorders (Taylor, 2014). However, only a small number of research have specifically looked at the connection between anxiety sensitivity and compulsive internet use, especially among Indian college students. The majority of current research has concentrated on general anxiety rather than the cognitive vulnerability that anxiety sensitivity represents, underscoring the need for more study in this field (Taylor, 2014).

Thus, the current study attempts to investigate the connection between college students' obsessive internet use and anxiety sensitivity. It is predicted that compulsive internet use and anxiety sensitivity would be significantly positively correlated, meaning that higher levels of compulsive internet use will be linked to higher levels of anxiety

sensitivity. Knowing this connection could help identify psychological risk factors linked to excessive internet use and aid in the creation of mental health programs and preventive interventions for college students.

REVIEW OF LITERATURE

The growing dependence of young adults on digital technologies has made Compulsive Internet Use (CIU) a significant field of psychological research. Excessive and uncontrolled internet use that impairs social, psychological, vocational, and academic functioning is referred to as CIU (Meerkerk et al., 2009). Loss of control, obsession with online activities, withdrawal symptoms, and continuing usage despite negative outcomes are characteristics of CIU, in contrast to regular or frequent internet use. Meerkerk et al. (2009) created the Compulsive Internet Use Scale (CIUS) to measure this construct. It is now one of the most popular measures of problematic internet use. The Interaction of Person–Affect–Cognition–Execution (I-PACE) model was developed by Brand et al. (2019) to explain the psychological mechanisms underlying excessive internet use. It proposes that individual predispositions, emotional responses, cognitive biases, and executive functioning

interact to influence the development and maintenance of addictive internet behaviors. This concept suggests that people in emotional distress can turn more and more to internet-based activities as a maladaptive coping mechanism, which would eventually reinforce obsessive use habits. College students are a demographic that is especially susceptible to developing compulsive internet use because they deal with a lot of academic stress, social transitions, and more independence.

Anxiety Sensitivity (AS) is a significant psychological concept related to emotional functioning. According to Reiss and McNally (1985), anxiety sensitivity is the fear of anxiety-related feelings that results from the conviction that these feelings could have detrimental effects on one's body, mind, or social interactions. Anxiety sensitivity, in contrast to anxiety itself, is a person's propensity to misinterpret typical physiological and cognitive indicators of anxiety. People with high anxiety sensitivity frequently interpret symptoms like elevated heart rate, lightheadedness, shaking, or trouble focusing as signs of grave danger, which can result in higher emotional distress and avoidance behaviors. The Anxiety Sensitivity Index-3 (ASI-3) was created by

Taylor et al. (2007) to better measure this construct. It evaluates three aspects of anxiety sensitivity: social, cognitive, and bodily concerns. The ASI-3 is extensively utilized in both clinical and non-clinical populations and has shown outstanding validity and reliability. It has been acknowledged that anxiety sensitivity is a transdiagnostic vulnerability factor, which means it plays a role in the emergence and persistence of several emotional illnesses rather than just one mental illness. In support of this theory, a meta-analysis by Naragon-Gainey (2010) showed that anxiety sensitivity is strongly linked to both anxiety disorders and depressive symptoms. Therefore, while under stress, those with high anxiety sensitivity are more likely to exhibit maladaptive emotional reactions, cognitive distortions, and inefficient coping mechanisms.

Relatively few research have examined the direct association between anxiety sensitivity and compulsive internet use, despite the fact that both have been extensively investigated separately. According to theoretical interpretations, people who are highly sensitive to anxiety may use the internet to control or escape from unpleasant internal feelings. According to Spada (2014),

problematic internet use serves as a maladaptive coping mechanism in which people overindulge in online activities in order to momentarily alleviate unpleasant feelings and psychological suffering. In a similar vein, Kardefelt-Winther (2014) presented the Compensatory Internet Use Model, which contends that excessive internet use is frequently a reaction to underlying psychosocial issues rather than being purely motivated by the fulfilling quality of online activities. As a result, people who are feeling stress, worry, or emotional pain may rely more and more on the internet to get short-term relief, which could reinforce obsessive behavioral habits. This viewpoint is further supported by the I-PACE model, which suggests that emotional regulation issues and unhealthy coping strategies combine with individual vulnerabilities to raise the likelihood of internet addiction (Brand et al., 2019). Despite these theoretical justifications, there are still few empirical research that specifically look at the connection between anxiety sensitivity and compulsive internet use, especially in Indian college students. Rather than anxiety sensitivity as a particular cognitive vulnerability, the majority of prior research has concentrated on general anxiety, sadness,

or stress. As a result, there is a substantial knowledge vacuum on whether those who experience anxiety-related symptoms are also more prone to develop compulsive internet use. Closing this gap could help us better understand the psychological processes that underlie excessive internet use and have important ramifications for mental health programs and preventive interventions that encourage college students to utilize technology in a healthier way.

METHODOLOGY

RESEARCH DESIGN

The current study used a quantitative cross-sectional correlational research approach to investigate the association between college students' anxiety sensitivity and compulsive internet use. Standardized self-report questionnaires were used to gather data at a specific point in time, and statistical analyses were carried out to ascertain the correlation between the research variables.

SAMPLE

120 undergraduate and postgraduate students who were chosen by convenience sampling made up the study. Participants, who ranged in age from 18 to 25, constituted the study's target demographic.

INCLUSION AND EXCLUSION CRITERIA

College students between the ages of 18 and 25 who regularly use cellphones, computers, or tablets to access the internet met the inclusion requirements. They also had to be willing to participate in the study. Students who were receiving psychiatric or psychological treatment for serious mental illnesses or who were using drugs that might have a substantial impact on psychological functioning were not allowed to participate.

INSTRUMENTS

COMPULSIVE INTERNET USE SCALE (CIUS)

Meerkerk et al. (2009) created the CIUS, a 14-item self-report measure that assesses compulsive internet use in areas like loss of control, withdrawal, obsession, coping, and conflict. Higher scores indicate more compulsive internet use. Responses are recorded on a 5-point Likert scale from 0 (Never) to 4 (Very Often).

ANXIETY SENSITIVITY SCALE – 3 (ASI – 3)

Taylor et al. (2007) created the ASI-3, an 18-item self-report test that evaluates anxiety sensitivity in relation to physical, cognitive,

and social concerns. Higher scores indicate greater anxiety sensitivity. Items are assessed on a 5-point Likert scale from 0 (Very Little) to 4 (Very Much).

PROCEDURE

Eligible participants were given an online Google Forms survey to complete in order to gather data. Participants completed the CIUS and ASI-3 after giving their informed consent and completing a demographic questionnaire. Using Jamovi statistical software, the gathered replies were exported and examined.

ETHICAL CONSIDERATIONS

Informed consent was acquired prior to data collection, and participation was entirely voluntary. Confidentiality and anonymity were guaranteed to participants, and no personally identifiable information was gathered.

STATISTICAL ANALYSIS

The data was summarized and normalcy was evaluated using descriptive statistics. Spearman's rank-order correlation was utilized to investigate the connection between obsessive internet use and anxiety sensitivity because the assumptions of normalcy were not satisfied. Jamovi was used for statistical

analysis, and $p < .05$ was chosen as the significance level.

RESULTS AND ANALYSIS

Table 1 shows the descriptive statistics of the variables – Compulsive Internet Use and Anxiety Sensitivity

Table 1

DESCRIPTIVES	CIUS	ASI
Mean	27.60	27.10
Median	27.00	28.00
Standard Deviation	9.24	15.00
Minimum	1	0
Maximum	51	58
Shapiro – Wilk W	0.988	0.975
Shapiro – Wilk P	0.344	0.024

The Anxiety Sensitivity Index (ASI) and Compulsive Internet Use Scale (CIUS) scores from 120 participants were used to compute the descriptive statistics. With a mean score of 27.60 (SD = 9.24) and a median of 27.00, the CIUS scores varied from 1 to 51, suggesting that the distribution of scores was reasonably balanced around the center value. With a mean score of 27.10 (SD = 15.00) and a median of 28.00, the ASI values varied from 0 to 58.

The Shapiro-Wilk test was used to determine whether the data was normal. Given that the resultant p-value was larger than .05, the CIUS scores were determined to be normally distributed ($W = .988$, $p = .344$). The ASI scores, on the other hand, had a p-value of less than .05 and a substantial departure from normalcy ($W = .975$, $p = .024$). The association between obsessive internet use and anxiety sensitivity was investigated using Spearman's rank-order correlation because one of the study variables did not satisfy the assumption of normality.

Table 2 shows the Spearman's correlation between Compulsive Internet Use and Anxiety Sensitivity

Table 2

Spearman's rho	0.421
df	118
P – value	<0.001

The association between college students' obsessive internet use and anxiety sensitivity was investigated using a Spearman's rank-order correlation. Anxiety Sensitivity Index (ASI) scores and Compulsive Internet Use Scale (CIUS) scores were found to have a statistically

significant positive connection ($r_s = .421$, $p < .001$). This result suggests that individuals' levels of anxiety sensitivity were correlated with their obsessive internet use.

At the .001 level, the observed link was statistically significant ($r_s = .421$, $p < .001$), suggesting that the association was unlikely to have happened by accident. Consequently, the results confirm that there is a strong positive correlation between college students' anxiety sensitivity and compulsive internet use.

DISCUSSION

The current study looked at the connection between anxiety sensitivity and obsessive internet use in college students between the ages of 18 and 25. The results showed a statistically significant and moderately positive correlation between anxiety sensitivity and compulsive internet usage ($r_s = .421$, $p < .001$), meaning that students who reported higher levels of anxiety sensitivity also reported higher levels of compulsive internet use. These results imply that young adults' excessive and maladaptive internet use may be significantly influenced by anxiety-related cognitive vulnerability.

The current results are in line with other research showing a strong correlation

between excessive internet use and psychological suffering and maladaptive coping mechanisms. According to Kuss and Lopez-Fernandez's (2016) comprehensive review, problematic internet use is linked to sleep difficulties, anxiety, sadness, loneliness, and poor psychosocial functioning. Similar to this, Brand et al. (2019) suggested that inadequate self-regulation, emotional reactions, cognitive processes, and personal vulnerabilities interact to sustain addictive online behaviors using the Interaction of Person–Affect–Cognition–Execution (I-PACE) model. The current research lends credence to this theory by indicating that anxiety sensitivity could be one of the psychological vulnerabilities causing excessive internet use.

Anxiety sensitivity hypothesis can also be used to explain the results. Anxiety sensitivity, according to Reiss and McNally (1985), is the fear of anxiety-related feelings stemming from convictions that these feelings have negative effects. Therefore, typical physiological and cognitive feelings are more likely to be interpreted as threatening by those with high anxiety sensitivity, leading to increased emotional distress. According to Taylor et al. (2007), anxiety sensitivity includes social, cognitive,

and physical issues, all of which increase emotional susceptibility. According to the current study, anxiety sensitivity may also be linked to maladaptive behavioral outcomes like compulsive internet use, which is consistent with Naragon-Gainey's (2010) identification of anxiety sensitivity as a transdiagnostic vulnerability factor associated with anxiety and depressive symptoms.

The Compensatory Internet Use Model put forth by Kardefelt-Winther (2014), which contends that people frequently use the internet to deal with underlying psychological discomfort, may also account for the link shown in this study. Similarly, according to Spada (2014), problematic internet use serves as an emotion-focused coping mechanism that offers momentary respite from unpleasant emotional states. As a result, college students who are more sensitive to anxiety may turn to online activities as a way to cope with upsetting ideas and feelings, which could eventually reinforce compulsive internet use through repeated emotional relief.

Despite the statistical significance of the relationship found in this study, its modest strength suggests that anxiety sensitivity is

just one of several characteristics that contribute to compulsive internet use. Excessive internet use may also be influenced by other behavioral, psychological, and environmental factors. However, the results emphasize how crucial it is to measure anxiety sensitivity while addressing college students' problematic internet use. Reducing excessive internet use and improving psychological well-being may be possible with interventions that emphasize emotional regulation, adaptive coping techniques, and anxiety management. In order to further understand the direction of this association and investigate the mechanisms underlying anxiety sensitivity and compulsive internet use, future research should make use of longitudinal methods.

CONCLUSION

The present study examined the relationship between compulsive internet use and anxiety sensitivity among college students aged 18–25 years. Using a quantitative cross-sectional correlational design, data were collected from 120 participants using the Compulsive Internet Use Scale (CIUS) and the Anxiety Sensitivity Index-3 (ASI-3). The findings revealed a moderately positive and statistically significant relationship between

compulsive internet use and anxiety sensitivity ($r_s = .421, p < .001$), supporting the hypothesis that higher levels of compulsive internet use are associated with higher levels of anxiety sensitivity.

The findings are consistent with previous literature suggesting that compulsive internet use is associated with psychological vulnerabilities and maladaptive coping. Individuals with greater anxiety sensitivity may rely on internet-based activities to manage emotional distress, which can reinforce excessive internet use over time. Anxiety sensitivity is only one of several factors contributing to compulsive internet use.

The study highlights the importance of identifying anxiety sensitivity as a potential psychological risk factor when addressing problematic internet use among college students. Educational institutions and mental health professionals should promote healthy digital habits, emotional regulation, and adaptive coping strategies to reduce excessive internet use. Future research should employ longitudinal designs and larger, more diverse samples to better understand the causal relationship between compulsive internet use and anxiety

sensitivity and to inform effective prevention and intervention strategies.

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3. Ethics Approval:

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4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

□ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

***A QUALITATIVE STUDY ON THE LIVED EXPERIENCES OF YOUNG ADULTS
WITH ADVANCED-AGE PARENTS***

Article History

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Introduction

Parenthood looks quite different today than it did a generation ago. Education, career-building, financial stability, and personal ambitions have pushed many people to delay marriage and childbearing, and reproductive technologies like IVF have made it possible to become a parent well past the age that was once considered typical. As a result, delayed parenthood is now common enough that a whole generation of young adults has grown up with significantly older parents, yet we know surprisingly little about what that experience is actually like from their side. Most of the existing research on advanced-age parenthood looks at the parents: fertility, pregnancy risk, genetic outcomes, child development. The children themselves, how they make sense of having an older parent, especially once they're old enough to reflect on it, have barely been studied, particularly during young adulthood, when questions of identity, independence,

relationships, and the future start to matter most. For this study, "advanced-age parenthood" is defined as a parent-child age gap of 35 years or more, regardless of the parent's sex. The point of framing it this way, rather than around the parent's age at childbirth, is to keep the focus on what the age gap actually creates in day-to-day family life, the relationships, the emotions, the caregiving, the worries about the future, rather than on a number.

The study looks specifically at young adults aged 18–25, the stage Arnett calls emerging adulthood, marked by identity exploration, growing independence, instability, and future planning. For someone with an older parent, these same developmental tasks tend to arrive alongside a growing awareness of parental ageing, health decline, caregiving demands, and even mortality. That overlap is exactly what makes this age group worth studying. Several theoretical lenses inform the study. Life Course Theory, through its idea of "linked lives," explains how the timing of a life event like delayed parenthood ripples across generations, shaping parents and children together rather than separately. Five

dimensions of experience run through the study: interpersonal relationships, emotional experience, responsibility and role change, social and peer experience, and the impact on life choices and future concerns.

This is also where the study tries to fill a real gap. Most of what exists comes from Western samples and centres the parent's perspective; very little asks young adults, in their own words, what the experience means to them, and almost none of it comes from an Indian context, where family interdependence and caregiving obligation carry particular cultural weight. Using a phenomenological, qualitative approach, this study tries to capture that missing perspective directly, adding something to a conversation that has so far been dominated by medical and demographic framing.

Literature Review

Delayed marriage, education, career priorities, financial planning, and advances in reproductive medicine have all made advanced-age parenthood more common than it once was. Much of the research this has generated focuses on fertility, pregnancy,

and parental health, far less has looked at what it's like for the children raised in these families. What evidence does exist suggests the experience brings both real advantages and real challenges, across several areas of life. **Interpersonal relationships.** Young adults with older parents often describe close, meaningful relationships with them. Older parents tend to be seen as emotionally mature, patient, financially stable, and deeply invested in their children and the research suggests that what shapes the quality of these relationships isn't the parent's age itself so much as emotional closeness, family context, cultural expectations, and simply how much time parent and child get to spend together. Most participants in these studies describe supportive, caring parents, even while acknowledging that the wider age gap creates its own family dynamic. **Emotional experiences.** The emotional side of this is genuinely mixed. Many young adults describe gratitude, affection, and a real sense of security in their relationship with an older parent. At the same time, watching a parent age brings its own anxieties, uncertainty, sadness, and a kind of anticipatory grief about future decline or loss, which only

intensifies once caregiving responsibilities enter the picture. And yet, despite these worries, plenty of participants credit growing up with an older parent for their own emotional maturity, empathy, and resilience. **Responsibilities and role changes.** As parents age, family roles start to shift, sometimes earlier than expected. Young adults may find themselves offering emotional support, helping around the house, managing a parent's healthcare, or contributing financially, all while still navigating their own education, early careers, and sense of identity. That overlap can create real strain and role conflict. But caregiving isn't automatically experienced as a burden; many young adults frame it instead as an act of love and reciprocity, not an obligation forced on them. **Social and peer experiences.** For the most part, young adults with older parents don't see anything unusual about their family, until a peer interaction makes it visible. A classmate's comment, a friend's much-younger parents, or being asked if their parent is actually their grandparent can all trigger that awareness. Some describe feeling embarrassed or misunderstood in these moments; others push

back against the stereotype entirely, pointing instead to the stability and maturity their older parents bring. Either way, these moments reveal how much social comparison shapes the way young adults come to understand their own family situation.

Impact on life choices and future concerns.

Growing up aware of a parent's age tends to shape how young adults plan ahead. Many factor caregiving into decisions about education, jobs, where to live, marriage, and when to have children of their own, some deciding to start families earlier as a result, others drawing the opposite lesson and feeling reassured by the example of a parent who waited. Either way, an awareness of limited time together tends to deepen appreciation for the relationship, even as it adds a layer of uncertainty about what lies ahead. Put together, this body of research makes clear that growing up with an older parent isn't simply a story of hardship or of benefit. It's a constant interplay between emotional bonds, caregiving demands, social perception, and future planning.

Methodology

Given that the aim was to understand how young adults personally make sense of their experiences, their emotions, their interpretations, their meaning-making, a qualitative, phenomenological design made the most sense here; a quantitative approach measuring predetermined variables simply wouldn't capture what the study was after. Thematic Analysis was used to draw out the recurring patterns and themes across participants' accounts. Participants were recruited through purposive sampling based on clear inclusion criteria: young adults aged 21–25 with at least one parent with an age gap of 35 years or more. Nine participants took part in total, enough to allow a genuinely detailed look at individual experiences while still supporting a thorough qualitative analysis. Data came from semi-structured interviews, which let participants describe things in their own words while a set of guiding questions kept the interviews broadly consistent with one another. The questions covered family relationships, emotional experiences, responsibilities, peer interactions, future concerns, and how participants generally made sense of having an older parent. Standard ethical procedures

were followed throughout, supported by an information sheet, consent form, interview schedule, and full interview transcripts.

Transcripts were analysed using Thematic Analysis: reading and re-reading the material, coding meaningful segments, grouping related codes into categories, and finally building these into broader themes that captured what participants shared in common. This process produced six major themes describing the lived experience of young adults with advanced-age parents:

- Interpersonal Relationships
 - Emotional Experiences
 - Responsibilities and Role Changes
 - Social and Peer Experiences
 - Impact on Life Choices and Future Concerns
- These five themes became the framework for interpreting participants' experiences and addressing the study's research objectives.

Analysis & Findings

Five themes emerged from the interviews, and together they tell a more

complicated story than "good" or "bad", participants held closeness and worry, responsibility and growth, all at once.

Theme 1: Interpersonal Relationships.

Most participants described genuinely close, warm relationships with their parents, loving, supportive, emotionally available. Many credited their parents' life experience for the patience and wisdom that shaped a secure home. Disagreements did happen, usually over technology, values, or lifestyle choices, but these read as generational friction rather than real conflict. If anything, watching their parents grow older made participants more deliberate about spending time with them and appreciating what they had.

Theme 2: Emotional Experiences. The emotional picture was mixed but not contradictory, participants held gratitude and worry side by side. Love, pride, and a sense of security sat alongside a quieter, ongoing anxiety about their parents' health, retirement, and the possibility of losing them sooner than most of their peers would. That worry wasn't tied to any specific illness; it was more of a background awareness. And rather than pulling participants away, it

tended to draw them closer, pushing them to stay connected and treat family time as something not to take for granted.

Theme 3: Responsibilities and Role Changes. Many participants found themselves taking on real responsibility earlier than their friends did, helping around the house, managing a parent's healthcare, handling money, offering emotional support. As they noticed their parents struggling with tasks that used to be easy, most stepped in willingly, framing it as care rather than burden. That said, juggling these duties alongside school, work, and their own relationships wasn't always simple, and a few described shelving personal plans to keep up. Still, most saw real upside in it, more patience, more empathy, more independence than they think they'd otherwise have developed this early.

Theme 4: Social and Peer Experiences. For most participants, their family felt entirely normal, until someone else pointed out otherwise. A classmate's comment, a parent mistaken for a grandparent, a friend's obviously younger and more active parents these moments made the age gap visible in a

way it hadn't been before, and sometimes brought embarrassment or a sense of being different. But reactions varied a lot: plenty of participants pushed back against the idea that older necessarily means worse, pointing instead to the stability and wisdom their parents offered. Even those who noticed they were thinking about caregiving and retirement earlier than their friends generally didn't let that shake how they felt about their families.

Theme 5: Impact on Life Choices and Future Concerns. Parental age quietly shaped a lot of forward planning, where to study, whether to move away for work, how to balance a career with being available if needed. Several participants imagined staying close to home for exactly that reason. Views on their own future parenthood varied: some wanted to have children earlier than their parents did, so they'd have more years together; others actually saw upside in waiting, having watched their own parents parent well later in life. Underneath all of it was a quieter awareness that they might face loss earlier than most people their age, which, rather than being paralyzing, mostly pushed

them to be more present and intentional with the time they had.

Discussion

Relationships with parents varied widely while some participants felt genuinely close, others described real distance and communication that never quite flowed. A common pattern was feeling closer to mothers, with fathers seen more as providers than emotional confidants; a few even said they talked more easily with siblings than with their dads. Disagreements tended to center on lifestyle, independence, career, and friendships, and participants mostly chalked this up to generational differences rather than anything deeper. These frictions didn't threaten the relationship; they were just part of it. Love, when it showed up, tended to come through in actions more than words. This tracks with existing research on generational communication gaps, but adds something worth noting: having a much older parent doesn't necessarily weaken the bond, it just changes how that closeness gets expressed. Worry about parental health and ageing came up often, usually triggered by something concrete, an illness, a retirement,

a visible decline, which made participants more aware of their parents' mortality and, with that, more uncertain about the future. Alongside this came real pressure to grow up faster: many felt they needed to reach financial independence, or emotional readiness, before their parents could no longer support them. Notably, this worry showed up even among participants who felt emotionally distant from their parents, suggesting it isn't really about closeness. Over time, this seemed to mark a shift, from relying on parents to genuinely worrying about them. That shift showed up concretely in changing family roles. Some participants had already stepped into contributing financially or handling healthcare needs; others could see it coming as their parents aged. Some took this in stride as simply how families work; others felt the weight of arriving at "readiness" earlier than expected. What seemed to shape this wasn't just the parent's age, but their health, the family's financial situation, and expectations tied to being a son or daughter. Socially, most participants didn't face real judgment, occasional awkward moments aside, like a friend mistaking a father for a grandfather,

but they did notice a quieter kind of difference: carrying responsibilities their peers hadn't reached yet. This wasn't stigma so much as a mismatch in timing and expectation.

That mismatch carried into bigger life decisions too. Many adjusted education or career plans to stay close to home or reach stability sooner, and some felt pressure, from themselves or their parents, to settle down earlier. Across the board, there was a consistent thread: making sure parents were secure came before fully chasing personal ambitions.

Conclusion

Taken together, these findings paint a picture of an experience that's genuinely layered, not simply hard, not simply fortunate. Participants felt real closeness to their parents alongside real concern about their ageing; they took on responsibility earlier than most of their peers, and largely grew from it rather than resenting it; they noticed how their families differed from others', but mostly held onto their own sense of what a good family looks like anyway. What ties it all together is that parental age wasn't just a fact

in the background, it shaped how participants planned their careers, thought about having kids themselves, and prepared, quietly, for a loss they expect to come earlier than it typically would. And yet none of this tipped into despair; if anything, participants came across as more grounded and appreciative because of it.

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Article

Coach–Athlete Relationship and Athlete Burnout: The Moderating Role of Resilience among Competitive Swimmers

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Abstract

Athlete burnout has become a significant psychological issue for competitive athletes, driven by rising training demands, heightened performance expectations, and extended exposure to physical and emotional stress. Among the many psychological and interpersonal factors that contribute to burnout, the coach - athlete relationship and resilience have garnered significant attention. This study sought to explore how the coach - athlete relationship connects to athlete burnout and to assess whether resilience influences this connection in competitive swimmers. A quantitative, cross-sectional, correlational approach was used. Sixty competitive swimmers aged 18 to 25 took part in the study, selected using purposive and snowball sampling methods. Data were gathered using the Coach - athlete Relationship Questionnaire (CART-Q), the Connor Davidson Resilience Scale (CD-RISC-25), and the Athlete Burnout Questionnaire (ABQ). Pearson correlation and moderation analyses were conducted

using Jamovi statistical software. The findings showed that there was a strong inverse link between the coach - athlete relationship and athlete burnout, meaning athletes who had closer ties with their coaches tended to experience less burnout. A strong positive link was also found between the quality of the coach - athlete relationship and resilience. However, resilience showed no significant link with athlete burnout and did not influence the connection between coach - athlete relationship and burnout. These findings highlight the need to cultivate positive coach - athlete relationships to enhance psychological well-being and help prevent burnout in competitive swimmers.

Keywords: *Coach-athlete relationship, athlete burnout, resilience, competitive swimmers, sports psychology, moderation.*

Introduction

Competitive sports demand that athletes maintain consistent performance despite challenging physical, psychological, and emotional demands. In the realm of water-based sports, competitive swimming stands out as one of the most demanding physically, necessitating years of disciplined training, technical development, and ongoing

involvement in competitions (Cde, 2022). Competitive swimmers face demanding training regimens, intense performance demands, and ongoing competitive stress, which can leave them susceptible to psychological strain and exhaustion (Minnesota Swimming, n.d.).

Athlete burnout is a multidimensional psychological condition marked by emotional and physical fatigue, diminished feelings of achievement, and a loss of value in sport (Raedeke & Smith, 2001). Burnout emerges over time due to sustained training stress, high competitive pressure, insufficient recovery, and ongoing psychological strain (Gustafsson et al., 2018). In addition to impacting athletic performance, burnout has been linked to decreased motivation, reduced enjoyment of sports, withdrawal from competition, and lower psychological well-being (Alvarez et al., 2021).

Among the psychosocial factors that affect athlete well-being, the coach - athlete relationship has been the subject of significant attention. Coaches are crucial in honing athletes' technical abilities and also offer emotional support, motivation, helpful feedback, and direction (Jowett, 2017). Based on Jowett's 3 + 1 Cs model, strong

coach - athlete relationships are defined by closeness, commitment, complementarity, and co-orientation factors that together enhance athlete satisfaction, confidence, and performance (Jowett, 2017). Relationships grounded in trust, open communication, and mutual respect have consistently been linked to decreased psychological distress and lower rates of athlete burnout (Isoard-Gautheur et al., 2015; McGee & DeFreese, 2019).

A key psychological element in sports is resilience, which refers to an individual's capacity to respond positively to challenges, bounce back from failures, and continue performing effectively under pressure (American Psychological Association, n.d.). In competitive sports, resilience helps athletes manage injuries, performance pressure, setbacks, and rigorous training conditions (Mastroianni et al., 2025). Studies indicate that resilient athletes exhibit better emotional regulation, enhanced coping skills, and greater psychological well-being, which helps mitigate the negative impacts of stress (Codonhato et al., 2018; Meggs et al., 2015).

Prior studies have independently shown that positive coach - athlete relationships are linked to reduced burnout and better athlete well-being, while resilience

supports improved coping and psychological adjustment (Raanes et al., 2019; Gerber et al., 2024). Nevertheless, few studies have investigated whether resilience affects the link between the quality of the coach - athlete relationship and athlete burnout. Additionally, studies focusing specifically on these variables among competitive swimmers, especially within India, are still scarce (Munagekar & Kulkarni, 2025).

This study seeks to explore how the coach – athlete relationship relates to athlete burnout in competitive swimmers, and to assess whether resilience influences this connection. Recognizing these connections could help create coaching methods and psychological strategies focused on athletes, which would improve their well-being and lessen burnout in competitive swimming.

Review Of Literature

The quality of the coach - athlete relationship has repeatedly been recognized as a key factor influencing athletes' psychological well-being and performance. Jowett (2017) states that strong coach - athlete relationships are marked by trust, commitment, communication, and mutual respect factors that enhance athlete satisfaction and

motivation. Similarly, Mageau and Vallerand (2003) noted that autonomy-supportive coaching helps meet athletes' psychological needs, while controlling coaching behaviours can lead to greater emotional distress.

Multiple studies have shown that strong coach - athlete relationships are linked to reduced levels of athlete burnout. Raanes et al. (In 2019, it was found that more robust coach - athlete relationships and greater resilience were linked to reduced burnout in junior athletes. Similarly, Isoard-Gautheur et al. (McGee and DeFreese (2019), as well as the 2015 study, found that supportive coaching relationships helped reduce burnout by enhancing athlete engagement, motivation, and achievement goals. Studies involving swimmers have also found that trust, communication, and emotional support from coaches contribute to higher athlete satisfaction and psychological well-being (Philippe & Seiler, 2005; Lipošek & Topič, 2014).

Resilience is widely acknowledged as a protective psychological resource that helps athletes cope with stress, setbacks, and the pressures of competition (American Psychological Association, n.d.). Research has indicated that resilient athletes report

reduced stress, enhanced recovery, increased self-efficacy, and improved psychological well-being (Codonhato et al., 2018; Meggs et al., 2015; Mastroianni et al., 2025). Among competitive swimmers, resilience has been linked to consistent motivation and successful coping strategies after setbacks and injuries (Karvonen, 2024).

While both the quality of the coach - athlete relationship and resilience have each been associated with lower levels of burnout, studies exploring resilience's role as a moderator are still scarce. Lu et al. (2015) suggested that resilience and coach support together help reduce burnout in stressful conditions, whereas Gerber et al. (The 2024 study found that psychological resources like mental toughness did not significantly moderate the link between the quality of the coach - athlete relationship and burnout.

Despite growing research, few studies have examined these variables together among competitive swimmers, particularly in the Indian context. Therefore, the present study investigates the relationship between coach-athlete relationship, resilience, and athlete burnout while examining whether resilience moderates this relationship among competitive swimmers.

Methodology

AIM:

This study sought to investigate how the coach - athlete relationship relates to athlete burnout in competitive swimmers and to assess whether resilience influences this connection.

Hypotheses:

- H1: There is a significant relationship between coach-athlete relationship and athlete burnout among competitive swimmers.
- H2: There is a significant relationship between resilience and athlete burnout among competitive swimmers.
- H3: Resilience significantly moderates the relationship between coach-athlete relationship and athlete burnout among competitive swimmers.

Research Design:

A quantitative, cross-sectional correlational research design was used to investigate the relationships between coach - athlete relationships, resilience, and athlete burnout.

Sampling Details:

The study included **60 competitive swimmers** aged **18–25 years**, selected using purposive and snowball sampling. Participants were actively training under a coach and participating in competitive swimming events.

Tools Used:

Data were collected using three standardized measures: the **Coach–Athlete Relationship Questionnaire (CART-Q)** (Jowett & Ntoumanis, 2004), the **Connor–Davidson Resilience Scale (CD-RISC-25)** (Connor & Davidson, 2003), and the **Athlete Burnout Questionnaire (ABQ)** (Raedeke & Smith, 2001). All instruments have demonstrated satisfactory reliability and validity.

Procedure:

Following the acquisition of informed consent, data were gathered via an online Google Form. Participation was optional, and confidentiality was ensured. The data were analysed using Jamovi. Descriptive statistics were used to summarize participant characteristics, Pearson's correlation assessed relationships among variables, and moderation analysis (using the Medmod module) evaluated whether resilience moderated the link between coach athlete

relationship and athlete burnout. The threshold for statistical significance was defined as $p < .05$.

Results And Analysis

Descriptives			
	cart q	abq	resilience
N	60	60	60
Missing	940	940	940
Mean	60.2	40.3	94.3
Median	62.5	40.5	95.5
Standard deviation	11.3	9.78	13.3
Minimum	30	23	66
Maximum	77	71	125
Skewness	-0.638	0.511	0.174
Std. error skewness	0.309	0.309	0.309
Kurtosis	-0.0545	0.375	-0.0572
Std. error kurtosis	0.608	0.608	0.608
Shapiro-Wilk W	0.956	0.969	0.979
Shapiro-Wilk p	0.029	0.124	0.379

In Table 1, participants reported a mean score of 60.20 (SD = 11.30) for the coach - athlete relationship, reflecting generally positive views of this dynamic. The average burnout score was 40.30 (SD = 9.78), whereas the average resilience score was 94.30 (SD =

13.30), indicating that the swimmers exhibited relatively high levels of resilience.

TABLE 2

Correlation Matrix				
		cart q	abq	resilience
cart q	Pearson's r	—		
	df	—		
	p-value	—		
abq	Pearson's r	-0.292*	—	
	df	58	—	
	p-value	0.024	—	
resilience	Pearson's r	0.572***	-0.196	—
	df	58	58	—
	p-value	<.001	0.133	—
Note. * $p < .05$, ** $p < .01$, *** $p < .001$				

A notable negative correlation was observed between the coach - athlete relationship and athlete burnout ($r = 0.292$, $p = .024$). This suggests that swimmers with closer ties to their coaches tended to report less athlete burnout. Thus, Hypothesis 1 was supported.

A strong positive link was found between coach - athlete relationship and resilience ($r = 0.572$, $p < .001$), showing that stronger coach - athlete bonds were tied to greater resilience in competitive swimmers.

No significant relationship was found between resilience and athlete burnout ($r = -$

0.196, $p = .133$). Therefore, **Hypothesis 2 was not supported.**

TABLE 3

Moderation

Moderation Estimates				
	Estimate	SE	Z	p
abq	-0.21	0.13753	-1.5283	0.126
resilience	0.454	0.08738	5.192	<.001
abq * resilience	-6.03e-4	0.00838	-0.072	0.943

There was no statistically significant relationship between athlete burnout and resilience ($\beta = 0.0006$, $p = .943$). This suggests that resilience did not meaningfully influence the link between the coach - athlete relationship and athlete burnout. Thus, Hypothesis 3 was not supported. Although resilience had a significant independent effect ($\beta = 0.454$, $p < .001$), the interaction effect was not statistically significant, suggesting that resilience did not modify the link between coach - athlete relationship and athlete burnout.

Overall, the findings show that stronger relationships between coaches and athletes were linked to less athlete burnout and greater resilience in competitive swimmers. Nevertheless, resilience did not substantially

affect the link between the coach - athlete relationship and athlete burnout.

Conclusion

The findings show that a more robust coach - athlete relationship is linked to reduced athlete burnout and increased resilience in competitive swimmers. Nevertheless, resilience did not substantially affect the link between the coach - athlete relationship and athlete burnout. These results underscore the value of cultivating supportive coach - athlete relationships to improve athletes' psychological well-being and minimize burnout. Future studies could employ larger sample sizes and investigate additional psychological factors that contribute to athlete burnout.

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☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review ; Editing

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Article**An Empirical Study on Interface Segmentation: Paginated vs. Scroll-Based Reading
Formats and Their Effects on Cognitive Fatigue, Attention, and Recall****Article History**

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Abstract

Digital reading environments increasingly depend on scrolling interfaces that eliminate structural boundaries and stopping cues. This study explores whether interface structure influences recall performance and perceived cognitive fatigue during digital reading. Using a between-subjects experimental design, 37 undergraduate students were randomly assigned to either a paginated reading format or an infinite scroll format, with identical text presented across both conditions. After reading, participants completed a recall test and a cognitive fatigue questionnaire; a subset participated in semi-structured interviews. It was hypothesised that scroll-based participants would show lower recall and higher cognitive fatigue. Results partially supported this: cognitive fatigue was significantly higher in the scroll condition ($p = 0.05$), while recall did not differ significantly between groups ($p = 0.556$).

Keywords

Interface structure, Scrolling, Paginated, Cognitive Fatigue, Attention, Recall

Introduction

The way digital content is structured has become an increasingly important variable in how people read, retain, and experience information online. Among the many design decisions embedded in digital platforms, the choice between paginated and continuous scroll-based formats is one of the most prevalent yet least examined from a cognitive standpoint. Pagination divides content into discrete units navigated through deliberate user action, while continuous scroll formats present content as a single unbroken stream with no visible stopping points or progress indicators. The dominance of scroll-based interfaces across social media, news, and digital reading platforms has largely been driven by engagement and usability consideration rather than by evidence about their cognitive consequences. Sanchez and Wiley (2009) were among the first to provide empirical evidence that scrolling formats reduced comprehension of complex texts, particularly among readers with lower working memory capacity. Their findings suggested that scrolling itself imposes a processing cost, drawing on the same limited

cognitive resources needed for understanding—consistent with cognitive load theory, which holds that extraneous demands on working memory compete with resources available for meaningful learning (Sweller et al., 2003). Studies on segmentation in multimedia learning environments have further found that structuring content into discrete segments supports better recall and reduces perceived mental effort (Mayer & Chandler, 2001). The subjective dimension of this equation has received considerably less attention. Research on digital reading suggests that screen-based reading is associated with lower deep engagement and a tendency toward skimming, with cognitive fatigue frequently cited as contributing factor (Wastlund et al., 2008). The present study addresses this by isolating interface

Interface Segmentation and Cognitive Fatigue 4 structure as an independent variable and examining its effects on both recall performance and perceived cognitive fatigue in a controlled experimental setting.

Review of Literature

Existing research has documented comprehension differences between digital

and print formats. Delgado et al. (2018), in a meta-analysis of 171 samples and over 170,000 participants, found reading comprehension was generally higher for print, particularly for longer informational tasks, suggesting digital environments may increase superficial processing. Mangen, Walgermo, and Bronnick (2013) similarly found that students reading on paper achieved significantly higher comprehension scores, proposing that physical cues in printed text support cognitive processing. Singer and Alexander (2017) found that students demonstrated better comprehension when reading printed text, with screen reading promoting skimming and reduced attentional depth. Interface design has been shown to significantly influence cognitive processing. Sweller, Ayres, and Kalyuga (2011) demonstrated that poorly organised information increases extraneous cognitive load, while structured layouts and clear segmentation reduce unnecessary mental effort. Mayer (2009) found that instructional materials with clear segmentation and structured

organisation improved comprehension and reduced cognitive load. Zhang and Li (2005) found that interfaces with clear organisation

and intuitive navigation significantly reduced perceived cognitive load and improved task performance. On the scrolling-versus-pagination question specifically, Czerwinski, Larson, and van Dantzich (1999) found that paging interfaces supported more efficient navigation and improved task performance, while scrolling required greater effort to maintain orientation. On cognitive fatigue, Paas and van Merriëboer (1994) demonstrated that higher cognitive load is associated with increased mental effort and reduced task efficiency. Mark, Vaida, and Cardello (2012) found that prolonged digital task engagement led to increased fatigue and decreased Interface Segmentation and Cognitive Fatigue 6 performance. Inzlicht and Schmeichel (2012) proposed that mental fatigue emerges when individuals must continuously regulate attention over extended periods, directly relevant to sustained digital reading.

Research gap

Relatively few studies have systematically isolated interface structure while controlling for content, making it difficult to determine the specific impact of scrolling versus pagination on cognitive outcomes. Furthermore, limited research has examined

recall performance and perceived cognitive strain simultaneously within the same experimental context. The present study addresses both gaps.

Methodology

Aim

To examine the effects of digital interface segmentation, specifically paginated versus scroll-based reading formats, on attention, recall, and perceived cognitive fatigue among undergraduate students.

Objectives

- To compare recall performance across scroll-based and paginated reading conditions.
- To compare perceived cognitive fatigue scores across the two conditions.
- To explore participants' subjective experiences of reading under different interface formats through semi-structured interviews.

Hypotheses

- H1: Participants in the scroll-based condition will demonstrate lower recall scores compared to those in the paginated condition.

- H2: Participants in the scroll-based condition will report higher perceived cognitive fatigue compared to those in the paginated condition.

Research Design

Between-subjects experimental design with a mixed-method explanatory component. Participants were randomly assigned to one of two conditions: scroll-based reading format (Condition A / Team 1) or paginated reading format (Condition B / Team 2). Quantitative data were collected through recall scores and the Mental Fatigue Scale. Qualitative data were collected through semi-structured interviews conducted on the same day. Interface Segmentation and Cognitive Fatigue 8

Sample

- N = 37 postgraduate students
- Setting: Single classroom session
- Condition A (Scroll): n = 18
- Condition B (Paginated): n = 19
- Sampling method: Convenience sampling with random assignment to conditions

Materials

Reading Passage

- An expository passage on the History of Cartography (~1,300 words)
- Moderate difficulty, neutral topic, low prior familiarity expected
- No subheadings or internal visual segmentation, with identical content across both conditions
- Delivered via a mobile-optimised web page, accessed by participants through a QR code on their personal smartphones
- Interface Conditions
- Scroll condition: Full text presented as a single continuous vertical page with no structural breaks beyond paragraph spacing
- Paginated condition: Text divided into 10 equal sections; participants tapped a Next button to advance, with a visible progress indicator (e.g., Section 3 of 10)
- Font, font size, line spacing, and background colour were identical across both conditions

Distraction Task

- A two-minute visual search task was projected on screen for all participants

- Participants were shown a dense grid of illustrated panda faces with a number of raccoon faces embedded within
- Task: Identify and record the number of raccoons hidden in the grid
- Non-verbal, visually engaging, and standardised across both conditions to disrupt active rehearsal of passage content
- Recall Measure
- 10 structured short-answer questions based on specific factual details from the passage
- One unambiguous correct answer per question; maximum score = 10
- Administered via Google Forms on participants' personal smartphones
- Scoring: 1 point per correct response; spelling errors and paraphrased answers accepted where intent was clearly identifiable
- Mental Fatigue Scale (MFS)
- 14-item validated self-report scale (Johansson & Rönnbäck, 2014)
- Each item scored 0 to 3 (half-point increments permitted); full scale range: 0 to 42
- The full scale was administered to all participants; however, only 6 items were

retained for analysis based on their direct relevance to the cognitive demands of a reading task

- Items retained: Item 3 (Mental fatigue), Item 4 (Mental recovery), Item 5 (Concentration difficulties), Item 6 (Memory problems), Item 7 (Slowness of thinking), and Item 10 (Irritability)

- Items 3 through 7 map directly onto the cognitive experience of sustained reading — mental effort, attentional focus, memory encoding, and processing speed. Item 10 was included because irritability during a reading task reflects a motivational and attentional Interface Segmentation and Cognitive Fatigue 10 consequence of fatigue, particularly the subjective experience of disengagement and the desire to stop.

- Subscale score range: 0 to 18; higher scores indicate greater cognitive fatigue

- Administered immediately after the recall measure in the same Google Form Semi-Structured Interview

- Conducted with a subset of participants from each condition on the same day

- Explored three themes: perceived engagement with the passage, subjective

mental effort during reading, and motivation to understand versus to complete the task

- Interviews were recorded and transcribed for thematic analysis

Variables

Independent Variable

Interface format operationalised as two levels: scroll-based (Condition A) and paginated (Condition B).

Dependent Variables

- Recall performance, measured as total score out of 10 on the structured short-answer questionnaire.

- Perceived cognitive fatigue, measured as the total score on a 6-item subscale of the Mental Fatigue Scale (MFS items 3, 4, 5, 6, 7, and 10; range 0 to 18).

Extraneous Variables and Control Measures

- Prior knowledge of content: Controlled by selecting a passage on a topic with low expected familiarity among undergraduates. Interface Segmentation and Cognitive Fatigue 11

- Researcher familiarity bias: The researchers had no prior relationship with any of the participants. All 37 students were unknown to the research team, minimising the risk of social desirability or differential treatment.

- Condition assignment bias: Participants were randomly assigned to conditions, ensuring individual differences in reading ability, attention, or fatigue were distributed across both groups.

- Content differences across conditions: The reading passage was identical in both conditions. Only the interface format differed. Font, font size, line spacing, and background colour were held constant across both versions.

- Return to passage during recall: The hosted web pages were deactivated by the researcher during the distraction task, before the recall phase began. Participants attempting to return to the passage URL would have found the page inaccessible.

Procedure

At the start of the session, participants were briefed on the general nature of the study without being informed of the specific hypotheses. Each participant was randomly

assigned to either the scroll or paginated condition and provided with the corresponding QR code. Both conditions began reading simultaneously, with the passage accessed on participants' personal smartphones. Reading was self-paced, with an estimated duration of five to eight minutes. Once participants had finished reading, they were asked to place their phones face down on the desk. The researcher then displayed a two-minute visual search task on the projector screen. During this period, the hosted web pages were deactivated, ensuring participants could no longer access the reading passage. Following the distraction task, participants scanned a second Interface Segmentation and Cognitive Fatigue 12 QR code to open the Google Form and completed the ten-item recall questionnaire, followed by the Mental Fatigue Scale. After all quantitative data had been collected, a subset of participants from each condition was selected for individual semi-structured interviews, conducted on the same day. Interviews were audio recorded with participant consent and later transcribed for thematic analysis.

Instructions

The following instructions were read aloud to all participants prior to the start of the session: “You will be given a QR code. Please scan it on your phone and read the passage that appears. Take your time and read at your own pace. When you are done, place your phone face down on the desk. You will then complete a short activity on the screen at the front of the room. After that, you will scan a second QR code and answer a few questions about what you read, followed by a brief questionnaire. Please do not discuss the passage or your answers with anyone around you during the session.”

Data Analysis

Quantitative data were analysed using one-tailed independent samples t-tests to compare recall scores and MFS subscale scores across the two conditions, with interface format as the grouping variable. All statistical analyses were conducted using Jamovi (Version 2.6). For the qualitative component, interview transcripts were analysed using thematic analysis following the framework outlined by Braun and Clarke (2006), with themes identified inductively and subsequently interpreted alongside the quantitative findings to provide a richer account of participants’ reading experiences.

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Data Analysis and Results

Quantitative Analysis

H1: Effect of Interface Format on Recall

A one-tailed independent samples t-test was conducted to examine whether participants in the scroll-based condition recalled significantly less than those in the paginated condition. As shown in Table 3, the results did not support the hypothesis, $p = 0.556$. Interface format did not meaningfully influence factual recall performance in this study.

H2: Effect of Interface Format on Cognitive Fatigue

A one-tailed independent samples t-test was conducted to examine whether participants in the scroll-based condition reported significantly higher cognitive fatigue than those in the paginated condition. As shown in Table 4, the results supported the hypothesis, $p = 0.05$. Participants in the scroll condition reported higher perceived cognitive fatigue than those in the paginated condition, suggesting that continuous scroll-based

reading is associated with greater subjective cognitive fatigue than a structured paginated format.

Qualitative Analysis

Semi-structured interviews were conducted with a subset of participants from each condition on the same day as the study. Thematic analysis of the transcripts revealed distinct patterns of subjective experience across the two interface formats.

Scroll Condition

Participants in the scroll-based condition consistently reported themes of boredom, irritation, and a strong motivation to finish rather than to understand. Many described the passage as feeling too long and expressed difficulty sustaining attention throughout the continuous format. Difficulty in recalling content after reading was also a recurring concern, with several Interface Segmentation and Cognitive Fatigue 14 participants noting that the absence of structure made it hard to hold information in mind. The overall experience was characterised by low engagement and a sense of effort without reward.

Paginated Condition

Participants in the paginated condition described a different but not uniformly easier experience. While several noted that the section-by-section structure helped them pause, process, and retain information in parts, others reported that recalling content from earlier sections felt difficult once those pages were no longer accessible. The sense of progress provided by the pagination was perceived positively by some, but the volume of content within each section was occasionally described as too much to absorb at once. Overall, the paginated format appeared to support more deliberate reading, even if it did not eliminate difficulties with recall entirely.

Discussion and Conclusion

Discussion

The findings of this study were mixed but telling. Recall performance did not differ significantly between the scroll and paginated conditions, while cognitive fatigue was significantly higher among participants who read in the scroll format. This suggests that interface structure may have a stronger effect on how reading feels than on what gets remembered, at least when the task involves short-term factual recall. The lack of a

significant recall difference is worth reflecting on. Sanchez and Wiley (2009) found that scrolling impairs comprehension, particularly for readers with lower working memory capacity. However, their study involved more complex inferential tasks, whereas this study used discrete factual questions. It is possible that the structural advantages of pagination matter more for deeper comprehension than for surface-level recall, which may explain why no difference emerged here. Mayer and Chandler's (2001) segmentation work also focused on multimedia environments with higher cognitive load, so the effect may simply be harder to detect with plain text. The cognitive fatigue finding is more consistent with prior research. Wastlund et al. (2008) showed that page layout affects mental workload during screen-based reading, and the present results extend this to mobile scroll versus paginated formats. The qualitative data give this finding more texture. Scroll participants described boredom, irritation, and a strong desire to just finish, which reflects a pattern of attentional fatigue rather than active engagement. Paginated participants, on the other hand, described a more deliberate reading experience, though many found it harder to

recall information from earlier sections once those pages were no longer visible. This is an interesting trade-off that recall scores alone could not have revealed. Interface Segmentation and Cognitive Fatigue 16 Taken together, the results suggest that interface format shapes the cognitive experience of reading more than it shapes its outcomes, at least in the short term. The scroll format appeared to cost participants more in terms of motivation and subjective effort, even when their recall was comparable to the paginated group. This has real implications for educational platforms and digital reading environments where sustained engagement matters as much as retention.

Limitations

This study has a few notable limitations. The sample was small ($n = 37$) and drawn from a single classroom, which limits how broadly the findings can be generalised. Participants read on their own smartphones, introducing some variability in screen size and display that could not be controlled. The recall measure targeted factual details rather than deeper comprehension, which may not be sensitive enough to capture the full cognitive effects of interface format. Additionally, using only six items from the MFS, while

theoretically justified, means the fatigue scores are not directly comparable to normative MFS data.

Conclusion

This study found that while scroll-based and paginated reading formats produced comparable recall scores, participants in the scroll condition reported significantly higher cognitive fatigue. The qualitative data reinforced this, with scroll participants describing greater disengagement and irritability, while paginated participants reported a more structured but at times frustrating reading experience. These findings have practical relevance for the design of digital learning environments. Platforms that default to continuous scroll may be increasing the cognitive cost of reading without necessarily impairing recall on simpler tasks. For longer or more complex material, the cumulative effects on fatigue and attention could be more consequential. Interface Segmentation and Cognitive Fatigue 17 Future research would benefit from larger and more diverse samples, longer reading passages, and measures of deeper comprehension alongside factual recall. Objective attention measures, such as eye-tracking, would add precision to the design.

It would also be worth examining whether individual differences in working memory capacity or habitual screen use moderate the effects observed here. As digital reading becomes the norm across educational and professional settings, understanding how interface design shapes cognitive experience is a question that deserves more attention.

Referential Table & Annexures

Tables

Table 1

Descriptive Statistics for Recall Scores by Interface Condition

Group	N	Mean	Median	SD
1	18	3.39	3.50	2.85
2	19	3.26	3.00	2.49

Table 2

Descriptive Statistics for Cognitive Fatigue Scores by Interface Condition

Group	N	Mean	Median	SD
1	18	8.44	8.00	3.66
2	19	6.68	6.50	2.99

Table 3

Independent Sample T-Test Results for Recall Scores

t	df	p
0.14	35.0	0.55

Table 4

Interface Segmentation and Cognitive Fatigue

Independent Sample T-Test Results for Cognitive Fatigue Scores

t	df	p
1.61	35.0	0.05

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The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

□ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis, Writing – Review

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Article**The Relationship Between AI Beauty Filter Use, Appearance Comparison, and Body*****Dissatisfaction*****Article History**

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Abstract

The increasing use of artificial intelligence (AI) based beauty filters on social media has raised concerns regarding their impact on body image and psychological well-being. The present study examined the relationship between AI beauty filter use, appearance comparison, and body dissatisfaction among college students. A sample of 64 participants was recruited using convenience sampling, and data were collected through an online survey. AI beauty filter use was assessed using a self-constructed questionnaire, appearance comparison was measured using the Physical Appearance Comparison Scale, and body dissatisfaction was measured using the Body Shape Questionnaire (BSQ-16). Pearson correlation analysis revealed a significant positive relationship between AI beauty filter use and appearance comparison, as well as between AI beauty filter use and body dissatisfaction. A strong positive correlation was found between appearance comparison and body dissatisfaction. These

findings suggest that increased use of AI beauty filters is associated

with higher levels of appearance comparison and body dissatisfaction. The results highlight the role of appearance comparison as a key psychological mechanism underlying the relationship between digital filter use and negative body image outcomes. The study underscores the need for greater awareness of the psychological effects of digitally altered images in contemporary social media environments.

INTRODUCTION

The rapid expansion of artificial intelligence (AI) in visual media has significantly transformed how individuals perceive, construct, and evaluate their physical appearance. AI-based beauty filters refer to digitally enhanced tools that modify facial and bodily features in real time to produce a more aesthetically refined version of the self. Unlike earlier forms of image editing, contemporary AI filters are highly sophisticated, enabling alterations to facial symmetry, skin texture, and structural features with minimal effort (Boursier et al., 2020). These technologies have been seamlessly integrated into popular social

media platforms such as Instagram, Snapchat, and TikTok, making digitally modified appearances a routine aspect of online self-presentation (Chae, 2017). As digital environments continue to evolve, these AI-enhanced tools are increasingly shaping users' internal standards of attractiveness. The normalization of filtered and curated images has led to growing psychological concern, particularly regarding their impact on body image and self-perception (Fardouly & Vartanian, 2016). Exposure to idealized and digitally altered appearances may distort individuals' perceptions of what constitutes a realistic or attainable standard of beauty (Grabe et al., 2008). Over time, repeated interaction with such content may contribute to internalization of unrealistic appearance ideals, potentially leading to dissatisfaction with one's natural appearance (Tiggemann & Slater, 2014). A substantial body of research on social media use and body image suggests that frequent exposure to idealized images is associated with negative body-related outcomes, including body dissatisfaction, low self-esteem, and disordered eating tendencies (Holland &

Tiggemann, 2016; Perloff, 2014). AI beauty filters may intensify these effects by not only presenting idealized versions of others but also allowing individuals to alter their own appearance in ways that may not be achievable in reality (Kleemans et al., 2018). This creates a discrepancy between the actual self and the digitally enhanced self, which may contribute to negative self-evaluation (de Vries et al., 2019). Body dissatisfaction refers to negative thoughts and feelings about one's physical appearance and has been consistently identified as a significant predictor of adverse psychological outcomes (Cash, 2004). One of the primary mechanisms underlying body dissatisfaction is appearance comparison, which involves evaluating one's physical attributes in relation to others. According to Social Comparison Theory, individuals are more likely to engage in such comparisons in environments where objective standards are absent (Festinger, 1954). Social media platforms provide an ideal context for this process, as users are continuously exposed to curated and often idealized representations of peers, influencers, and celebrities (Vogel et al., 2014).

In AI-driven digital environments, appearance comparison may become even more pronounced. Unlike traditional media, where exposure is largely passive, AI filters actively engage users in modifying their own appearance, thereby increasing self-focus and evaluative tendencies (Boursier et al., 2020). This dual exposure—to both enhanced images of others and altered versions of the self—may amplify upward social comparisons, where individuals compare themselves to perceived superior standards (Fardouly et al., 2015). Such comparisons are often unrealistic, yet they can significantly influence self-perception and contribute to dissatisfaction.

Although not all individuals experience immediate negative effects from using beauty filters, there is increasing evidence to suggest that the psychological impact of these technologies may operate through underlying cognitive processes rather than direct exposure alone (Perloff, 2014). Appearance comparison, in particular, has been identified as a key factor that links social media use to negative body image outcomes (Myers & Crowther, 2009). In this sense, AI beauty filter use may function as a reinforcing factor that increases comparison

tendencies, which in turn contribute to body dissatisfaction. Furthermore, AI beauty filters can be understood not merely as technological tools but as cultural agents that shape and reinforce contemporary beauty standards (Grabe et al., 2008). By promoting a more uniform and idealized representation of attractiveness, these filters may contribute to narrowing definitions of beauty. This can increase pressure on individuals to conform to digitally constructed ideals, especially among young adults who are highly engaged with social media (Tiggemann & Zaccardo, 2015). College students, in particular, represent a population that is both highly exposed to these technologies and potentially vulnerable to their psychological effects. Despite growing research on social media and body image, there remains a need to examine

the specific role of AI-based beauty filters within this broader context. Much of the existing literature focuses on general social media exposure, with comparatively less attention given to interactive technologies that allow users to actively modify their appearance (Kleemans et al., 2018). Additionally, while previous studies have established relationships between media

exposure and body dissatisfaction, fewer studies have examined the role of appearance

comparison as an explanatory factor within this relationship, particularly in the context of AI-enhanced environments (Fardouly et al., 2015). In the Indian context, where digital engagement has increased rapidly and beauty standards are influenced by both traditional and globalized media, examining these relationships becomes particularly important. Cultural expectations, combined with increasing exposure to digitally enhanced images, may create unique pressures that influence body image and self-perception (Narang & Mishra, 2020). Understanding how AI beauty filter use relates to appearance comparison and body dissatisfaction within this context can provide valuable insights into the psychological impact of emerging digital technologies. The present study therefore aims to examine the relationship between AI beauty filter use, appearance comparison, and body dissatisfaction among college students. By exploring these variables together, the study seeks to provide a more nuanced understanding of how AI-driven visual technologies influence body image through comparison-based processes.

METHODOLOGY

The present study employed a quantitative, correlational research design to examine the relationships among AI beauty filter use, appearance comparison, and body dissatisfaction among college students. A total of 64 participants were recruited using convenience sampling. Participants were required to be currently enrolled college students and active users of social media platforms. Data were collected through an online survey administered via Google Forms, and participation was voluntary and anonymous. Informed consent was

obtained prior to participation, and no identifying information was collected to ensure confidentiality. AI beauty filter use was assessed using a self-constructed questionnaire developed by the researcher to measure the frequency, duration, and purpose of using AI-based beauty filters on social media platforms. The scale consisted of items rated on a 5-point Likert scale ranging from 1 (Never) to 5 (Always), with higher scores indicating greater engagement with AI beauty filters. The total score was computed by summing individual item responses, and scores were interpreted as reflecting low, moderate, or high levels of usage based on

the distribution. The questionnaire was reviewed for content validity by subject experts to ensure clarity and relevance of items. Appearance comparison was measured using the Physical Appearance Comparison Scale (PACS; Thompson et al., 1991), which assesses the extent to which individuals compare their physical appearance with others in everyday situations. The scale consists of items rated on a 5 (Always). Scores were calculated by summing responses across all items, with higher scores indicating a greater tendency toward appearance-based social comparison. Body dissatisfaction was measured using the Body Shape Questionnaire (BSQ-16; Evans & Dolan, 1993), a widely used measure assessing concerns related to body shape and dissatisfaction. The BSQ-16 consists of items rated on a 6-point Likert scale ranging from 1 (Never) to 6 (Always). Total scores were obtained by summing all item responses, with higher scores indicating greater levels of body dissatisfaction.

AI_Filter_USe			Physical Appearance	Body Dissatisfaction
AI_Filter_USe	Pearson Correlation	1	.375**	.364**
	Sig. (2-tailed)		0.002	0.003
	N	64	64	64
Physical Appearance	Pearson Correlation	.375**	1	.771**
	Sig. (2-tailed)	0.002		0
	N	64	64	64
Body_Dissatisfaction	Pearson Correlation	.364**	.771**	1
	Sig. (2-tailed)	0.003	0	
	N	64	64	64

DISCUSSION

The present study examined the relationship between AI beauty filter use, appearance comparison, and body dissatisfaction among college students. The findings revealed significant positive relationships among all three variables, supporting the proposed hypotheses and highlighting the interconnected nature of digital media use and body image processes. A moderate positive correlation between AI beauty filter use and appearance comparison suggests that individuals who frequently engage with beauty filters are more likely to evaluate their appearance in relation to others. This finding

aligns with existing literature indicating that social media environments promote comparison-based evaluation due to continuous exposure to curated and idealized images (Fardouly & Vartanian, 2016). AI beauty filters may further intensify this process by not only presenting idealized images of others but also enabling individuals to modify their own appearance, thereby increasing self-focus and the likelihood of upward social comparisons. Similarly, the observed positive relationship between AI beauty filter use and body dissatisfaction indicates that greater engagement with digitally enhanced images is associated with more negative self-evaluations. This finding supports previous research suggesting that exposure to digitally altered content can distort perceptions of normative appearance and contribute to dissatisfaction with one's natural body (Frontiers in Public Health, 2024). The use of beauty filters may create a discrepancy between the actual self and an idealized, digitally modified version, which can lead to increased dissatisfaction when individuals compare their unfiltered appearance to enhanced representations. The strongest finding of the study was the significant

positive correlation between appearance comparison and body dissatisfaction. This suggests that individuals who frequently engage in appearance-based comparisons are substantially more likely to experience negative body image outcomes. This result provides strong support for Social Comparison Theory (Festinger, 1954), which posits that individuals evaluate themselves relative to others, particularly in the absence of objective standards. In the context of social media, where exposure to highly curated and filtered images is pervasive, such comparisons are often upward and unrealistic, thereby contributing to negative self-perception and dissatisfaction. Importantly, the findings indicate that appearance comparison may serve as a key psychological mechanism underlying the relationship between AI beauty filter use and body dissatisfaction. While filter use is directly associated with negative body image, its impact appears to be strengthened through increased comparison tendencies. This is consistent with prior research suggesting that digital environments encourage continuous self-monitoring and comparison, which in turn contribute to body image concerns (Frontiers in Public Health, 2025). Thus, AI

beauty filters may not function as an isolated influence but rather as a factor that amplifies existing cognitive processes related to self-evaluation. Overall, the results highlight the potential psychological risks associated with AI-enhanced visual technologies. Although beauty filters are often used for self-expression and aesthetic enhancement, their repeated use may reinforce unrealistic beauty standards and promote comparison-based thinking patterns that negatively affect body image. These findings contribute to a growing body of literature emphasizing the need to critically examine the impact of emerging digital tools on psychological well-being.

CONCLUSION

The present study examined the relationship between AI beauty filter use, appearance comparison, and body dissatisfaction among college students within the context of increasing engagement with digitally enhanced media. The findings revealed that AI beauty filter use is positively associated with both appearance comparison and body dissatisfaction. In particular, the strong relationship observed between appearance comparison and body dissatisfaction

highlights the central role of comparison-based processes in shaping body image outcomes. These results are consistent with Social Comparison Theory (Festinger, 1954), which suggests that individuals evaluate themselves in relation to others, especially in environments where objective standards are absent. Social media platforms, characterized by the widespread presence of curated and digitally enhanced images, provide a context that encourages frequent and often unrealistic upward comparisons. Within such environments, AI beauty filters may further intensify self-evaluative tendencies by enabling individuals to engage with idealized versions of both themselves and others. The findings also suggest that the impact of AI beauty filter use on body dissatisfaction may not be solely direct but is likely reinforced through increased appearance comparison. In this sense, beauty filters function as a contributing factor that amplifies existing cognitive processes related to self-evaluation, rather than acting as an isolated cause of dissatisfaction. This aligns with existing research indicating that digital media environments promote continuous comparison and internalization of unrealistic beauty standards. From a broader

perspective, the study highlights the psychological implications of emerging AI-driven visual technologies. While beauty filters are widely used for self-expression and social engagement, their repeated use may contribute to the reinforcement of narrow and idealized standards of appearance, thereby negatively influencing body image. These findings

underscore the importance of promoting critical awareness of digitally altered content and encouraging healthier engagement with social media. In conclusion, the study demonstrates that AI beauty filter use is significantly associated with body dissatisfaction, with appearance comparison emerging as a key explanatory factor. As AI technologies continue to evolve and become further integrated into everyday digital interactions, understanding their psychological impact remains essential for promoting positive self-perception and overall well-being.

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Yes, informed written consent was obtained from all participants.

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The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

□ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

Scrolling into Numbness: A Correlational Study of Social Media Usage and Emotional Numbing

Article History

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Abstract:

The spread of social media has changed how people encounter, interpret, and respond to emotionally charged information. Features such as infinite scrolling, algorithmic feeds, and rapid content turnover expose users to a high volume of emotionally intense material in a short period of time. Although this digital environment can feel highly stimulating, it may also shape how individuals respond to emotions outside the screen. The present study examines the relationship between continuous social media scrolling and emotional numbing among users. Specifically, it explores whether prolonged exposure to fast-changing emotional content is connected with reduced emotional responsiveness in everyday offline situations. A quantitative survey-based design was used, with data collected on social media use patterns and self-reported emotional responsiveness. The study was designed to test whether greater continuous social media use is associated with higher emotional numbing and discuss the potential role of overstimulation as a driving factor. The

findings are focus upon digital desensitization, emotional fatigue, and the impact of high-velocity scrolling on real-world emotional reactivity.

Keywords: *Emotional Numbing, Social Media Use, Short-Form Content, Emotional Responsiveness, Digital Immersion, Desensitization, Overstimulation.*

Scrolling into Numbness:

A Correlational Study of Social Media Usage and Emotional Numbing

Nearly 70% of our world population uses Social Media today. We scroll through our feeds endlessly, without realising the affects it has on us. Many adolescents, young adults and adults have adapted the mechanism of Doomscrolling - the act of constantly scrolling through news or content on a phone.

When we scroll through our feeds, there is a constant shift of information and emotions within seconds - from aesthetic to sad to news to memes, etc. This constant shift of content does not give us enough time to process the constant shift of emotions our brain has to deal with. This contributes to cognitive overload, which mainly emerges from Overstimulation - a state where the brain and nervous system receive more sensory,

emotional, or cognitive input than they can effectively process, and might lead to Emotional Numbing in individuals.

Emotional Numbing, also called Psychological Desensitization, is a psychological state where a person loses the ability to feel or express emotions.

Aim

The study aims to examine the correlation between social media scrolling and emotional numbing, with overstimulation as a mediator.

Objectives

- a. To assess the level of continuous social media use and emotional numbing among the sample, individually.
- b. To examine the association between continuous social media use and emotional numbing.

Review of Literature

Research on social media and psychological well-being suggests that the relationship is more complex than simple time spent online. Huang (2017) found only a weak negative relationship between the spent time on social networking sites and factors like self-esteem, life satisfaction, depression, and loneliness. This suggests that measuring merely the time

spent online may not be enough to fully understand its psychological effects. Instead, the way people engage with social media might be more important.

Building on this, recent studies have started focusing on the emotional impact of various types of social media use. Hatai et al. (2024) found positive relationships between social media use, depression, anxiety, and psychological distress among adolescents. Their findings suggest that the content users consume and the way they interact with it may matter more than the number of minutes spent online.

Another important factor is platform design. Bharatharajan et al. (2024) highlighted that visually engaging short-form content and personalized feeds tend to increase user engagement, especially among younger individuals. Similarly, Edelson et al. (2023) argued that algorithmic systems are built to maximize attention by continuously presenting new content that is likely to keep users engaged. This design creates a high-frequency stream of emotional and cognitive stimulation.

Conceptually, this matters because emotions are not instantaneous reactions only. They

involve appraisal, physiological activation, and meaning-making. Fischer and Manstead (2008) emphasized that emotions also serve social purposes, including communication, affiliation, and relationship regulation. If emotional processing becomes compressed through rapid scrolling, it may alter how people respond when real-life situations require slower, more deliberate emotional engagement.

Li et al. (2023) demonstrated that social media overload arising from excessive information, communication, and social demands significantly elevates social media fatigue, which in turn impairs cognitive regulation and emotional functioning. This suggests that it is not exposure alone, but the experience of being cognitively overwhelmed, that drives psychological strain. Continuous scrolling may similarly induce overstimulation that depletes attentional resources, contributing to emotional numbing in offline contexts.

Related research also points to the possibility of desensitization. Repeated exposure to emotionally intense content can reduce responsiveness over time, especially when exposure is fast and repetitive. Westfall and Veilleux (2026) noted that emotional

numbness is not limited to clinical populations, and may occur in everyday contexts as well. Adding to that, discussions related to online overstimulation and doomscrolling suggest that repeated emotional activation may lead to fatigue, rumination, and numbing.

Overall, the literature indicates a meaningful gap. Many studies examine social media use broadly, yet fewer focus on the emotional consequences of continuous scrolling, rapid content switching, and the overstimulating structure of short-form platforms. The current study addresses this gap by considering emotional numbing as a possible outcome of repeated exposure to overstimulating online content.

Hypotheses

H1: Continuous social media use is positively correlated with emotional numbing.

H2: Overstimulation acts as a mediator between Social media usage and Emotional Numbing.

Methodology

Participants

The study included 133 participants who were selected using a convenience sampling including personal networks, including classmates, friends, family members, and social media contacts. Participants ranged in age from 18 to 45 years. Individuals below 18 years and above 45 years were excluded. Participants who reported a clinical diagnosis of depression were also excluded from the final sample.

Design

The study used a correlational design to examine the association between social media use and emotional responsiveness. No variables were manipulated.

Materials

Data was collected through a structured online questionnaire administered via Google Forms. The questionnaire included two main variables. Emotional responsiveness was measured using the Emotional Reactivity and Numbing Scale (ERNS), a 17-item scale rated on a 5-point Likert response format from “Not at all like me” to “Very much like me”. In the present study, the scale showed acceptable internal consistency (Cronbach's $\alpha = .75$). Social media use was assessed using the Social Media Use Questionnaire

(SMUQ; Xanidis & Brignell, 2016), consisting of 9 items rated on a 5-point Likert scale from “Never” to “Always”. The SMUQ also showed acceptable reliability in this sample (Cronbach's $\alpha = .76$). Basic demographic details such as age and initials were collected from the participants.

Procedure

Participants were invited to take the survey through a link shared on social media and through personal contacts. The study was conducted online, and responses were collected individually. Before participation, individuals were informed about the purpose of the study, eligibility criteria, confidentiality, and their right to withdraw at any point. Informed consent was obtained. Participants then provided demographic details before completing the ERNS and SMUQ. Responses were screened and only eligible responses were analysed.

Ethical Considerations

The study followed standard ethical principles. Participation was voluntary. Confidentiality and anonymity were maintained. The data were used for academic purposes only. Only basic initials and age

were collected in the form of demographic details.

Data Analysis

Descriptive statistics were computed for all variables. Pearson's correlation analysis was used to assess the linear relationship between social media use and emotional numbing. Spearman's rank-order correlation was also calculated to check whether the relationship remained consistent when the assumption of normality was relaxed. Statistical significance was evaluated at conventional levels of $p < .05$ and $p < .01$.

Results

A total of 133 participants were included in the analysis. No major problems were detected with the data collected. Although the variables showed slight deviations from normality, these were not strong enough to invalidate the analysis. Both Pearson and Spearman correlations were therefore used to provide a more robust view of the relationship.

Pearson's correlation showed a statistically significant positive association between social media use and emotional numbing, $r(131) = .20$, $p = .020$. This indicates that higher social media use was associated with

higher emotional numbing. However, the sample size was small, suggesting that the relationship, while reliable, was modest in strength.

Spearman's rank-order correlation produced a similar result, $\rho(131) = .23, p = .007$, supporting the statistical significance of Pearson's correlation. The two tests confirm each other, strengthening confidence in the results.

Overall, the findings support our hypothesis that continuous social media use is positively associated with emotional numbing. Meanwhile, the small sample size indicates that social media use explains only a small proportion of variance in emotional responsiveness, suggesting that additional psychological and contextual factors are also involved.

Table 1

Correlation Between Social Media Usage and Emotional Numbing

N	Variables	1	2
133	Emotional Numbness	-	.20*
	Social Media Usage	.20*	-

Note. $N = 133$. r = Pearson correlation. ρ = Spearman correlation. Pearson's $r = .20, p = .020$; Spearman's $\rho = .23, p = .007$. * $p < .05$.

Discussion

The present study examined the correlation between social media scrolling and emotional numbing, with overstimulation as a mediator.. The findings revealed a statistically significant but weak positive correlation, suggesting that greater engagement with social media is linked to slightly higher emotional numbing. Despite the modest sample, the findings highlight a significant relationship between digital engagement and emotional well-being.

Our findings clearly suggest that Social Media usage is directly proportional to emotional numbing or psychological desensitization. One of the possible explanations to this can be overstimulation. Repeated exposure to overstimulating digital content may cause emotional desensitization, reducing your reactivity to daily events. Repeated switching between emotionally different posts may also prevent deeper processing, making emotional reactions more shallow or fragmented over time.

The weak size of the relationship is equally meaningful. It suggests that emotional numbing cannot be attributed to social media use alone. Individual differences in emotional regulation, personality, mental health, offline stressors, and the type of content consumed are likely to interact with usage patterns. Social media may thus be viewed as one of the contributing factors, not the sole cause

Social media isn't inherently harmful, but its design, like the infinite scroll through various stimulating content, forces a constant stream of input. This persistent overstimulation reshapes our emotional habits, turning engagement into a sensory burden. Ultimately, emotional numbing becomes a psychological defense against a digital world that is built to never stop. Limitations

Several limitations shall be noted. Firstly, the cross-sectional design prevents any causal conclusion. Second, the survey was self-reported, meaning response bias could intervene. Third, the sample size was not huge and convenient sampling was used. Fourth, the presence of overstimulation as the mediator could not be judged through the survey. Lastly, the study did not directly assess the important possible variables that

could intervene, such as personality traits, content type or specific platform use.

Future Scope

Future studies should consider a longitudinal or experimental designed to prevent causal conclusions. Overstimulation as a separate variable can be assessed. Finally, moderating factors such as personality traits content type or specific platform can be focused upon.

Conclusion

In conclusion, the present study indicates a modest but significant relationship between continuous social media use and emotional numbing in offline contexts. The findings suggest that repeated scrolling may be associated with reduced emotional responsiveness in the offline world, possibly through overstimulation. At the same time, the weak effect highlights that we need to take a closer look at the many different factors that shape how we feel and connect in a world where we are always online.

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3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review Editing

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Article

Perceived Social Support, Quality of Life and Psychological Distress Among Female Breast Cancer Patients Undergoing Active Treatment

Article History

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Abstract

Breast cancer is one of the most common cancers among women and is often accompanied by significant psychological and emotional challenges that affect patients' quality of life. The present study examined

the relationship between perceived social support, quality of life, and psychological distress among female breast cancer patients undergoing active treatment. A descriptive correlational research design was employed, involving 25 female breast cancer patients selected through purposive, convenience, and snowball sampling. Data were collected using a Sociodemographic Data Sheet, the Multidimensional Scale of Perceived Social Support (MSPSS), the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30), and the Kessler Psychological Distress Scale (K10). Data were analyzed using descriptive statistics, Pearson's product-moment correlation, and linear regression. The findings revealed a significant positive relationship between

perceived social support and quality of life ($r = 0.456$, $p = 0.022$) and a significant negative relationship between quality of life and psychological distress ($r = -0.726$, $p < 0.001$). Perceived social support was negatively associated with psychological distress but was not statistically significant. Regression analysis indicated that quality of life significantly predicted psychological distress ($R^2 = 0.526$). These findings highlight the importance of psychosocial interventions that enhance quality of life and strengthen social support to promote psychological well-being among women undergoing breast cancer treatment.

Keywords: Breast cancer, perceived social support, quality of life, psychological distress.

Introduction

Breast cancer is one of the most frequently diagnosed cancers among women worldwide and remains a major public health concern. It is associated with substantial physical, emotional, and psychosocial challenges that extend beyond the disease itself. Despite advances in early detection and treatment, women undergoing active treatment often

experience considerable emotional distress, disruption in daily functioning, and reduced quality of life. Consequently, addressing psychosocial well-being has become an essential component of comprehensive breast cancer care (World Health Organization, 2025; Cleveland Clinic, 2021).

Globally, breast cancer accounts for a significant proportion of cancer diagnoses among women, with an estimated 2.3 million new cases reported in 2020. In India, the burden of breast cancer has steadily increased over recent decades, making it one of the leading cancers affecting women (Mehrotra & Yadav, 2022). Although medical advances have improved survival rates, the diagnosis and treatment of breast cancer continue to impose considerable psychological and social challenges. Women receiving chemotherapy, radiotherapy, surgery, hormone therapy, or targeted therapy frequently experience fatigue, pain, sleep disturbances, body image concerns, fear of recurrence, financial strain, and uncertainty regarding prognosis, all of which may adversely affect their psychological well-being and overall quality of life (World Health Organization, 2025; Mehrotra & Yadav, 2022).

Psychological distress is among the most common psychosocial consequences experienced by women undergoing active treatment for breast cancer. Symptoms such as anxiety, depression, emotional distress, and stress may negatively influence treatment adherence, coping, and overall functioning. Previous studies have consistently reported that greater psychological distress is associated with poorer quality of life among women with breast cancer (Ng et al., 2015; Wen et al., 2017). Conversely, interventions targeting psychological well-being have demonstrated improvements in emotional adjustment and overall quality of life (Dinapoli et al., 2021; Jassim et al., 2023).

Perceived social support has been widely recognised as an important protective resource during the cancer trajectory. Support received from family, friends, significant others, and healthcare professionals provides emotional reassurance, practical assistance, and encouragement that facilitate adaptation to treatment-related challenges. Higher perceived social support has been associated with lower levels of anxiety and depression, better coping strategies, improved psychological adjustment, and enhanced quality of life among women with breast

cancer (Zhang et al., 2017; Liu et al., 2024). Social support also functions as a buffering factor by reducing the adverse psychological effects of stressful life events (Cohen & Wills, 1985).

Quality of life has emerged as an important indicator of treatment outcomes in oncology because it encompasses physical, emotional, cognitive, social, and functional well-being. Women undergoing active treatment often experience impairments across these domains due to treatment-related symptoms and psychosocial difficulties. Previous research has consistently shown a positive relationship between perceived social support and quality of life, while higher psychological distress has been associated with poorer quality of life (Ng et al., 2015; Wen et al., 2017; M. Pezzolato et al., 2023; Lan et al., 2022). These findings highlight the interrelated nature of psychosocial factors in breast cancer care.

Although considerable research has examined perceived social support, quality of life, and psychological distress individually, relatively few studies have investigated the interaction of these variables among women undergoing active treatment, particularly within the Indian context. Cultural factors,

family structure, and healthcare accessibility may influence patients' perceptions of social support and psychological adjustment, underscoring the need for context-specific research. Examining these variables together may contribute to a better understanding of the psychosocial experiences of women with breast cancer and support the development of comprehensive, patient-centred interventions that enhance psychological well-being and quality of life. Accordingly, the present study aimed to examine the relationship between perceived social support, quality of life, and psychological distress among female breast cancer patients undergoing active treatment.

Review of Literature

Breast cancer is associated with significant physical, emotional, and psychosocial challenges that influence patients' overall well-being throughout diagnosis and treatment. Increasing evidence suggests that perceived social support, quality of life, and psychological distress are closely interconnected and collectively shape the experiences of women undergoing breast cancer treatment. Understanding these relationships is essential for developing

comprehensive interventions that address both medical and psychosocial needs.

Perceived social support has consistently been identified as an important protective factor that promotes psychological adjustment among women with breast cancer. Support received from family, friends, and significant others provides emotional reassurance, practical assistance, and encouragement, enabling patients to cope more effectively with treatment-related challenges. Studies have demonstrated that higher perceived social support is associated with greater emotional well-being, better coping strategies, lower levels of anxiety and depression, and improved treatment adherence (Zhang et al., 2017; Ng et al., 2015; Tang et al., 2024). Furthermore, the buffering hypothesis proposed by Cohen and Wills (1985) suggests that social support reduces the negative psychological effects of stressful life events by enhancing individuals' coping resources. These findings emphasize the importance of strengthening supportive relationships throughout the cancer trajectory. Quality of life has become an important outcome measure in breast cancer care because it reflects patients' physical, emotional, cognitive, social, and functional

well-being. Previous studies have reported that breast cancer and its treatment frequently impair quality of life through symptoms such as pain, fatigue, sleep disturbances, body image concerns, and limitations in daily activities (Wen et al., 2017; Lan et al., 2022). Nevertheless, research has consistently shown that women who perceive stronger social support report better quality of life despite the challenges associated with diagnosis and treatment (Ng et al., 2015; M.Pezzolato et al., 2023). These findings indicate that supportive interpersonal relationships contribute positively to patients' overall well-being and facilitate better adjustment during treatment.

Psychological distress is one of the most prevalent psychosocial concerns among women undergoing active treatment for breast cancer. Anxiety, depression, fear of recurrence, uncertainty, and emotional exhaustion are frequently reported during the treatment process and may adversely affect treatment adherence, recovery, and quality of life. Several studies have identified quality of life as an important determinant of psychological well-being, demonstrating that poorer quality of life is associated with greater psychological distress (Wen et al.,

2017; Jassim et al., 2023). Although perceived social support generally demonstrates a protective effect against psychological distress, the strength of this relationship varies across different populations and healthcare settings (Tang et al., 2024). These inconsistencies suggest the need for further research among women undergoing active treatment, particularly within the Indian context. Although previous research has independently examined perceived social support, quality of life, and psychological distress, relatively few studies have explored the interaction among these variables in women receiving active treatment for breast cancer in India. Differences in cultural values, family support systems, and healthcare accessibility may influence psychosocial experiences and treatment outcomes. Therefore, examining these variables simultaneously may provide a more comprehensive understanding of patients' psychological well-being and contribute to the development of holistic, patient-centred interventions aimed at enhancing quality of life and reducing psychological distress during active treatment.

Review of Literature

Breast cancer is associated with significant physical, emotional, and psychosocial challenges that influence patients' overall well-being throughout diagnosis and treatment. Increasing evidence suggests that perceived social support, quality of life, and psychological distress are closely interconnected and collectively shape the experiences of women undergoing breast cancer treatment. Understanding these relationships is essential for developing comprehensive interventions that address both medical and psychosocial needs.

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psychosocial concerns among women undergoing active treatment for breast cancer. Anxiety, depression, fear of recurrence, uncertainty, and emotional exhaustion are frequently reported during the treatment process and may adversely affect treatment adherence, recovery, and quality of life. Several studies have identified quality of life as an important determinant of psychological well-being, demonstrating that poorer quality of life is associated with greater psychological distress (Wen et al., 2017; Jassim et al., 2023). Although perceived social support generally demonstrates a protective effect against psychological distress, the strength of this relationship varies across different populations and healthcare settings (Tang et al., 2024). These inconsistencies suggest the need for further research among women undergoing active treatment, particularly within the Indian context.

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values, family support systems, and healthcare accessibility may influence psychosocial experiences and treatment outcomes. Therefore, examining these variables simultaneously may provide a more comprehensive understanding of patients' psychological well-being and contribute to the development of holistic, patient-centred interventions aimed at enhancing quality of life and reducing psychological distress during active treatment.

Methodology

Research Design

The present study employed a quantitative, descriptive correlational cross-sectional research design to examine the relationship between perceived social support, quality of life, and psychological distress among female breast cancer patients undergoing active treatment.

Sample The study consisted of 25 female breast cancer patients undergoing active treatment. Participants were recruited from A.K.G. Memorial Co-operative Hospital, Kannur, and through online data collection using Google Forms. Women diagnosed with breast cancer and currently receiving active treatment were included in the study.

Individuals below 18 years of age, those who had completed treatment, and those with severe psychiatric or cognitive impairments that could interfere with questionnaire completion were excluded.

Sampling Technique

Participants were selected using purposive sampling, convenience sampling, and snowball sampling techniques based on the study's inclusion criteria.

Instruments

Data were collected using a Sociodemographic Data Sheet, the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988), the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30 Version 3.0) (Aaronson et al., 1993), and the Kessler Psychological Distress Scale (K10) (Kessler et al., 2002).

Procedure

Ethical approval was obtained from the Institutional Ethics Committee before data collection. Permission to conduct the study was obtained from the hospital administration. Participants were informed

about the purpose of the study, and written informed consent was obtained prior to participation. Confidentiality, anonymity, and voluntary participation were ensured throughout the study. Data were collected through both offline administration at the hospital and online questionnaires distributed via Google Forms.

Statistical Analysis

Data were analysed using Jamovi statistical software. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to summarise participant characteristics and study variables. Pearson's product-moment correlation was performed to examine the relationships among perceived social support, quality of life, and psychological distress. Linear regression analysis was conducted to determine whether perceived social support and quality of life significantly predicted psychological distress.

Analysis and Findings

Figure 1: Demographic Details of the Participants

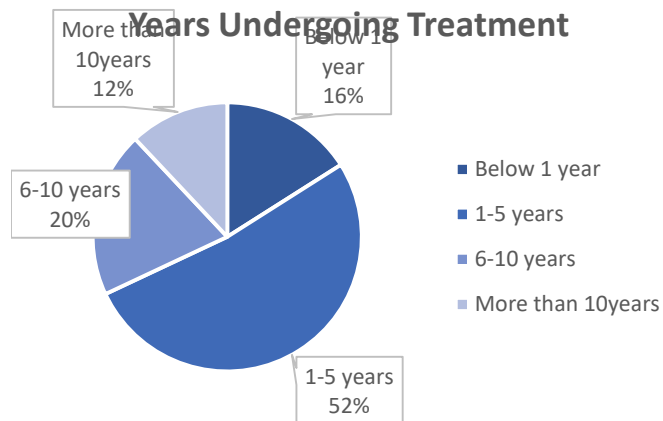


Figure 1(a)

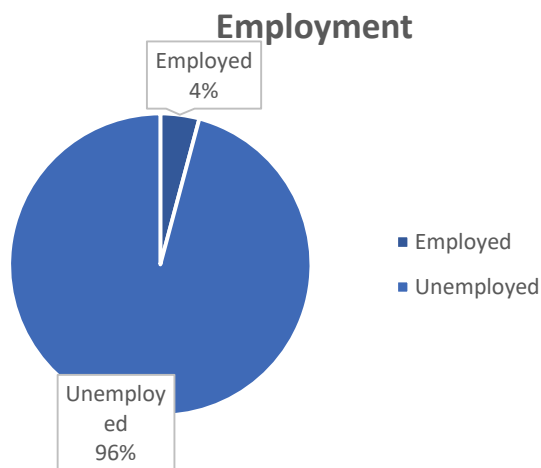


Figure 1(b)

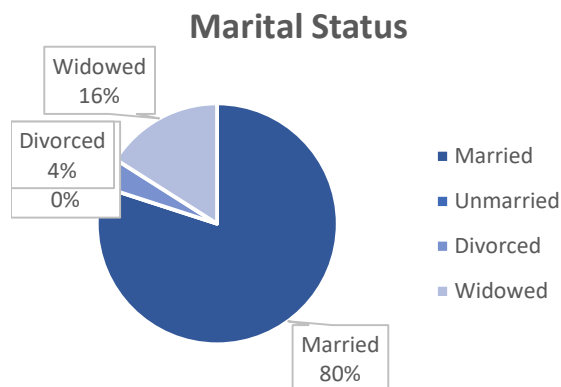


Figure 1(c)

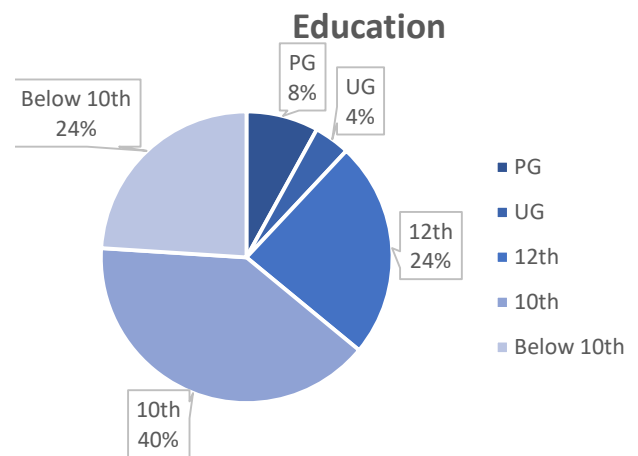


Figure 1(d)

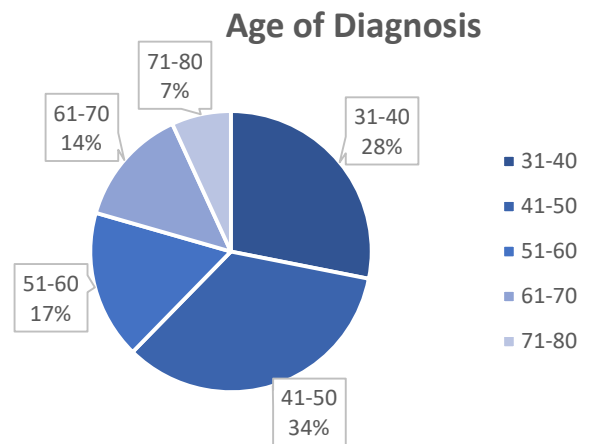


Figure 1(e)

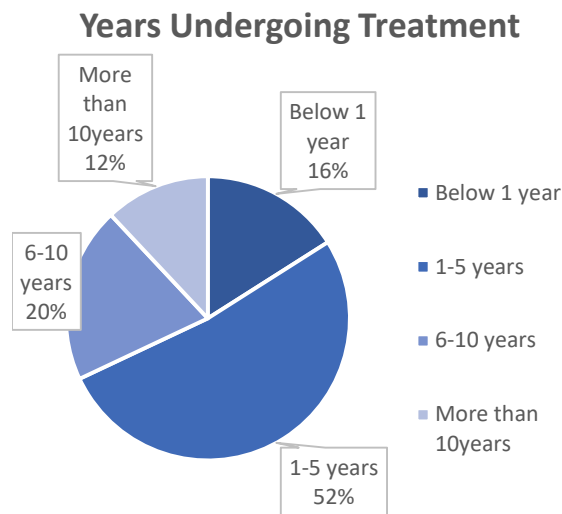


Figure 1(f)

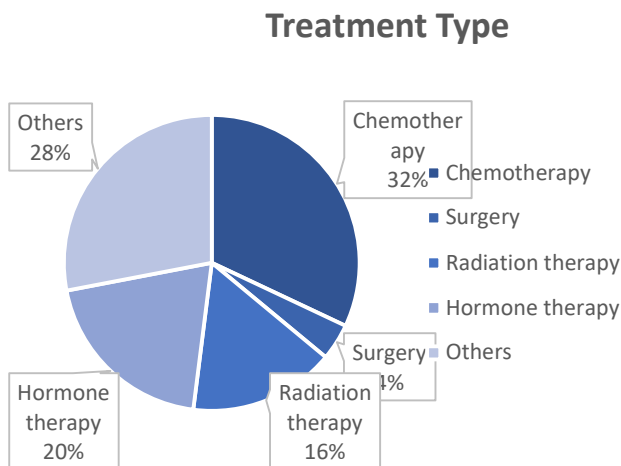


Figure 1(g)

Figure 1 presents the demographic characteristics of the participants included in the study. The sample consisted of 25 female breast cancer patients undergoing active treatment. Most participants were aged 41–50 years (37%), were unemployed (96%), and married (80%). The majority had completed 10th standard education (40%), were diagnosed between 41–50 years of age (34%), and had been undergoing treatment for 1–5 years (52%). Chemotherapy was the most common treatment modality (32%), followed by hormone therapy, radiation therapy, surgery, and other treatment modalities. These findings provide an overview of the characteristics of the study population and the clinical context in which the psychosocial variables were examined.

Table 1: Shows the Mean, Standard Deviation (SD), and Standard Error (SE) Scores of the Participants on Perceived Social Support, Quality of Life and Psychological Distress.

Descriptives

	Perceived social support	Quality of life	Psychological distress
N	25	25	25
Mean	62.9	47.3	27.9
Std. error mean	2.80	4.92	1.86
Standard deviation	14.0	24.6	9.30

Correlation Matrix

		Perceived social support	Quality of life	Psychological distress
Perceived social support	Pearson's r	—		
	df	—		
	p-value	—		
Quality of life	Pearson's r	0.456	—	
	df	23	—	
	p-value	0.022	—	
Psychological distress	Pearson's r	-0.350	-0.726	—
	df	23	23	—
	p-value	0.087	<.001	—

Table 1 presents the descriptive statistics of the study variables. The mean perceived social support score was 62.9 (SD = 14.0), indicating that participants generally reported a high level of perceived social support. The mean quality of life score was 47.3 (SD = 24.6), while the mean psychological distress score was 27.9 (SD = 9.30), suggesting moderate levels of quality of life and psychological distress among the participants. These findings indicate that although participants generally perceived adequate social support, they continued to experience challenges related to quality of life and emotional well-being during active treatment.

Table 2: Correlation Matrix of Perceived Social Support, Quality of Life and Psychological Distress

Table 2 represents the Pearson correlation analysis conducted to examine the relationship between perceived social support, quality of life and psychological distress. A significant positive correlation was observed between perceived social support and quality of life ($r = 0.456$, $p = 0.022$), indicating that participants who perceived greater social support reported better quality of life. A negative correlation was found between perceived social support and psychological distress ($r = -0.350$, $p = 0.087$); however, this relationship was not statistically significant. Furthermore, a significant negative correlation was observed between quality of life and psychological distress ($r = -0.726$, $p < 0.001$), suggesting that higher quality of life was associated with lower levels of psychological distress. These findings

indicate that while perceived social support is positively associated with quality of life, quality of life demonstrates a stronger relationship with psychological distress.

Table 3: Model Fit Measures for the Prediction of Psychological Distress from Quality of Life

Model Fit Measures

Overall Model Test							
Model	R	R ²	Adjusted R ²	F	df1	df2	p
1	0.726	0.526	0.506	25.6	1	23	<.001

Note. Models estimated using sample size of N=25

Table 3 shows the linear regression analysis performed to determine whether quality of life significantly predicted psychological distress among female breast cancer patients undergoing active treatment. The regression model was statistically significant ($F(1,23) = 25.6, p < 0.001$) and explained 52.6% of the variance in psychological distress ($R^2 = 0.526$), indicating a substantial predictive relationship. The adjusted R^2 value of .506 further suggested that approximately 50.6% of the variance in psychological distress was explained by quality of life.

Model Coefficients - Psychological distress

Predictor	Estimate	SE	t	p	Stand. Estimate
Intercept	40.901	2.8812	14.20	<.001	
Quality of life	-0.274	0.0542	-5.06	<.001	-0.726

Table 4: Regression Coefficients for the Prediction of Psychological Distress from Quality of Life

Table 4 presents the regression coefficients indicated that quality of life was a significant predictor of psychological distress ($B = -0.274, SE = 0.0542, t = -5.06, p < 0.001, \beta = -0.726$). The negative regression coefficient indicates that higher quality of life was associated with lower psychological distress. These findings demonstrate that quality of life plays an important role in predicting the psychological well-being of women undergoing active treatment for breast cancer.

The findings of the present study demonstrate that perceived social support was positively associated with quality of life, whereas quality of life was negatively associated with psychological distress. Although perceived social support showed a

negative relationship with psychological distress, the association was not statistically significant. Furthermore, quality of life emerged as a significant predictor of psychological distress, explaining over half of its variance among the participants. These findings highlight the importance of psychosocial well-being, particularly quality of life, in understanding the psychological experiences of female breast cancer patients undergoing active treatment.

Conclusion

The present study examined the relationship between perceived social support, quality of life, and psychological distress among female breast cancer patients undergoing active treatment. The findings demonstrated that perceived social support was positively associated with quality of life, indicating that women who perceived greater support from family, friends, and significant others reported better overall well-being. A significant negative relationship was observed between quality of life and psychological distress, suggesting that improved quality of life was associated with lower levels of psychological distress.

Although perceived social support showed a negative association with psychological distress, the relationship was not statistically significant. Furthermore, quality of life emerged as a significant predictor of psychological distress, explaining a substantial proportion of its variance.

These findings highlight the importance of addressing psychosocial factors alongside medical treatment to promote the overall well-being of women with breast cancer. While social support contributes to enhancing quality of life, improving quality of life appears to play a more direct role in reducing psychological distress during active treatment. The study emphasizes the need for comprehensive, patient-centered care that integrates psychosocial assessment and supportive interventions into routine oncology practice.

Despite the study's contribution, its findings should be interpreted in light of certain limitations, including the relatively small sample size and cross-sectional design, which limit the generalizability of the results. Future research involving larger and more diverse samples and longitudinal designs may provide a deeper understanding of the dynamic relationships among

perceived social support, quality of life, and psychological distress across different stages of breast cancer treatment.

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2. Conflict of Interest Statement:

The authors declare no conflict of interest with respect to the research, authorship, or publication of this article.

3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

□ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis, Writing – Review; Editing

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Article

Immediate Effects of Brief Social Media Scrolling Versus Mindfulness Meditation on Psychological Distress Among College Students

Article History

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Abstract-

Social media and mobile phones have become essential components of our daily lives. Although modern technologies provide entertainment and convenience, excessive usage can have detrimental effects on one's physical, emotional, and mental health. Social media's growing prevalence in daily life has raised concerns about its impact on psychological well-being, specifically among young adults. High levels of stress, anxiety, and emotional distress have been linked to frequent usage of social media. Simultaneously, mindfulness-based techniques have been shown to improve emotional regulation and psychological well-being. The aim of the present study is to examine whether a brief mindfulness meditation session following social media scrolling can reduce psychological distress in college students or not. An experimental research design was employed with college students as participants. All participants initially engaged in ten minutes of social media scrolling to simulate typical digital

engagement. Following this, the experimental group participated in a ten-minute guided mindfulness meditation session focusing on breathing and present-moment awareness, while the control group did not receive any intervention. After the activity, participants in both groups completed the Depression Anxiety Stress Scales (DASS-21) to assess levels of psychological distress. Data was analysed using an independent sample t-test to compare the levels of depression, anxiety, and stress between the experimental and control groups. The results were not statistically significant.

Keywords: social media, mindfulness meditation, psychological well-being, DASS-21, psychological distress

Introduction

The rapid expansion of digital technology has significantly transformed patterns of communication, information consumption, and daily functioning, particularly among young adults. College students represent one of the most active user groups of smartphones and social media

platforms, frequently engaging with digital content for extended periods throughout the day (Keles et al., 2020). While these platforms provide opportunities for social interaction, entertainment, and access to information, growing concerns have emerged regarding their potential impact on psychological well-being. A growing body of empirical research suggests that excessive and unregulated social media use is associated with negative mental health outcomes (Primack et al., 2017; Lin et al., 2016). Studies have demonstrated that increased screen time and passive consumption of online content are linked to higher levels of stress, anxiety, and depressive symptoms (Twenge et al., 2018; Lin et al., 2016). Continuous exposure to large volumes of information may contribute to cognitive overload and emotional dysregulation, thereby negatively affecting psychological functioning (Mark et al.,

2018). In particular, unstructured and prolonged engagement with social media platforms has been associated with maladaptive cognitive processes such as social comparison and negative self-evaluation, which can further lead to emotional distress (Vogel et al., 2014; Verduyn et al., 2017).

One specific behavioural pattern that has gained attention in recent years is “doom scrolling,” defined as the repetitive consumption of negative or distressing online content. This behaviour has been associated with heightened rumination, worry, and emotional exhaustion. Exposure to negative digital content has been shown to increase negative affect and stress responses, thereby reinforcing maladaptive emotional cycles (Yang Y et al., 2023). Such patterns are particularly concerning among college students, who are frequently exposed to algorithm-driven content that prioritizes

emotionally salient information. In contrast to the adverse effects associated with excessive digital engagement, mindfulness-based interventions have been widely recognized as effective approaches for enhancing psychological well-being. Mindfulness refers to the intentional, present-moment awareness of one’s thoughts, feelings, and bodily sensations in a non-judgmental manner. Research indicates that mindfulness-based practices can reduce anxiety, depression, and stress by improving emotional regulation and decreasing rumination (Khoury et al., 2013; Hoge et al., 2013). Meta-analytic evidence further supports the effectiveness of mindfulness-based interventions in reducing symptoms of anxiety and depression across diverse populations. (Hofmann et al., 2010)

Importantly, recent research suggests that even brief mindfulness interventions can produce immediate psychological benefits.

Experimental studies have demonstrated that short-duration mindfulness practices can reduce negative affect and improve emotional responses following exposure to distressing stimuli. These findings highlight the potential of brief, accessible interventions in real-world contexts, particularly for populations with limited time and high digital engagement.

Despite the growing literature on both social media use and mindfulness interventions, most existing studies have focused on long-term associations or correlational designs. There remains a lack of experimental research examining the immediate psychological effects of social media exposure and the potential buffering role of brief mindfulness practices in real-time contexts. Furthermore, limited research has specifically explored these dynamics among college students in controlled experimental settings. Therefore, the present

study aims to examine the effect of a brief mindfulness meditation following social media scrolling on psychological distress among college students. By focusing on immediate outcomes, this study seeks to contribute to the emerging field of digital well-being and provide practical insights into simple interventions that can mitigate the psychological impact of everyday digital engagement.

Review Of Literature

The relationship between social media use and psychological well-being has been widely examined in contemporary research, particularly among young adults. Several studies have identified a positive association between excessive social media use and increased levels of psychological distress. For instance, Ethan Kross et al. (2013) found that increased Facebook use predicted declines in subjective well-being over time, suggesting that frequent

engagement with social networking platforms may negatively impact emotional health. Similarly, Melissa G. Hunt et al. (2018) demonstrated that limiting social media use significantly reduced loneliness and symptoms of depression, highlighting the potential mental health risks associated with prolonged digital engagement.

A key mechanism underlying these effects is passive consumption of content, particularly through scrolling behaviours. Passive use of social media has been associated with increased social comparison, which can lead to negative self-evaluation and reduced self-esteem. Research by Hanna Krasnova et al. (2013) indicated that passive following of others on social media can evoke feelings of envy, thereby contributing to decreased life satisfaction. Furthermore, exposure to emotionally negative content has been shown to amplify stress responses and negative affect, reinforcing maladaptive

emotional patterns (Garfin, Silver, & Holman, 2020).

In recent years, the phenomenon of doom scrolling has gained attention as a distinct pattern of problematic digital behaviour. Doom scrolling involves the repetitive consumption of negative or distressing news, often driven by uncertainty and the need for information. Studies have suggested that such behaviour is associated with increased anxiety, rumination, and emotional exhaustion (Price et al., 2022). Continuous exposure to negative information may activate stress-related cognitive processes, thereby intensifying psychological distress and reducing emotional resilience.

In contrast to these negative outcomes, mindfulness-based interventions have been widely recognized for their effectiveness in improving mental health. Mindfulness practices promote present-moment awareness and non-judgmental

acceptance of experiences, which can reduce rumination and enhance emotional regulation. A meta-analysis by Stefan G. Hofmann et al. (2010) found that mindfulness-based therapy is effective in reducing symptoms of anxiety and depression across clinical and non-clinical populations. Similarly, Khoury et al. (2013) reported that mindfulness-based interventions produce moderate to large effects in reducing psychological distress.

Specific to college populations, mindfulness has been shown to reduce problematic smartphone use and associated distress. Research by Greg Feldman et al. (2023) demonstrated that a brief breath-focused mindfulness exercise led to improvements in emotional regulation and physiological responses when compared to unstructured smartphone use. These findings suggest that even short-duration

interventions can have meaningful psychological benefits.

Despite the substantial evidence linking social media use to psychological distress and mindfulness to improved well-being, there remains a lack of experimental studies examining their interaction in immediate contexts. Much of the existing literature focuses on long-term outcomes or correlational relationships, limiting the ability to draw causal inferences. In particular, few studies have investigated whether brief mindfulness interventions can effectively reduce the immediate psychological impact of social media scrolling within a controlled setting.

The present study addresses this gap by experimentally examining the effect of a short mindfulness meditation following social media exposure on psychological distress among college students. By focusing on immediate outcomes, this research

contributes to the understanding of how simple, time-efficient interventions can support psychological well-being in an increasingly digital world.

Methodology

- **Aim:** The aim is to examine whether a brief mindfulness meditation session following social media scrolling can reduce psychological distress in college students or not.
- **Hypothesis:**
 1. Null Hypothesis (H_0): There will be no significant difference in levels of depression, anxiety, and stress between participants who engage in mindfulness meditation after social media scrolling and those who do not.
- **Research Design:** A between-group design was used to examine the effect of a brief mindfulness intervention on psychological distress following social media exposure.

Participants were randomly assigned to one of two groups-

1. **Experimental group (n = 30)**
2. **Control group (n = 30)**
3. **Variables:**

Independent Variable: Mindfulness meditation

Dependent Variable: Levels of psychological distress, operationalized as Depression, Anxiety, and Stress.

- **Sampling:** The study involved 60 undergraduate and postgraduate students selected through convenience sampling within the age range of 18-25 years.
 - **Inclusion Criteria:**
 1. Individuals who range between 18-25 years.
 2. Individuals who engage in social media regularly.
 3. Participants who can understand and comprehend English.
 - **Exclusion Criteria:**
-

1. Individuals with a diagnosis of severe psychiatric disorder.
2. Participants currently undergoing therapy or counselling.
3. Participants who do not actively engage in social media.

- **Tool Used:** Psychological distress was assessed using the Depression Anxiety Stress Scales (DASS-21) developed by Syd Lovibond and Peter Lovibond (1995). The DASS-21 is a self-report instrument consisting of 21 items, divided into three subscales, namely Depression, Anxiety, and Stress. Participants rate each item on a 4-point Likert scale ranging from 0 (“Did not apply to me at all”) to 3 (“Applied to me very much or most of the time”). The scale has demonstrated good reliability and validity across both clinical and non-clinical populations.

Procedure

The study was conducted in a controlled environment to minimize external distractions. Participants were first briefed about the general purpose of the study and provided informed consent.

Step 1: Social Media Exposure: All participants were initially asked to engage in 10 minutes of social media scrolling. This was done to simulate typical digital engagement behaviour. Participants were instructed to scroll passively without actively interacting (e.g., commenting or messaging).

Step 2: Group Allocation and Intervention: Following the scrolling phase, participants were randomly assigned to an experimental group, which underwent a 10-minute guided mindfulness meditation session. The meditation focused on breath awareness, encouraging participants to observe their thoughts and bodily sensations

without judgment. Followed by control group that did not receive any intervention and remained seated quietly for the same duration. Immediately after the intervention phase, all participants completed the **DASS-21** questionnaire to assess their levels of depression, anxiety, and stress.

- **Ethical Considerations:**

Ethical guidelines were strictly followed throughout the study. Participation was voluntary, and informed consent was obtained before data collection. Participants were assured of confidentiality and anonymity. They were also informed of their right to withdraw from the study at any point without penalty. No harmful or distressing stimuli were used, and the mindfulness intervention posed no psychological risk to participants.

- **Data Analysis:**

An Independent Sample T-Test was conducted using Jamovi software to compare the mean scores between the two groups.

- **Results:**

An Independent Sample T- Test was conducted to evaluate whether participants who underwent intervention obtained lower distress scores compared to those who did not follow through with the intervention.

Descriptive statistics indicated that the experimental group ($n = 30$) had a mean score of 24.1 ($SD = 20.1$), while the control group ($n = 30$) had a higher mean score of 32.9 ($SD = 21.7$). The results of the t-test showed that the difference between the two groups was not statistically significant, $t(58) = -1.63$, $p = 0.109 > 0.05$. Thus, the null hypothesis was retained, indicating that there is no statistically significant difference in psychological distress between the two groups.

Discussion

The present study aimed to examine the immediate effects of brief mindfulness meditation following social media scrolling on psychological distress among college students.

Although the experimental group reported lower mean distress scores compared to the control group, the difference was not statistically significant. This suggests that while mindfulness meditation may have a potentially beneficial effect, the impact of a single brief session may not be strong enough to produce significant changes in psychological distress. The findings partially align with previous research that highlights the effectiveness of mindfulness; however, such benefits are often observed with longer or repeated interventions rather than short-term exposure.

Conclusion

This study examined the immediate effects of brief mindfulness meditation following social media scrolling on psychological distress among college students. Although the experimental group showed lower levels of distress compared to the control group, the difference was not statistically significant.

These findings suggest that while mindfulness may have a positive influence, a single short session may not be sufficient to produce measurable changes. Further research with longer and repeated interventions is needed to better understand its effectiveness.

Limitations

There are several limitations that must be considered while interpreting the findings. Relatively small sample size limits the generalizability of the results to a broader population. Additionally, the use of a single, brief 10-minute mindfulness intervention may not have been sufficient to produce significant changes in psychological distress.

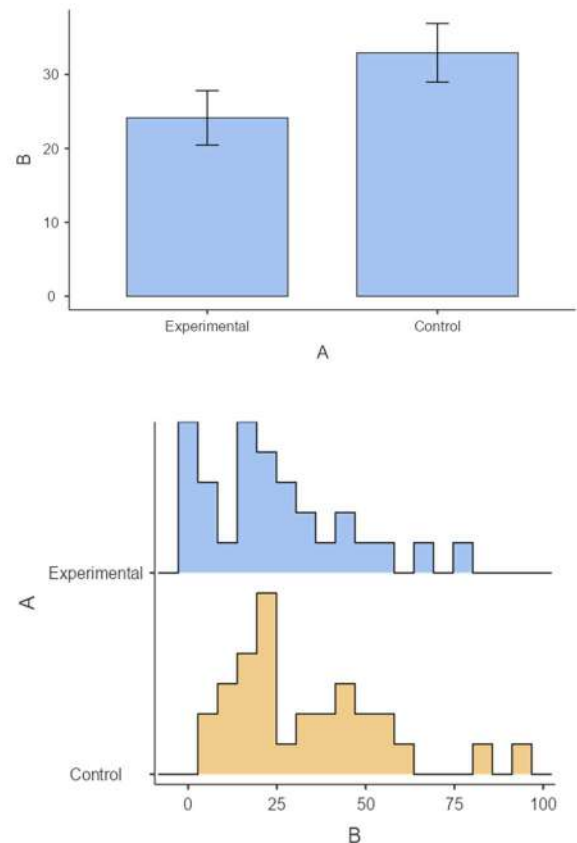
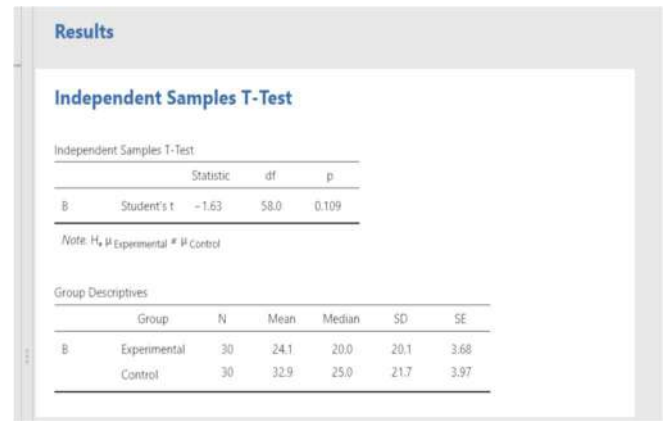
The study employed convenience sampling, which may introduce bias and affect the representativeness of the sample. Data were collected using self-report measures (DASS-21), which are subject to social desirability and response biases. Furthermore, external variables such as participants prior emotional

state, type of social media content viewed, and individual differences were not controlled. The absence of a long-term follow-up also restricts understanding of the sustained effects of the intervention and participant engagement with the mindfulness exercise.

Implications

The findings of the study suggest that brief mindfulness meditation may have potential as a simple and accessible strategy for managing psychological distress among college students, even though the results were not statistically significant. It highlights the importance of promoting mindful practices as part of student well-being and encourages educational institutions to incorporate short mental health interventions into daily routines. Additionally, the study provides a foundation for future research to explore the

effectiveness of mindfulness with larger samples, longer durations, and repeated sessions to better understand its impact.



Appendix

DASS21 Name: V P Date: 11/02/26

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

Statement	0	1	2	3
1 (a) I found it hard to wind down	0	1	2	3
2 (a) I was aware of dryness of my mouth	0	1	2	3
3 (a) I couldn't seem to experience any positive feeling at all	0	1	2	3
4 (a) I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 (a) I found it difficult to work up the initiative to do things	0	1	2	3
6 (a) I tended to over-react to situations	0	1	2	3
7 (a) I experienced trembling (e.g. in the hands)	0	1	2	3
8 (a) I felt that I was using a lot of nervous energy	0	1	2	3
9 (a) I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10 (a) I felt that I had nothing to look forward to	0	1	2	3
11 (a) I found myself getting agitated	0	1	2	3
12 (a) I found it difficult to relax	0	1	2	3
13 (a) I felt down-hearted and blue	0	1	2	3
14 (a) I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15 (a) I felt I was close to panic	0	1	2	3
16 (a) I was unable to become enthusiastic about anything	0	1	2	3
17 (a) I felt I wasn't worth much as a person	0	1	2	3
18 (a) I felt that I was rather touchy	0	1	2	3
19 (a) I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20 (a) I felt scared without any good reason	0	1	2	3
21 (a) I felt that life was meaningless	0	1	2	3

8 x 3 = 24

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2. Conflict of Interest Statement:

The authors declare no conflict of interest with respect to the research, authorship, or publication of this article.

3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

AI Dependency in Higher Education: Examining the Relationship Between Generative AI Reliance, Cognitive Engagement, and Academic Performance Among Undergraduate Students.

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Abstract:

The rapid proliferation of Generative Artificial Intelligence (GenAI) in higher education has significantly transformed how undergraduate students approach academic tasks such as research, problem-solving, and assignment completion. These advanced technologies offer notable advantages by enhancing efficiency, simplifying complex processes, and increasing access to information. However, the growing integration of AI tools has also raised concerns regarding excessive reliance and its potential implications for students' cognitive engagement and academic development. This study investigates the phenomenon of AI dependency, defined as the overreliance on generative AI tools for academic tasks that may reduce independent thinking, critical evaluation, and learning autonomy.

Using a quantitative research design, data were collected from undergraduate students to examine patterns of AI usage, levels of dependency, and related cognitive and psychological outcomes. The study is guided

by the concept of the AI paradox, which proposes that while AI tools improve productivity and creativity, their uncontrolled use may simultaneously undermine deep learning and skill acquisition. In addition to assessing the relationship between AI dependency and academic performance indicators, the research explores psychological predictors including trust in AI systems, technostress, and affective responses associated with AI use.

The findings reveal considerable patterns of AI reliance among students, with higher levels of dependency associated with reduced cognitive effort and increased reliance on automated outputs. Moreover, affective factors such as satisfaction and trust in AI tools appear to reinforce continued usage and potential overreliance. These results highlight the need for responsible AI integration through digital literacy initiatives and pedagogical strategies that encourage critical engagement while preserving students' intellectual autonomy.

Keywords: *Generative Artificial Intelligence, AI Dependency, Academic Performance, Technostress, Cognitive Engagement, Higher Education.*

Introduction

The emergence of Generative Artificial Intelligence (GenAI) has significantly altered the landscape of higher education. Generative AI systems, which rely on deep learning architectures such as transformer-based large language models, are capable of producing human-like text, code, images, and analytical outputs. These tools are increasingly being integrated into students' academic routines, assisting with tasks such as literature exploration, drafting written responses, coding, and data analysis. As a result, the boundaries between human cognitive effort and algorithmic assistance are becoming progressively blurred.

The diffusion of digital technologies into education has historically been associated with both opportunities and challenges. Earlier innovations such as online learning platforms, digital libraries, and automated tutoring systems have demonstrated that technology can enhance accessibility and efficiency in learning environments (Selwyn, 2016). Generative AI, however, represents a qualitatively different development because it does not merely deliver information but actively creates new content. Consequently,

students are increasingly able to complete complex academic tasks with minimal manual effort.

1.2 Background of the Study

Recent surveys indicate that a substantial proportion of university students are already incorporating AI tools into their coursework. Studies conducted in higher education contexts have reported that students use AI primarily for brainstorming ideas, summarizing information, generating written drafts, and solving technical problems (Dwivedi et al., 2023). While such practices can support productivity and creativity, scholars have raised concerns that excessive reliance on automated systems may undermine the development of independent cognitive skills essential for higher learning.

Within this context, researchers have begun to conceptualize the phenomenon of AI dependency, referring to a pattern in which individuals rely excessively on AI tools for tasks that traditionally require human reasoning and critical evaluation. Excessive technological reliance has historically been associated with reduced problem-solving engagement and diminished cognitive effort (Carr, 2010). When applied to generative AI

systems, this dependency may influence how students process information, evaluate evidence, and construct knowledge.

The rapid adoption of generative AI has therefore generated an emerging debate within academia regarding the long-term implications of these tools for learning quality, academic integrity, and intellectual autonomy. Understanding how AI dependency develops and how it influences academic outcomes has become a pressing concern for educators and researchers alike.

1.3 Rationale for the Study

Although generative AI technologies provide substantial academic support, their widespread use has also generated uncertainty regarding their impact on students' learning processes. Universities across the world are currently attempting to determine how these technologies should be integrated into teaching and assessment practices. However, most institutional discussions have focused primarily on issues of plagiarism detection and academic misconduct.

Such a narrow focus overlooks a more complex psychological question: how the

increasing availability of AI tools is reshaping students' cognitive engagement with academic tasks. Educational psychology research has long emphasized that meaningful learning occurs through effortful processing, critical analysis, and sustained intellectual struggle (Bjork & Bjork, 2011). When technological systems perform a significant portion of this intellectual work, students may experience reduced engagement with the underlying concepts.

Furthermore, existing discussions surrounding AI in education often rely on speculative claims rather than systematic empirical evidence. While anecdotal reports suggest that students may become overly dependent on AI-generated solutions, there remains limited quantitative research examining the relationship between AI reliance and academic performance outcomes.

The present study is therefore motivated by the need to examine the phenomenon of AI dependency within a structured empirical framework. By analyzing patterns of AI usage alongside psychological variables such as trust in AI systems and technostress, the study aims to provide a more nuanced

understanding of how generative technologies are influencing contemporary learning environments.

1.4 Problem Statement

The increasing integration of generative AI tools in higher education has created a paradoxical situation. On one hand, these technologies enhance efficiency and enable students to perform complex tasks with greater ease. On the other hand, there is growing concern that excessive reliance on AI-generated outputs may reduce independent cognitive engagement and hinder the development of essential academic skills.

Despite widespread discussion about the educational implications of AI, there remains insufficient empirical research examining the extent to which undergraduate students develop dependency on AI tools and how such dependency influences academic performance. Additionally, the psychological mechanisms underlying AI reliance—such as trust in automated systems, satisfaction with AI outputs, and experiences of technostress—are not yet clearly understood.

Without a systematic examination of these factors, educators and institutions lack the evidence required to develop effective policies and pedagogical strategies for responsible AI integration. Consequently, there is a need for empirical research that investigates the patterns, predictors, and academic consequences of AI dependency among undergraduate students.

1.5 Purpose of the Study

The purpose of this study is to examine the phenomenon of AI dependency among undergraduate students and to evaluate its relationship with academic performance and associated psychological factors. Specifically, the study aims to assess patterns of reliance on generative AI tools and explore how such reliance influences cognitive engagement and academic outcomes.

By investigating both behavioral and psychological dimensions of AI usage, the research seeks to contribute to a deeper understanding of how emerging technologies are reshaping learning processes in higher education.

1.6 Research Questions

1. To what extent do undergraduate students rely on generative AI tools for academic tasks?
2. Is there a relationship between AI dependency and students' academic performance?
3. What psychological factors contribute to the development of AI dependency among students?
4. How do affective responses such as trust and satisfaction influence continued reliance on AI systems?
5. Are there differences in AI usage patterns across demographic or disciplinary groups?

1.7 Significance of the Study

This study holds significance for multiple stakeholders within the higher education ecosystem. For educators, the findings may provide insights into how students are integrating AI technologies into their learning processes and how such practices influence cognitive engagement. Understanding these patterns can inform the development of teaching strategies that promote critical thinking while incorporating technological tools responsibly.

For institutional policymakers, empirical evidence regarding AI dependency can support the formulation of guidelines and digital literacy initiatives aimed at encouraging ethical and balanced AI usage. Universities are increasingly recognizing the need to move beyond restrictive policies toward frameworks that emphasize informed and responsible engagement with emerging technologies.

From a research perspective, the study contributes to the emerging body of literature examining the psychological and educational implications of generative AI. By focusing on dependency patterns and their cognitive consequences, the research addresses an area that has received relatively limited empirical attention.

1.8 Theoretical Framework

The study is conceptually informed by the Interaction of Person–Affect–Cognition–Execution (I-PACE) model, originally proposed to explain the development of behavioral dependencies related to digital technologies (Brand et al., 2019). The I-PACE framework suggests that problematic technology use arises from the interaction between individual predispositions,

emotional responses, cognitive evaluations, and behavioral outcomes.

Within the context of AI usage, the Person component refers to individual characteristics such as academic self-efficacy, personality traits, and motivation for learning. These predispositions influence how students approach technological tools and whether they rely on them excessively.

The Affect component includes emotional responses such as satisfaction with AI outputs, perceived convenience, and trust in automated systems. Positive affective reinforcement may encourage repeated use of AI tools, potentially leading to habitual reliance.

The Cognition component involves beliefs about the reliability and usefulness of AI systems. Students who perceive AI-generated outputs as highly accurate may be less likely to critically evaluate the information produced by these systems.

Finally, the Execution component represents the behavioral manifestation of technology use, including patterns of AI reliance in academic tasks. Over time, repeated interactions between these components may

lead to the development of dependency-like usage behaviors.

Applying the I-PACE framework allows the present study to examine AI dependency as a multifaceted phenomenon influenced by psychological, cognitive, and behavioral factors.

1.9 Research Gaps

Despite the rapidly expanding literature on artificial intelligence in education, several gaps remain evident. First, a substantial portion of existing research focuses on ethical concerns and plagiarism detection, rather than examining the psychological processes underlying students' reliance on AI technologies.

Second, there is limited empirical evidence regarding the relationship between AI dependency and measurable academic performance outcomes. Most existing studies rely on conceptual discussions rather than systematic data analysis.

Third, relatively few investigations have explored the affective and cognitive mechanisms that may reinforce AI reliance, including trust in automated outputs and satisfaction with AI-assisted performance.

Finally, research examining disciplinary and demographic variations in AI usage patterns remains limited, leaving unanswered questions regarding how different groups of students interact with generative technologies.

1.10 Research Objectives

The study seeks to systematically investigate patterns of generative AI reliance and their implications for undergraduate academic performance.

Primary Objective. To examine the relationship between AI dependency and academic performance among undergraduate students.

Secondary Objectives. To examine the role of affective responses such as trust and satisfaction in reinforcing AI reliance.

To explore the relationship between AI dependency and cognitive engagement in learning tasks.

Review of Literature

The rapid integration of Generative Artificial Intelligence (GenAI) into academic environments has stimulated an emerging body of research examining its implications

for learning processes, cognitive engagement, and academic outcomes. Scholars from the fields of educational psychology, technology studies, and higher education research have begun to investigate the ways in which AI tools influence students' study behaviors, decision-making patterns, and intellectual development. The following review synthesizes key literature related to AI reliance, cognitive engagement, psychological predictors, and academic performance among undergraduate students.

Cotton, Cotton, and Shipway (2023) examined how students across different academic disciplines perceive and use generative AI technologies. Their research revealed that students in STEM fields were more likely to adopt AI tools for coding, data analysis, and problem-solving tasks, whereas students in humanities disciplines primarily used AI for writing assistance and idea generation. The study also highlighted differences in attitudes toward AI reliability and ethical concerns, suggesting that disciplinary cultures influence how students engage with emerging technologies.

Dwivedi et al. (2023) conducted a comprehensive multidisciplinary review

examining the adoption of generative artificial intelligence across educational and professional contexts. Their analysis highlighted that generative AI tools such as language models are increasingly used by students for drafting assignments, summarizing academic content, and solving complex problems. The researchers observed that while these tools significantly improve efficiency and accessibility to information, they also introduce the risk of overreliance, particularly among students who lack advanced subject knowledge. Dwivedi and colleagues emphasized that excessive dependence on AI-generated outputs may discourage critical evaluation of information and potentially weaken analytical reasoning skills. Their findings underscore the growing need to examine patterns of AI reliance within higher education and evaluate how these patterns influence learning outcomes.

Kasneci et al. (2023) explored the educational potential and risks associated with generative AI systems in higher education environments. Through an interdisciplinary review of emerging research, the authors found that students

often use AI tools as cognitive assistants for brainstorming ideas, drafting essays, and obtaining explanations of difficult concepts. While these practices may enhance productivity, the study also identified a tendency among students to accept AI-generated responses without rigorous verification. Kasneci et al. argued that such patterns represent an early form of algorithmic dependency, where learners gradually substitute their own reasoning processes with automated outputs. The authors concluded that although AI can function as a powerful learning aid, uncontrolled reliance may hinder the development of independent academic competencies.

Baidoo-Anu and Ansah (2023) conducted an empirical study examining how university students utilize generative AI tools in academic settings. Their findings indicated that students frequently employ AI systems to assist with writing assignments, information retrieval, and concept clarification. While moderate use of AI tools was associated with improved productivity and time management, the researchers observed that heavy reliance often corresponded with reduced engagement in

independent study practices. Students who relied extensively on AI-generated responses demonstrated lower levels of conceptual understanding and weaker retention of course material. The study therefore suggested that although AI can enhance efficiency, excessive dependence may undermine the depth of learning necessary for academic success.

Chan and Hu (2023) investigated the relationship between generative AI use and academic performance among university students in technology-driven learning environments. Their study revealed that students who used AI tools as supplementary resources - rather than replacements for independent thinking-tended to achieve better academic outcomes. Conversely, students who depended heavily on AI-generated content were more likely to experience superficial learning, where assignments were completed successfully but conceptual mastery remained limited. The authors argued that the educational value of AI technologies depends largely on how they are integrated into the learning process.

Brand et al. (2019) proposed the Interaction of Person-Affect-Cognition-Execution (I-PACE) model to explain the development of technology-related behavioral dependencies. According to this framework, problematic patterns of technology use arise from interactions between individual predispositions, emotional responses, cognitive expectations, and behavioral reinforcement mechanisms. Although originally applied to internet-use disorders, the model has been increasingly used to examine emerging forms of digital dependency. When applied to AI technologies, the I-PACE model suggests that factors such as personality traits, emotional satisfaction from AI assistance, and beliefs about AI reliability may collectively contribute to the development of AI reliance behaviors.

Sparrow, Liu, and Wegner (2011) conducted a series of experiments investigating how access to digital information systems affects human memory and learning processes. Their findings demonstrated that individuals who expect information to be readily available through technological sources tend to remember the location of information rather than the information itself. This

phenomenon, sometimes referred to as the “Google effect,” illustrates how digital technologies reshape cognitive strategies for knowledge acquisition. In the context of generative AI, similar mechanisms may lead students to rely on AI-generated explanations instead of actively constructing knowledge through independent analysis.

Ayyagari, Grover, and Purvis (2011) further examined the relationship between technology use and workplace stress by analyzing how technological demands influence emotional well-being. Their findings revealed that excessive reliance on digital tools can produce feelings of dependency, frustration, and mental exhaustion. Although the study focused on organizational settings, similar mechanisms may operate among students who rely heavily on AI systems to manage academic workloads. Such findings suggest that technological assistance can simultaneously provide convenience while also contributing to psychological strain.

Hancock, Billings, Schaefer, Chen, De Visser, and Parasuraman (2011) conducted a meta-analysis examining the factors influencing trust in human-machine

interactions. Their findings indicated that perceived reliability, ease of use, and prior positive experiences significantly increase users' trust in automated technologies. The researchers concluded that high levels of trust often predict greater dependence on technological systems, particularly when users

believe that the technology consistently produces accurate outcomes. Within the context of generative AI, such dynamics may reinforce continued reliance on AI-generated academic content.

Carr (2010) examined the broader cognitive consequences of heavy reliance on digital technologies in his influential analysis of internet usage and attention patterns. Carr argued that when individuals consistently depend on external technological systems for information processing, they gradually engage less deeply with complex ideas. This process, often described as cognitive offloading, reduces the need for sustained concentration and critical reasoning. Although Carr's work predates generative AI technologies, his analysis provides an important conceptual foundation for

understanding how excessive technological assistance may influence cognitive engagement in educational contexts.

Tarafdar, Tu, Ragu-Nathan, and Ragu-Nathan (2007) introduced the concept of technostress, describing the psychological strain individuals experience when interacting with complex digital systems. Their research identified several key dimensions of technostress, including information overload, technological complexity, and constant connectivity pressures. In educational contexts, students who frequently engage with advanced technological tools may experience cognitive fatigue and stress associated with continuous digital engagement. As AI technologies become more embedded in academic workflows, technostress may emerge as an important psychological outcome of prolonged AI usage.

Lee and See (2004) conducted a foundational study on trust in automated systems, examining how individuals develop confidence in technological decision-making tools. Their research demonstrated that when users perceive automated systems as highly reliable, they are more likely to accept system

outputs without critical verification. While such trust can enhance efficiency, excessive trust may lead to inappropriate reliance on automation. In educational settings, students who perceive AI-generated responses as accurate or authoritative may rely on them without thoroughly evaluating the information.

Bandura (1997) developed the concept of self-efficacy, referring to individuals' beliefs in their capacity to perform specific tasks successfully. Within educational contexts, students with high academic self-efficacy tend to demonstrate greater persistence, deeper learning strategies,

and stronger engagement with challenging material. Conversely, students with lower confidence in their abilities may be more inclined to rely on external support systems, including technological tools. The self-efficacy framework therefore provides a useful lens for understanding why certain students may become more dependent on AI assistance during academic tasks.

3. METHODOLOGY

3.1 Aim of the Study

The present study aims to explore how the use of generative artificial intelligence (AI) relates to academic performance among undergraduate students. In addition, the study attempts to examine whether the extent of AI usage can significantly predict students' academic outcomes.

3.2 Objectives of the Study

The study was conducted with the following objectives:

1. To examine the level of generative AI usage among undergraduate students.
2. To assess students' academic performance.
3. To identify the relationship between generative AI usage and academic performance.
4. To determine whether generative AI usage serves as a predictor of academic performance.

3.3 Research Design

A quantitative research approach was adopted for the present study. More specifically, the research followed a cross-sectional correlational design, as the data were collected at a single point in time and

analyzed to identify relationships between variables.

This design was considered suitable because the study focuses on measurable variables namely generative AI usage and academic performance and aims to examine their statistical association rather than establish causation. Correlation analysis was used to understand the direction and strength of the relationship, while regression analysis was applied to test the predictive role of AI usage.

3.4 Variables of the Study

Independent Variable (IV). Generative AI Usage

Dependent Variable (DV). Academic Performance

3.5 Operational Definitions

Generative AI Usage. In the context of this study, generative AI usage refers to the extent to which students utilize AI-based tools for academic purposes such as completing assignments, generating written content, or solving problems. This was measured through self-reported responses, where higher scores reflect greater usage.

Academic Performance. Academic performance refers to the level of achievement attained by students in their studies. It was assessed using self-reported academic scores provided by the participants.

Undergraduate Students. Undergraduate students are individuals enrolled in bachelor's degree programs, typically falling within the age range of 18 to 25 years.

3.6 Sample and Sampling Technique

3.6.1 Sample Characteristics.

The study was conducted on a sample of 91 undergraduate students. Participants were drawn from different academic backgrounds, providing a general representation of students currently engaged in higher education.

3.6.2 Sampling Technique.

A purposive sampling method was employed to select participants. This approach was chosen because the study required individuals who actively use generative AI tools for academic work. Only those who met the study criteria were included.

3.7 Inclusion and Exclusion Criteria

Inclusion Criteria

- Students currently enrolled in undergraduate programs
- Individuals aged between 18 and 25 years
- Students who use generative AI tools for academic purposes
- Participants who agreed to provide informed consent

Exclusion Criteria

- Individuals who are not students
- Participants outside the specified age range
- Responses that were incomplete or inconsistent

3.8 Tools Used for Data Collection**3.8.1 Generative AI Usage**

Scale. Generative AI usage was measured using a self-structured questionnaire designed for this study. The scale included items assessing how frequently and in what ways students use AI tools in their academic work, such as for writing assignments, idea generation, and problem-solving. Higher scores indicated greater reliance on AI.

3.8.2 Academic Performance Measure.

Academic performance was assessed through self-reported academic scores. Participants were asked to indicate their level of performance, which was used as an overall indicator of academic achievement.

3.9 Procedure

Data collection was carried out through an online survey. Participants were first provided with a brief explanation of the study's purpose. They were assured that their responses would remain confidential and would be used solely for academic purposes.

After giving informed consent, participants completed the questionnaire, which included demographic details, items related to generative AI usage, and academic performance.

Care was taken to ensure that participants could respond freely and without pressure. Once the responses were collected, the data were organized, coded, and prepared for statistical analysis.

3.10 Ethical Considerations

Ethical guidelines were strictly followed throughout the research process. Participation in the study was entirely

voluntary, and informed consent was obtained from all participants prior to data collection.

Confidentiality and anonymity were maintained at all stages. No identifying information was collected, and the data were used exclusively for research purposes.

Participants were informed that they could withdraw from the study at any time without any negative consequences. Since the study involved only self-reported academic and behavioral information, it posed minimal risk to participants.

3.11 Statistical Analysis

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS).

The following statistical methods were applied:

- Descriptive statistics (mean and standard deviation) to summarize the data
- Tests of normality (Kolmogorov–Smirnov and Shapiro–Wilk) to assess data distribution

- Pearson’s correlation analysis to examine the relationship between generative AI usage and academic performance

- Simple linear regression analysis to determine whether generative AI usage predicts academic performance

The level of significance for all statistical tests was set at $p < .05$

RESULTS

4.1 Introduction

This chapter presents the statistical results obtained from the analysis of data collected from 91 participants. The analyses were conducted to examine the relationship between generative AI usage and academic performance, and to determine whether generative AI usage significantly predicts academic performance. Data were analyzed using SPSS, and results are presented in a sequential manner, beginning with descriptive statistics, followed by normality testing, correlations, and simple linear regression.

4.2 Descriptive Statistics

Descriptive statistics were computed to summarize the central tendency and

dispersion of the study variables, namely generative AI usage and academic performance.

The mean score for academic performance was 28.14 (SD = 4.97), indicating moderate levels of academic achievement among the participants. The mean score for generative AI usage was 27.29 (SD = 7.09), suggesting moderate engagement with generative AI tools in the sample.

These results indicate that participants generally reported moderate academic performance alongside moderate levels of generative AI usage.

Table 4.1

**Descriptive Statistics of Study Variables
(N = 91)**

Variable	Mean	Standard Deviation
Academic Performance	28.14	4.97k
Generative AI	27.29	7.09

4.3 Normality Testing

Tests of normality were conducted to assess the distribution of academic performance scores.

Table 4.2

Tests of Normality for Academic Performance (N = 91)

Variable	Kolmogorov-Smirnov Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Academic Performance	.060	9	.200	.988	9	.57
		1	*		1	7

*This is a lower bound of the true significance.

a. Lilliefors Significance Correction.

4.4 Correlation Analysis

Pearson's product-moment correlation analysis was conducted to examine the relationship between generative AI usage and academic performance.

The results revealed a weak negative correlation between generative AI and academic performance scores, $r = -.126$, which was not statistically significant ($p = .118$, one-tailed). This finding indicates that higher levels of generative AI usage were slightly associated with lower academic performance, though not reaching statistical significance.

Table 4.3

Correlation Between Generative AI Usage and Academic Performance

Variables	1	2
1. Academic Performance	1.000	-.126
2. Generative AI	-.126**	1.000

Note. **p < .118 (one-tailed); N = 91.

4.5 Simple Linear Regression Analysis

A simple linear regression analysis was performed to examine whether generative AI usage significantly predicts academic performance.

4.5.1 Model Summary

The regression model was not statistically significant, with $R = .126$ and $R^2 = .016$, indicating that only 1.6 percent of the variance in academic performance was explained by generative AI usage. The adjusted R^2 value of .005 suggests limited model reliability.

Table 4.4

Model Summary for Regression Analysis

R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics: F Change	df 1	df 2	Sig. F Change
.12	.01	.005	4.96279	1.427	1	89	.235

4.5.2 ANOVA for Regression Model

The ANOVA results indicated that the regression model was not statistically significant, $F(1, 89) = 1.427$, $p = .235$, confirming that generative AI usage does not significantly predict academic performance.

Table 4.5

ANOVA Summary for Regression Model

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	35.136	1	35.136	1.427	.235
Residual	2192.007	89	24.629		
Total	2227.143	90			

4.5.3 Regression Coefficients

The regression coefficients indicated that generative AI usage did not significantly predict academic performance. Generative AI emerged as a non-significant predictor, $B = -0.088$, $t = -1.194$, $p = .235$. The standardized beta coefficient ($\beta = -.126$) indicates a weak effect size.

Table 4.6

Regression Coefficients for Predicting Academic Performance

Predictor	B	Std. Error	β	t	Sig.
(Constant)	30.547	2.079	—	14.691	.000
Generative AI	-0.088	0.074	-.126	-1.194	.235

4.6 Residual Analysis

Residual diagnostics indicated that the assumptions of linear regression were adequately met. Standardized residuals ranged from -2.618 to 2.052, with a mean close to zero, suggesting no extreme outliers or systematic deviations.

Table 4.7

Residual Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	26.7581	29.5780	28.1429	.62482	91
Residuals	-12.99179	10.18445	.00000	4.93514	91
Std. Predicted Value	-2.216	2.297	.000	1.000	91
Std. Residual	-2.618	2.052	.000	.994	91

4.7 Summary of Findings

The major findings of the study are summarized as follows:

- Participants reported moderate levels of academic performance and generative AI usage.
- Data met normality assumptions.
- A weak non-significant negative correlation existed between generative AI usage and academic performance.
- Generative AI did not significantly predict academic performance ($R^2 = 1.6\%$).
- Regression assumptions were satisfied. [pmc.ncbi.nlm.nih+](https://pubmed.ncbi.nlm.nih/)1

DISCUSSION AND ANALYSIS

5.1 Introduction

The purpose of this chapter is to interpret and critically discuss the findings presented in Chapter 4. The study examined whether generative AI usage significantly influences academic performance among 91 participants. Using correlation and simple linear regression analyses, the results demonstrated a weak negative but non-significant relationship. This chapter situates these findings within existing theoretical frameworks and empirical literature.

5.2 Interpretation of Descriptive Findings

Descriptive statistics showed moderate academic performance and generative AI usage. Normality was confirmed, supporting parametric analyses. These levels suggest routine AI integration without extremes.

5.3 Relationship Between Generative AI Usage and Academic Performance

A weak negative correlation ($r = -.126$, $p = .118$) emerged, indicating no robust link. This diverges from reviews showing positive learning outcomes in some contexts, possibly due to dependency reducing critical thinking.

5.4 Predictive Role of Generative AI Usage

The non-significant model ($R^2 = .016$, $p = .235$) implies generative AI minimally influences performance variance. Contrasting meta-analyses with positive effects, this highlights potential null impacts in general samples.

5.5 Integration With Social Comparison Theory

Per Social Comparison Theory, AI outputs may trigger unfavorable self-assessments, explaining the negative trend. This echoes studies on comparisons harming academic self-concepts.

5.6 Cognitive-Behavioral Interpretation

Generative AI may not reshape academic cognitions substantially, with weak prediction signaling stable habits over tool reliance.

5.7 Implications of the Study

This study provides practical insights for educators and universities managing generative AI dependency among undergraduate students. The weak negative but non-significant relationship between AI reliance and academic performance ($r = -.126$, $p = .118$) highlights the need for balanced AI integration strategies that preserve cognitive engagement while leveraging efficiency benefits. Findings support developing AI literacy programs and teaching guidelines to prevent overreliance and foster independent critical thinking skills essential for long-term academic success.

5.8 Limitations of the Study

The cross-sectional design prevents establishing causality between generative AI dependency and academic outcomes. Self-reported measures of AI usage and performance may introduce social

desirability bias. The modest sample of 91 undergraduates limits statistical power and generalizability to broader student populations across disciplines and institutions.

5.9 Suggestions for Future Research

Future studies should adopt longitudinal designs to examine changes in AI dependency and cognitive engagement over time. Inclusion of mediating variables like self-efficacy or moderating factors such as academic discipline could provide deeper insight into underlying mechanisms. Larger, multi-institutional samples with objective performance measures would enhance generalizability and robustness.

5.10 Conclusion

This research finds no significant relationship between generative AI reliance and academic performance among undergraduate students, indicating moderate usage does not undermine outcomes. The findings underscore the AI paradox in education and emphasize responsible integration to maintain deep learning and intellectual autonomy. Results contribute to evidence-

based policies for sustainable AI adoption in higher education.

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3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis,
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Article

Screen Time, Procrastination, and Self-Control: An Examination of Digital Habits and Self-Regulation Among Young Adults

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Abstract:

The present research aims to examine the relationship between screen time, procrastination, and self-control among young adults. With digital technologies becoming integral to daily life, previous studies (Steel, 2007; Chen & Yan, 2016) have indicated that excessive screen exposure may foster habitual delay in goal-directed behaviors and diminish self-regulatory abilities. Research by Meier et al. (2020) further highlighted that the constant accessibility of online entertainment can act as a distraction, reinforcing procrastinatory tendencies and lowering impulse control. The central research question investigates whether increased screen time predicts higher levels of procrastination and lower levels of self-control. Accordingly, the hypotheses propose that (H1) there is a positive correlation between screen time and procrastination, and (H2) a negative correlation between screen time and self-control. This quantitative study employs a correlational research design using a sample of 65 young adults, selected through

convenience and snowball sampling. Data collection utilizes standardized self-report measures assessing daily screen usage, procrastination tendencies, and self-control levels. For data interpretation, Pearson's correlation analysis and independent sample t-test were applied to evaluate the predictive relationship between variables. Results indicated no significant differences in procrastination or self-control between individuals using screens less than versus more than 6 hours daily. However, a significant negative correlation between self-control and procrastination ($r = -0.43$, $p = 0.00$) confirms that stronger self-regulatory capacity associates with reduced procrastinatory behavior, independent of screen time. These insights contribute to understanding how digital habits influence behavioral regulation among emerging adults in the contemporary media landscape.

Keywords: *Screen Time, Procrastination, Self-Control, Digital Behaviour, Young Adults, Self-Regulation.*

INTRODUCTION

The rapid proliferation of digital devices has made high screen time a defining feature of college life. Students today spend

considerable hours daily on smartphones, social media, and streaming platforms—often at the expense of academic responsibilities. Alongside this trend, procrastination—the voluntary delay of intended tasks despite awareness of negative consequences—has emerged as a significant concern in higher education (Corneille & de Wit, 2022). Equally implicated is self-control, the capacity to regulate impulses and sustain goal-directed behavior (Şimşir Gökulp et al., 2023).

While the individual links between screen use, procrastination, and self-control have been explored separately, their interplay in college student populations warrants closer examination. LeBlanc et al. (2017) note that though screens offer informational and social benefits, unregulated use poses measurable risks to behavioral and cognitive functioning. The present study directly examines these relationships, with two specific hypotheses: (H1) screen time is positively correlated with procrastination, and (H2) screen time is negatively correlated with self-control.

REVIEW OF LITERATURE

LeBlanc et al. (2017) provide a comprehensive overview of screen time in

modern life, acknowledging both its benefits and its capacity to displace health-promoting behaviors such as physical activity and sleep. Their work establishes that heavy recreational screen use is particularly prevalent among young adults and is associated with a range of behavioral risks when left unmonitored—forming a foundational basis for studying downstream psychological outcomes such as procrastination.

A significant positive relationship between smartphone screen time and academic procrastination has been reported among students, with higher daily phone use linked to increased delays in schoolwork (Mobile Phone Use and Academic Procrastination, 2024). Corneille and de Wit (2022) further demonstrated that targeted screen time reduction interventions produced meaningful improvements in self-regulation, suggesting that screen exposure actively undermines the regulatory processes needed to initiate and persist with tasks. The always-available, reward-laden nature of digital content makes screens a highly effective vehicle for task avoidance.

Hill et al. (2025) examined a specific but consequential form of screen-related delay—

bedtime procrastination through a randomised pilot trial (REST-O intervention). Their findings indicate that evening screen use prolongs sleep onset, reduces sleep quality, and contributes to next-day fatigue, which in turn impairs motivation and task initiation. Bozkurt et al. (2024) corroborate this, demonstrating that problematic smartphone use mediates the relationship between bedtime procrastination and poor sleep quality in young people. Together, these studies highlight how screen-induced procrastination extends beyond academics into broader daily functioning.

Şimşir Gökalep et al. (2023) directly examined the relationship between self-control and procrastination among young people, finding that multi-screen addiction mediates this relationship. Students with lower self-control reported greater screen addiction, which in turn predicted higher procrastination levels. This positions self-control not merely as a correlate of screen behavior, but as an active mechanism through which screen time exerts its influence on task delay. The authors argue that digital environments—by offering constant, low-effort stimulation—erode inhibitory control over time, leaving

individuals more vulnerable to impulsive disengagement from demanding tasks.

METHODOLOGY

Collectively, the existing literature converges on the view that screen time, procrastination, and self-control form an interconnected triad. Excessive screen use appears to both reflect and reinforce weakened self-regulation, with procrastination as a key behavioral outcome. The present study extends this work by examining all three variables simultaneously in a college student sample, offering an integrated perspective on how digital habits shape regulatory functioning in academic contexts.

Research Design

The present study employs a quantitative, non-experimental correlational research design to examine associations between screen time, procrastination, and self-control among young adults. This design was selected because it permits systematic measurement of naturally occurring relationships between variables while preserving ecological validity, without requiring variable manipulation. A correlational approach is particularly appropriate for exploratory psychological

research where experimental control would be neither feasible nor ethically warranted (Field, 2018).

Participants

The sample comprised 65 young adults aged 18–30 years, corresponding to the developmental period of emerging adulthood characterized by increased autonomy, technology use, and vulnerability to self-regulatory challenges (Arnett, 2000). Inclusion criteria required participants to be regular digital device users, defined as spending at least one hour daily on screens for non-occupational purposes. Individuals with diagnosed neurological or psychiatric conditions affecting self-regulation were excluded.

Participants were recruited through convenience and snowball sampling. Convenience sampling involved approaching readily accessible individuals within the researchers' social and academic networks at St. Claret College, Bangalore. Snowball sampling was subsequently employed, wherein initial participants referred the study to other eligible individuals. This combined approach augmented sample size within available constraints and is commonly

employed in exploratory psychological research (Patton, 2002).

Measures

Procrastination Scale (Lay, 1986). Procrastination was assessed using Lay's (1986) 20-item self-report questionnaire measuring general tendency to delay task initiation and completion. Items are rated on a 5-point Likert scale (1 = extremely uncharacteristic to 5 = extremely characteristic), with higher scores indicating greater procrastination. The scale demonstrates sound psychometric properties, including satisfactory internal consistency (Cronbach's $\alpha = .82$) and convergent validity with task avoidance and low conscientiousness (Lay, 1986; Ferrari et al., 1995).

Brief Self-Control Scale (Tangney, Baumeister, & Boone, 2004). Self-control was measured using the 13-item Brief Self-Control Scale (BSCS), assessing capacity to override dominant behavioral responses and impulses. Items are rated on a 5-point Likert scale (1 = not at all like me to 5 = very much like me), with higher scores reflecting greater self-control. The scale exhibits strong reliability (Cronbach's $\alpha = .83$ to $.89$) and

predictive validity across behavioral outcomes including academic performance and interpersonal functioning (Tangney et al., 2004).

Screen Time Self-Report Measure. Daily screen time was assessed through a structured self-report questionnaire developed for this study. Participants estimated average daily screen time (in hours) across smartphones, laptops, tablets, and desktop computers. Additionally, participants identified their most frequent device activities from categories including academic/work tasks, internet browsing, streaming content, online gaming, shopping, and listening to music/podcasts. Participants also identified the single activity occupying the greatest proportion of their total screen time, providing contextual understanding of screen use beyond quantitative dimensions.

Procedure

Ethical approval was obtained from the institutional authority at St. Claret College, Bangalore. All participation was voluntary, with written informed consent obtained before study commencement. Participants were assured of response confidentiality and

informed of their right to withdraw without consequence.

An online survey was administered via Google Forms with standardized instructions provided. Demographic data including age and sex were collected. Average completion time was approximately 20–25 minutes.

Data Analysis

Following data collection, statistical analysis was conducted using IBM SPSS Statistics. The procedure began with data cleaning and preparation, which involved reverse-scoring scale items, calculating composite scores for procrastination and self-control, and categorizing screen time into two groups (low vs. high) using a 6-hour cutoff. Descriptive statistics were then generated to define the sample demographics and primary digital activities. To test for differences between screen time groups, an independent samples t-test was performed. Finally, Pearson's Product-Moment Correlation was performed to determine the strength and direction of the relationship between procrastination and self-control, with the significance level set at $p < 0.05$.

ANALYSIS AND FINDINGS

Table 1

Summary of Statistical Analyses

Test Type	Variables	Result	Significance/CI
Pearson's Product-Moment Correlation	Procrastination and Self-Control	$r = -0.43$	$p = 0.00$
Independent Sample t-test	Screen Time and Procrastination	$p = 0.94$	95% CI
Independent Sample t-test	Screen Time and Self-Control	$p = 0.36$	95% CI

The study examined the relationship between self-control, procrastination, and screen time among young adults. Statistical analyses were conducted to test the proposed hypotheses and explore the nature of relationships between these variables. The data findings are summarised in Table 1.

Correlation Between Self-Control and Procrastination

A Pearson correlation analysis revealed a moderate negative relationship between self-control and procrastination ($r = -0.43$, $p = 0.00$). This indicates that individuals with higher self-control tend to procrastinate less, while those with lower self-control tend to procrastinate more. The relationship was

statistically significant, suggesting it is unlikely to have occurred by chance. This finding supports the theoretical framework that self-regulatory capacity plays a crucial role in task initiation and completion behaviors.

Screen Time Group Differences

An independent sample t-test was conducted by dividing participants into two groups: those using screens for less than 6 hours and those using screens for more than 6 hours per day. The results showed no significant difference between the two groups in terms of self-control ($p = 0.36$) or procrastination ($p = 0.94$). While slight differences in mean scores were observed, these differences were not statistically significant. This suggests that screen time duration alone, when categorized using a 6-hour cutoff, does not meaningfully differentiate individuals in their self-regulatory capacities or procrastination tendencies.

Overall, the findings suggest that self-control is significantly related to procrastination, with the negative correlation indicating an inverse relationship between these constructs. However, screen time duration (using a 6-hour cutoff) does not appear to

have a significant effect on either self-control or procrastination in this sample. Additionally, since the study is correlational in nature, no cause-and-effect conclusions can be drawn, and other factors may also influence these variables. The results indicate that the quality and context of screen use may be more relevant than quantity alone in understanding self-regulatory outcomes.

CONCLUSION

This study investigated whether screen time quantity predicts procrastination and self-control among young adults aged 18–30 years. Results indicated no significant differences in procrastination or self-control between individuals using screens less than versus more than 6 hours daily. However, a significant negative correlation between self-control and procrastination ($r = -0.43$, $p = 0.00$) confirms that stronger self-regulatory capacity associates with reduced procrastinatory behavior, independent of screen time.

These findings imply that for digitally integrated young adults, screen duration alone may not meaningfully predict self-regulatory outcomes. Instead, the quality, purpose, and context of digital engagement

likely play more critical roles. The data suggest that young adults successfully balance substantial screen use—evidenced by 78.3% engaging in academic tasks—with self-control maintenance. This challenges simplistic narratives about screen time being inherently detrimental and points toward a more nuanced understanding of digital behavior.

Practical Implications

Practically, these results imply that interventions targeting procrastination should focus on strengthening general self-control capacities rather than solely restricting screen access. Educational institutions and mental health practitioners working with young adults may benefit from implementing programs that enhance executive functioning, impulse regulation, and goal-setting skills. Rather than blanket screen time restrictions, interventions should help individuals develop metacognitive awareness about their digital habits and cultivate intentional, purposeful technology use.

Limitations

Several limitations warrant consideration. First, the correlational design precludes

causal inferences; experimental manipulation would be necessary to establish directional relationships. Second, the reliance on self-report measures introduces potential bias, as participants may underestimate or overestimate their screen time and behavioral tendencies. Third, the convenience and snowball sampling methods limit generalizability beyond the immediate population studied. Finally, the binary categorization of screen time at 6 hours may oversimplify a continuous variable, potentially masking more subtle dose-response relationships.

Future Research Directions

Future research should employ longitudinal designs to track changes in these variables over time and investigate potential bidirectional relationships. Objective measurement of screen time through device usage logs would strengthen validity beyond self-report. Additionally, examining the qualitative dimensions of screen use—such as passive consumption versus active creation, or social connection versus solitary use—may reveal more meaningful predictors of self-regulatory outcomes. Investigation of moderating variables such as mindfulness, sleep quality, and social support could also

illuminate protective factors that buffer against potential negative effects of screen use.

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The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

☐ Author 2: Data Curation, Formal Analysis, Writing – Review Editing

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Article

Experience Of Emotional Boundaries In Online Communication Among College Students

Article History

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Abstract

The swift advancement of digital communication technologies has significantly altered the way humans interact, especially regarding emotional expression and the establishment of personal boundaries. Emotional boundaries, which are the psychological limits people set to manage their emotional involvement and protect their well-being, face rising challenges in online settings. Aspects like anonymity, fewer non-verbal signals, asynchronous communication, and continual connectivity add to the intricacy of emotional exchanges in digital arenas. This study seeks to investigate the lived experiences surrounding emotional boundaries in online interactions, particularly how individuals understand, navigate, and uphold these boundaries in their everyday communications. A descriptive research approach was utilized, and data were gathered through structured questionnaires that evaluated emotional engagement, communication practices, and boundary-setting behaviors. The results

indicate that while online platforms promote connection and emotional sharing, they can also lead to unclear boundaries, emotional fatigue, and a higher risk of negative interactions like miscommunication and cyber intrusion. Elements such as emotional intelligence, digital literacy, and social context significantly influence how individuals manage to establish healthy boundaries. The research emphasizes the necessity of cultivating digital emotional competence and points to the need for awareness-based interventions to encourage balanced and thoughtful communication practices. These findings enhance the study of cyberpsychology and provide practical insights for mental health practitioners, educators, and users of digital platforms.

Introduction

In recent times, the way people communicate has changed a lot, especially among college students. Most interactions that once happened face-to-face are now taking place through digital platforms like WhatsApp, Instagram, and online meeting apps. This shift has made communication quicker and more convenient, but at the same time, it has also affected how people express and understand emotions. When people talk in

person, they usually rely on things like facial expressions, tone, and body language to understand each other better. But in online communication, these elements are often missing. Because of that, messages can sometimes be misunderstood or taken in the wrong way. At the same time, many people find it easier to open up online, which can lead to more frequent or deeper emotional conversations. In this situation, emotional boundaries become very important. These boundaries are like personal limits that help individuals manage how much they get emotionally involved with others. They help a person decide what they are comfortable sharing and how much of others' emotions they can handle. In real-life interactions, these limits are often adjusted naturally, but in online communication, it is not always easy to do so because the usual social signals are not clearly present. This becomes even more relevant for college students, as this stage of life involves forming close relationships and depending on peers for emotional support. Many students use online platforms to share their feelings, discuss personal matters, or stay connected with friends. However, being constantly connected can sometimes become stressful.

Some students may share more than they intended, while others may feel emotionally drained because they are too involved in others' problems. Cultural factors also play a role here. In many cases, students may find it difficult to create distance or say no, especially when they do not want to hurt others. In online communication, this can become more complicated because even a delayed reply might be misunderstood. Considering all these aspects, it is important to explore how college students actually experience emotional boundaries in online communication. This study mainly focuses on their personal experiences, including how they handle emotional involvement and what kind of challenges they face in their daily digital interactions.

Aim of the Study

The aim of this study is to explore how college students manage emotional boundaries in online communication and how they deal with different emotional situations that come up in digital interactions.

Need for the Study

Today, online communication takes up a major part of students' daily lives, but its impact on their emotional space is not always

given enough attention. Many students engage in conversations that are emotionally meaningful, but they may not always be aware of when their limits are being crossed.

Some students may feel tired or overwhelmed because they are always available for others. Others may feel pressure to reply immediately or continue conversations even when they do not feel comfortable. There are also situations where students share personal information without fully thinking about the consequences, which may later cause discomfort. Although there is a good amount of research on social media and mental health, fewer studies focus specifically on emotional boundaries and how students personally experience them. Most studies focus on general outcomes rather than the actual feelings and experiences of individuals. Understanding this area is important because unclear emotional boundaries can lead to stress, confusion, and difficulties in relationships. On the other hand, having clear boundaries can help individuals feel more balanced and emotionally secure. This shows the need for studying this topic in more detail.

Variables of the Study

Emotional Boundaries

Emotional boundaries refer to the limits individuals set in order to protect their feelings while interacting with others. These limits help them decide how much they want to share and how much emotional involvement they are comfortable with, while still maintaining their own identity.

(Katherine, 2000; Petronio, 2002)

Online Communication

Online communication refers to the exchange of messages, ideas, and emotions through digital platforms such as messaging apps, social media, emails, and video calls. It is different from face-to-face communication because it often lacks direct emotional cues and may not happen instantly.

(Walther, 2011)

Types of Variables

Types of Emotional Boundaries

- Rigid boundaries – when a person avoids emotional closeness and keeps distance
- Porous boundaries – when a person becomes too involved and struggles to say no

- Healthy boundaries – when a person maintains a balance between being connected and protecting their own space

Types of Online Communication

- Synchronous communication – real-time interaction like calls or chats
- Asynchronous communication – delayed communication like texts or emails
- Public communication – communication shared with a wider audience
- Private communication – communication limited to specific individuals

Theoretical Background

1.Communication Privacy Management Theory

This theory mainly talks about how people handle their personal information. Everyone has some things they want to keep private and some things they are okay sharing. So, we all have our own “rules” about what to tell others and what not to. These rules actually act like emotional boundaries. When we share something personal, we are letting someone into our emotional space. In online communication, this becomes a bit risky because once something is shared, we don’t

really have full control over it. It can be forwarded or saved easily. Because of that, people may later feel uncomfortable or feel that their boundaries were crossed.

2.Social Information Processing Theory

This theory explains how people manage to communicate even without seeing each other face-to-face. Since we don't have body language or tone online, we try to adjust by using texts, emojis, timing, etc. Even though people slowly get used to this, there are still chances of misunderstanding. A simple message can be taken in different ways depending on how the other person reads it. Because of this, emotional boundaries can get affected, as people might feel hurt or confused even when that was not the intention.

3.Hyperpersonal Model

This model says that sometimes online communication can feel even more intense than real-life interaction. People may open up more easily online because they feel a bit safer or less judged. They may also present only the good side of themselves. Because of this, relationships can become very deep very

fast. But this can also lead to problems, because people may get emotionally attached quickly or share too much without thinking. This can weaken emotional boundaries.

4.Boundary Regulation Theory

This theory is about how people try to balance being close to others and having their own space. Sometimes we want to talk and connect, and sometimes we just want to be left alone. Emotional boundaries help us manage this balance. But in online communication, this becomes difficult because people are always reachable. Messages keep coming, and there is often an expectation to reply quickly. This can reduce personal space.

5.Attachment Theory

This theory says that the way we form relationships depends a lot on our early experiences. Some people are comfortable in relationships and can manage emotions well. Some may become too dependent and need constant reassurance. Others may avoid getting close to people. These patterns also show up in online communication. For example, some people may keep checking messages again and again, while others may ignore or delay replies.

6.Emotional Intelligence Theory

This theory is about how well a person understands and manages emotions. If someone is good at understanding their own feelings, they will know when something is bothering them. They can say no, take a break, and not get too involved in others' problems. This helps them maintain better emotional boundaries, even in online situations.

7.Uses and Gratifications Theory

This theory explains why people use online platforms. Everyone uses it for different reasons. Some use it to talk to friends, some for emotional support, some for time pass, and some for validation. Depending on the reason, people behave differently. For example, someone looking for support may share more personal things, which can affect their boundaries.

8.Social Exchange Theory

This theory looks at relationships like a balance. People expect some kind of return when they give time, care, or emotional support. If someone feels they are giving too much and not getting enough back, they may

feel tired or frustrated. At that point, they may start creating distance or setting boundaries.

9.Self-Determination Theory

This theory talks about basic needs like feeling independent, capable, and connected to others. Emotional boundaries are important to maintain independence. If someone is too involved with others emotionally, they may feel controlled or stressed.

Objectives of the Study

The present study is guided by the following objectives:

- 1.To examine the conceptual understanding of emotional boundaries in online communication
- 2.To explore how individuals experience emotional involvement and boundary regulation in digital interactions
- 3.To identify psychological, social, and technological factors influencing emotional boundary maintenance
- 4.To analyze the consequences of weak, blurred, or violated emotional boundaries

5.To suggest practical strategies for promoting healthy emotional engagement in online environments

Research Questions

How do individuals interpret and define emotional boundaries within online communication?

What are the common challenges encountered in maintaining emotional boundaries in digital interactions?

How do online communication patterns influence emotional well-being?

What coping mechanisms do individuals use to regulate emotional involvement online?

Review Of Literature

The concept of emotional boundaries in online communication has gained increasing attention with the rapid growth of digital interaction. Emotional boundaries refer to the psychological limits individuals set to protect their emotional well-being, regulate interpersonal involvement, and maintain a sense of identity in relationships. In online environments, these boundaries become more complex due to factors such as

anonymity, lack of non-verbal cues, and constant accessibility.

The study titled “Blurring Boundaries: A Psychological Investigation into the Emotional Authenticity of Virtual Relationships in the 21st Century” by Erwin Prasetyo and Nur Ifitah (2025) looks into how people experience emotions in relationships that happen mainly through online platforms, and whether those emotions are truly genuine or somewhat shaped by the digital space. The researchers used a qualitative method by going through and analysing earlier psychological studies related to online interaction, emotional bonding, and well-being. Their discussion mainly centres on how people express feelings online, the way attachments are formed in virtual settings, and how these experiences influence a person’s sense of connection and mental state. The study points out that even though online interactions can bring about real feelings such as closeness, comfort, and happiness, they are not always straightforward. Many individuals tend to show a more polished or selective version of themselves, which can make it hard to separate what is real from what is presented. This sometimes leads to feelings of

confusion, isolation, or emotional overdependence. Since online communication lacks physical presence and non-verbal cues, understanding emotions deeply can become difficult. Overall, the study suggests that while virtual relationships can be supportive, especially during times of loneliness, they cannot fully take the place of face-to-face connections, and maintaining a healthy mix of both is important for emotional balance. The study titled “The Impact of Online Communications on Different Users' Social, Emotional, and Moral Competence as a Potential Business Communication Tool” by S. Kalogiannidis and F. Chatzitheodoridis (2022) looks into how online communication influences people’s behaviour, feelings, and even their sense of values in professional settings. The authors explain that digital tools make communication quick and convenient, helping teams stay connected and work efficiently. At the same time, they point out that messages sent online can easily be misunderstood since there is no face-to-face interaction. Because of this, some people may react emotionally or misinterpret the intention behind messages. The study also notes that while some individuals feel more

confident expressing themselves online, others may feel disconnected or unsure. Overall, it suggests that online communication can be effective in business, but only when people are careful and aware of how they interact with others. The study “Exaggeration of Emotional Responses in Online Communication” by A. Caspi and S. Etgar (2023) focuses on how emotions are often expressed more strongly in online settings. The researchers found that when people communicate through screens, they may react more intensely than they would in real-life situations. This could be because there is a sense of distance and less immediate feedback from others. As a result, even small issues can turn into bigger emotional reactions. The study also highlights that without tone of voice or facial expressions, it becomes difficult to fully understand the meaning behind messages, which can lead to confusion or unnecessary conflict between people. The study titled “Navigating the Digital Mind: Emotional Intelligence and Resilience in Online Learning Environments” by S. Saha, M.K. Singh, and D. Karmakar (2026) explores how students manage their emotions while learning in online settings. It shows that

students who are more aware of their feelings and can control their emotional reactions tend to adapt better to online education. The study also discusses resilience, explaining that students who can handle stress and recover from challenges are less likely to feel overwhelmed. On the other hand, those who struggle with emotional control may experience stress, lack of motivation, or a sense of isolation. The authors highlight that emotional skills are just as important as academic ability in digital learning environments.

The study “Angry Posts Mobilize: Emotional Communication and Online Mobilization in the Facebook Pages of Western European Right-Wing Populist Leaders” by P. Gerbaudo and colleagues (2023) examines how emotional content, especially anger, spreads on social media. The researchers found that posts expressing strong emotions tend to attract more attention, leading to higher levels of engagement such as likes, comments, and shares. These emotional posts can influence people’s thoughts and even motivate them to take action. However, the study also points out that this kind of communication can increase negativity and

create divisions among users, especially in political discussions.

The study titled “Mind Your Language! How and When Victims of Email Incivility from Colleagues Experience Work-Life Conflict and Emotional Exhaustion” by C. Bernuzzi and colleagues (2024) focuses on how rude or disrespectful emails affect employees. The findings show that such negative communication does not just stay within the workplace but also affects individuals in their personal life. Many people reported feeling stressed, upset, and emotionally drained after receiving such messages. Over time, this leads to difficulty balancing work and personal life, causing emotional exhaustion. The study highlights the importance of maintaining respectful communication, even in digital formats like email.

The study “When Work and Life Boundaries are Blurred: The Effect of After-Hours Work Communication Through Communication Technology on Employee Outcomes” by

K.H. Kim and M.G. Chon (2022) looks at how work-related communication outside office hours affects employees. It explains that constant messages, emails, and calls make it difficult for people to disconnect

from work. This ongoing connection blurs the line between professional and personal life, leaving individuals feeling tired and mentally stressed. Many participants reported reduced satisfaction in both work and personal areas. The study suggests that setting clear limits on after-hours communication is important for maintaining a healthy balance.

The study titled “The Emotional Ambiguities of Healthcare Professionals' Platform Experiences” by V. Moretti and R. Pronzato (2024) explores how healthcare workers feel while using digital platforms in their jobs. The findings show that these platforms bring both positive and negative experiences. On one hand, they help professionals stay connected and share information quickly. On the other hand, the constant communication and workload can feel overwhelming. Many participants described feeling both supported and emotionally tired at the same time. This shows that digital platforms can create mixed emotional experiences in demanding professions like healthcare.

The study by T. Zhamshit (2025) on emotional burnout, psychological resilience, and work-life balance in online or hybrid work environments examines how digital

work settings affect people’s mental health. The study found that long hours of online work, continuous screen exposure, and lack of clear boundaries between work and home can lead to burnout. Many individuals feel emotionally drained because they are unable to fully disconnect from their work. However, the study also highlights that people with stronger coping skills and resilience are better able to manage these challenges. It emphasizes the need for balance, self-care, and setting boundaries in digital work environments.

“Affective Polarisation and Emotional Distortions on Social Media” by A. Tanesini (2022) looks at how social media slowly shapes the way people feel and react to things. It explains that these platforms don’t just help people communicate, but also play a big role in influencing emotions. When people are constantly seeing others’ opinions, comments, and reactions, they may start responding more emotionally without thinking much. The study points out that strong group feelings, especially anger, are quite common online, where people strongly support their own side and become more negative towards others. This creates a kind of emotional divide and makes people think

in a more one-sided way. It also mentions that while emotions like anger are normal, when they are repeatedly encouraged in online spaces, they can lead to more negativity than understanding between people.

The study titled “Transforming Habitus and Recalibrating Capital: University Students’ Experiences in Online Learning and Communication during the COVID-19 Pandemic” by M.M. Gu and C.F. Huang (2022) explores how students managed the sudden shift to online learning during the pandemic. It shows that even though the change was difficult at first, many students slowly adjusted by changing the way they study and communicate. They became more independent and started using digital tools in better ways. The study explains that students used their existing skills and experiences and reshaped them to fit the new online environment.

At the same time, the study also talks about the challenges students faced. Many found it difficult to understand lessons without direct interaction, especially because they missed things

like facial expressions and body language. Even with these difficulties, students gradually improved their communication skills in online spaces and found new ways to connect with others through chats and virtual discussions. Overall, the study shows that online learning didn’t just change how students study, but also affected how they interact and adjust to new situations.

When we put all these studies side by side, it becomes quite clear that online communication plays a big role in shaping how people feel, behave, and connect with others, but the way it affects them is not exactly the same in every situation. Research like Kalogiannidis and Chatzitheodoridis (2022), Kim and Chon (2022), and Bernuzzi et al. (2024) mostly looks at work settings and shows that even though digital communication makes things quicker and more convenient, it also brings problems like confusion, stress, and difficulty in keeping work and personal life separate. Along similar lines, Caspi and Etgar (2023) and Tanesini (2022) point out that emotions tend to get stronger in online spaces, where people may react more intensely than they normally would, especially when it comes to feelings like anger. Gerbaudo et al. (2023) also

supports this idea by showing how emotional posts spread fast on social media and can strongly influence how people respond or behave. At the same time, some studies like Saha et al. (2026) and Zhamshit (2025) bring attention to personal abilities such as managing emotions and handling stress, suggesting that people who are better at this are able to deal with online environments in a more balanced way. In a similar manner, Moretti and Pronzato (2024) show that digital communication is not always negative, as it can also help people feel connected and supported, even though it may sometimes feel overwhelming. From the student side, Gu and Huang (2022) explain that college students slowly adjust to online learning and communication by changing their habits and improving their way of interacting, even though they face challenges in the beginning, especially due to the lack of direct contact. Looking across all these studies, some common points keep coming up, like the absence of face-to-face cues leading to misunderstandings, emotions getting amplified online, and the mixing up of different parts of life, which can lead to stress or tiredness. At the same time, there are differences too, since some studies mainly

focus on negative effects like burnout and conflict, while others also show positive sides like adjustment and growth, and some focus more on the role of technology while others look at personal coping. Even with all this, one thing still feels missing. Most of these studies talk about emotions and communication in a broad way, but they don't really go deep into how people set or struggle with emotional limits, especially college students. Many of them focus more on working professionals or specific platforms, and don't fully reflect the everyday reality of students who are constantly juggling between studies, social media, and personal communication online. Also, even when emotional skills are mentioned, there is not much clarity on how students actually experience things like pressure to respond quickly, feeling emotionally drained, or not knowing when to step back. Because of this, there is a clear need to look more closely at how students understand and manage their emotional boundaries in daily online life, which is what the present study is trying to explore.

Research Methodology

Introduction In any study, the way the research is done really matters, especially

when the topic is about personal feelings and everyday experiences. In this case, the focus is on emotional boundaries in online communication, which is something most college students deal with daily. For them, online interaction is not separate from life—it's part of everything, whether it's chatting with friends, attending classes, or using social media. Because of this, their emotional experiences in these spaces can get a bit confusing at times, and not always easy to explain. They might feel pressured, overwhelmed, or unsure about how much to share or when to step back. So, to understand all this properly, it's important to use a method that lets them speak freely about what they go through, instead of just giving fixed answers. Keeping this in mind, the research is planned in a way that helps bring out their real experiences in a simple and clear manner. The next section explains how the study was

Research Design

This study uses a descriptive type of research, mainly to understand and explain people's experiences as they happen in real life. Since the topic is about emotional boundaries in online communication, it's not something that can be tested or controlled easily. So instead of experimenting, the study just looks

at how people actually feel and behave in such situations. This approach helps in getting a clear idea about their thoughts, reactions, and everyday experiences without changing anything.

Sample

The study includes people between the age of 18 and 35. This age group was chosen because they are the ones who are most active online, whether it is for studies, chatting, or social media. The participants include students and young adults who regularly use digital platforms. Since they spend a lot of time online, they are more likely to have gone through situations related to emotional boundaries, which makes their responses useful for the study.

Sl. No.	Variable	Category	Frequency (N)	Percentage (%)
1	Age	18–25 years	30	100%
2	Sex	Male	12	40%
		Female	18	60%
		Other	0	0%
3	Education	Undergraduate	20	66.7%
		Postgraduate	10	33.3%

Sampling Technique

For selecting participants, purposive sampling was used. This means people were not chosen randomly, but based on whether they use online communication regularly. The idea was to include only those who have enough experience in this area, so that they can share proper and meaningful answers. This made it easier to collect relevant information instead of getting general or unrelated responses.

Tools for Data Collection

The data were collected using a questionnaire that was specially prepared for this study. It was kept simple and easy to understand so that participants could answer without confusion. The questionnaire included basic details like age and gender, questions about how often they use online platforms, what kind of communication they usually have, how emotionally involved they feel while interacting online, and how they handle or set limits in such situations. The questions were framed in a way to understand both their habits and their personal experiences.

Data Collection Procedure

The questionnaire was shared through online platforms so that participants could fill it out easily at their own time. Before starting, they

were clearly told about the purpose of the study and what it involves. Their consent was taken before they answered the questions. Participation was completely their choice, and no one was forced. They were also assured that whatever they share will be kept private and their identity will not be revealed anywhere.

Data Analysis

Once all the responses were collected, the data were arranged and analysed in a simple way. Basic methods like counting how many people gave similar answers, finding percentages, and using charts or graphs were used to understand the results better. This helped in seeing common patterns and understanding how people experience emotional boundaries in online communication. The idea was to present the findings in a clear and easy way.

Ethical Considerations

While doing the study, proper care was taken to follow ethical rules. All participants were informed clearly before they took part, and their permission was taken. Their personal details were kept confidential, and nothing was shared outside. They were also free to stop participating at any time if they didn't

feel comfortable. Overall, the study was done in a way that made sure no one was harmed or put under any kind of stress.

Data Analysis And Interpretation

Data analysis

The study included a total of 30 participants, all of whom fell within the age range of 18–25 years, accounting for 100% of the sample. This shows that the research is entirely focused on young adults, a group that is highly involved in online communication and social networking. As a result, the data provides meaningful insight into how emotional boundaries are experienced within this digitally active age group.

In terms of gender distribution, 40% ($n = 12$) of the participants were male, while 60% ($n = 18$) were female, with no representation from other gender categories. The greater proportion of female participants indicates that the findings may be more reflective of female viewpoints. It is often observed in psychological literature that females tend to be more emotionally expressive and attentive to interpersonal dynamics, which could influence their approach to managing emotional boundaries in online spaces.

Regarding educational background, the majority of participants, 66.7% ($n = 20$), were undergraduate students, whereas 33.3% ($n = 10$) were pursuing postgraduate studies. This suggests that most respondents are in the earlier stages of their academic journey.

Undergraduate students are generally more active on digital platforms, which may expose them to more situations where emotional boundaries are tested, such as sharing personal

information or navigating peer expectations. In contrast, postgraduate students may exhibit more developed emotional control and clearer boundary-setting, possibly due to increased maturity and experience.

Interpretation

Looking at all these findings together, it can be understood that online spaces naturally create situations where emotional boundaries are not very clear. Since people are always connected through their phones and apps, there is a constant expectation to be available and responsive. This makes it hard for individuals to take a step back or create some personal space when needed. At the same time, the easy and quick nature of digital communication encourages people to open

up more, sometimes without thinking about limits.

All of this can slowly affect a person's emotional well-being. When someone is always responding, always connected, and often sharing more than they intend to, it can lead to tiredness, stress, and even a feeling of being overwhelmed. So, overall, the findings show that while online communication makes interaction easier, it also brings challenges in managing emotions and maintaining healthy boundaries, which are important for mental balance.

After going through the responses collected from the participants, some clear patterns could be seen in how people experience emotional boundaries while communicating online. One of the main things that stood out was that many participants found it quite difficult to keep a clear limit on their emotions when they were interacting through digital platforms. A good number of them mentioned that once they are online, they feel like they have to stay available most of the time. This creates a kind of pressure to reply quickly to messages, even when they may not be in the right mood or mental space to do so. Over time, this constant need to respond starts to feel tiring and leads to stress, and

some even described feeling emotionally drained because of it. Another important point that came up from the data was related to oversharing. Many participants, especially those who are active on social media, said that they tend to share their thoughts and feelings more openly online. This happens because online platforms make it very easy to express oneself, and sometimes there is also a feeling of safety or distance when communicating through a screen. Because of this, people may end up sharing personal emotions or experiences without thinking too much in the moment. Later on, some of them even felt that they had shared more than what they were actually comfortable with. This shows how the nature of online communication can slowly push people to cross their own emotional limits without fully realising it.

Some participants also pointed out that online communication lacks the usual signals we get in face-to-face interaction, like tone of voice, facial expressions, or body language. Because these cues are missing, it becomes harder to judge how much to say or how the other person might react. This sometimes leads to misunderstandings or makes people

feel unsure about how to handle their emotions in conversations. In such situations, maintaining proper emotional boundaries becomes even more difficult.

Findings, Suggestions And Conclusion

Major Findings

To begin with, emotional boundaries in digital interactions appear to be less defined and harder to manage. In contrast to in-person communication, online exchanges do not provide clear non-verbal signals such as facial expressions or tone of voice. Because of this, participants often found it difficult to judge when a conversation was becoming emotionally overwhelming or when their personal limits were being crossed. Another important observation was that greater involvement in online communication tends to increase emotional sensitivity and vulnerability. Those who were more actively engaged online reported feeling more exposed to emotionally demanding situations, including misunderstandings and the pressure of responding to others' concerns. The study also found a strong sense of expectation to stay continuously available. Many participants felt obliged to respond quickly to messages and notifications, which

created a constant sense of connection without sufficient personal space. Over time, this expectation contributed to feelings of emotional strain and fatigue. limited awareness of one's own emotions played a role in boundary-related difficulties. Several participants mentioned that they were not always able to recognize their emotional limits in the moment. As a result, they often realized that their boundaries had been crossed only after experiencing discomfort or stress. the findings suggest that skills such as digital awareness and emotional understanding are important for maintaining healthy boundaries online. Individuals who demonstrated better emotional regulation and a clearer understanding of online

interaction patterns were more capable of setting limits. They used approaches such as taking time before replying, reducing engagement, or clearly expressing their needs to maintain emotional balance.

Suggestions

Promoting awareness programs on digital emotional well-being is essential in today's highly connected world. Such initiatives can help individuals better understand how online interactions affect their emotions,

relationships, and overall mental health. By creating more awareness, people may become more conscious of their digital habits and the emotional impact of constant connectivity. It is also important to encourage individuals to set and maintain clear personal boundaries in communication. Many people struggle to express their limits in online spaces, which can lead to discomfort or emotional strain. Supporting individuals in recognizing their needs and confidently communicating them can help foster healthier and more respectful interactions. Another key area is the development of emotional regulation and mindful engagement skills. Learning how to manage emotional responses, pause before reacting, and engage thoughtfully in conversations can reduce misunderstandings and emotional exhaustion. These skills enable individuals to navigate online communication in a more balanced and self-aware manner. In addition, there is a need to educate users about privacy settings and safe digital practices. Understanding how to control visibility, manage interactions, and protect personal information can give individuals a greater sense of control over their online environment. This, in turn, supports stronger

emotional boundaries and reduces vulnerability. Individuals should be encouraged to maintain a balanced relationship with technology. Excessive use of digital platforms can lead to emotional fatigue and burnout. Adopting healthier habits, such as taking breaks, limiting screen time, and prioritizing offline interactions, can help preserve emotional well-being and create a more sustainable way of engaging with technology.

Conclusion

Emotional boundaries in online communication represent a complex and evolving aspect of modern interpersonal relationships. While digital platforms offer unprecedented opportunities for connection and expression, they also pose significant challenges in maintaining emotional balance and psychological well-being. The findings of this study highlight the need for increased awareness, education, and self-regulation in digital communication practices. By fostering emotional intelligence and digital literacy, individuals can navigate online interactions more effectively and maintain healthier emotional boundaries.

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4. Informed Consent:

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6. Author Contributions (Credit Statement):

□ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

AI Dependence And Self-Trust In Personal Thinking Among College Students

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Abstract

In many ways, artificial intelligence (AI) represents one of the most significant developments in technology in the world of modern education; however, its importance has become more prevalent with the rapid introduction of generative AI tools such as ChatGPT, Gemini, and other AI-assisted learning platforms. AI has emerged as an integral part of the academic routine of many college students; for example, students are utilizing AI for many activities such as writing assignments, developing ideas, summarizing material, solving problems, creating presentations, conducting research, and managing their academic load. While these tools are making education more accessible and convenient, there has recently been growing concern about how reliance on these systems may negatively impact a student's self-confidence in their ability to support their own thinking, have second-order judgement on their decisions, and assess information/assist in making logical/critical decisions. This paper presents a meta-analysis that assesses the link between

reliance on AI tools and self-trust in how young adults think independently. The intention of the study is to look at how AI affects students' view of themselves - specifically, their self-efficacy, their self-confidence, their emotional awareness and their ability to think critically, reason analytically, make independent decisions. It will also explore how AI is affecting learning by changing how students learn in higher education. The study was based on research articles published from 2022 - 2026, when generative AI became very easy to access and used more in academia. The studies chosen included quantitative (numerical), correlational, experimental, or survey-based research related to university/college student dependency on AI, AI literacy, cognitive functioning, emotional outcomes, and academic self-efficacy. The most prominent studies reviewed include those by Ahmad and Arshad (2025), Asio (2024), Woo et al. (2024), Nepal et al. (2024), Gerlich, Tian and Zhang, Zhai et al., and the AAC&U/Elon University survey. An analysis of the literature suggested that when used appropriately and responsibly, mechanical intelligence has the capability to enhance student academic success as well as

achievement. Multiple studies confirm that students' levels of self-efficacy, self-confidence, academic ability, and learning productivity are all positively impacted through developing their capacity for mechanical intelligence use through adequate usage education and training. AI technologies also encourage students' development of emotional awareness, self-reflective ability, customizable learning styles, and access to educational information sources through the use of technology-assisted educational solutions. Regarding the use of mechanical intelligence as a tool by students, those with higher self-confidence and greater academic achievement appeared to use mechanical intelligence more effectively and did not develop an excessive reliance on mechanical intelligence for independent academic achievement. Despite the review revealing negative consequences of excess dependency on AI (artificial intelligence), studies indicated the following negative consequences exist: when we rely too heavily on AI we have less ability to think critically and analyse things analytically; we become less creative and we are less able to solve problems independently; we may develop an offload of our cognitive duties (ex., thinking,

analysing, creating, etc.); we become mentally passive; we tend to have less intellectual involvement in what we do; we tend to lose trust in our own ability to judge things; and many educators feel that students are focusing more on getting quick answers produced by AI than they do on understanding, think critically, creatively, independently, and learn reflectively. Continuing to rely on AI for cognitive tasks may limit the opportunities for us to put forth intellectual effort and develop cognitively independently. In summary, the findings demonstrate that AI can have both positive and negative implications for students, depending largely on how often they are utilized, their intended purpose/benefit and the method of usage (frequency). The results indicate that using multiple forms of AI tools appropriately and intentionally by developing balanced and responsible patterns will help maintain both technological competency and independent thinking in college students. The results also identified the importance of promoting AI literacy; using AI in an ethical manner; and developing critical thinking skills within the higher education environment. Educational institutions should promote responsible use

of AI while encouraging creative thought, self-confidence, critical analysis and intellectual autonomy for students.

Keywords: *Artificial Intelligence, AI Dependence, Self-trust, Self-efficacy, College students, Critical thinking, Meta-analysis.*

Introduction

AI is one of today's big players in the field of education and it continues to revolutionise how we teach children over the coming years. Artificial intelligence will define the future of education as we know it. AI is changing how kids do research, complete schoolwork, collaborate with each other, and find solutions to homework problems quickly. With the emergence of new creations of artificial intelligence like ChatGPT, children have more options than ever before to use AI systems to provide them with immediate information, summarised materials, clarification of concepts, and even ideas for creative writing projects. While AI as a digital tool has been around for a long time, it became very obvious during the COVID pandemic that using AI technology (both increasing online learning through digital education and moving toward digital platforms/virtual classrooms) had significantly increased children's reliance on

technology for school and other learning activities. The global movement towards digital education methods has allowed many schools to increase their implementations of online learning and digital applications that support their classrooms. Children have become more experienced and more comfortable using technology to support their education and learning in general.

The majority of research prior to 2022 examined aspects such as digital learning, e-learning, perceived self-efficacy with respect to technology, and technology acceptance. There were few studies specifically addressing dependence on AI by students. Following the introduction and widespread use of generative AI tools, researchers have been investigating how AI impacts students' thought processes, level of confidence, decision-making, and reasoning capabilities. A particular worry is that students might develop a reliance upon AI tools for conducting independent thought. Rather than critically evaluating issues by themselves, students are likely to resort to AI-generated answers prior to having attempted any form of personal analysis. This trend calls into question the degree of self-trust that students will eventually develop regarding their own

ability to engage in independent reasoning, appraisal of evidence, decision-making, and problem-solving.

A college education is designed to build a student's intellectual independence and ability to think critically, analytically, and creatively. When students rely too heavily on artificial intelligence to do their thinking for them, they may decrease the abilities they develop during college through a lack of practice over time, as well as increase their reliance on technology and decrease their reliance upon their own judgment. Using AI regularly during education may lead students to develop habits that involve cognitive offloading, which is the use of technology to outsource their thinking. While there are potential negative implications of using AI and thus being dependent upon it, some research suggests there are also numerous positives associated with how students interact with AI tools while participating in educational experiences (like increased learning, increased confidence, greater efficiency, and assistance in learning difficult concepts). In addition, when used appropriately, AI tools may promote self-reflection, provide personalized experiences and increase emotional awareness.

As such, understanding how dependence on AI will influence how much students trust themselves is critical in the current educational environment. This study will examine AI dependence and its effects on college student confidence toward their own ability to think for themselves.

Conceptual Understanding

Artificial Intelligence (AI)

At its core, AI includes computer programs that are capable of carrying out functions similar to those previously carried out exclusively by the human brain (e.g., logic, learning, comprehension, etc.). In education, AI tools are frequently found being used for content development, summarization of information, tutoring, answering questions, or aiding in learning activities.

AI Dependence

AI Dependence is The Chronic Reliance on AI Tools When Fulfilling Required Tasks, Such As Problem Solving, Generating Ideas, Or Making Decisions Compared to First Attempting to Solve a Problem by Using Your Own Reasoning. In Relation to College Students, This May Include Repeatedly Using AI To Complete Assignments (Note-making/Essay Writing),

Brainstorming/Create Ideas for an Essay, Or Explanation of An Academic Subject.

AI Dependence Is Not Necessarily an Addiction, Overuse or Total Dependence Upon AI. Rather, It Represents the Extent to Which Students Use AI Systems to Assist Them with Their Day-to-day Academic And Cognitive Activities.

Self-Trust in Personal Thinking

Trust in oneself is an individual's belief in their thoughts, ability to reason, how they judge and make decisions. When students have a high level of trust in themselves, they are better at thinking critically, making confident decisions, and solving problems based on their own knowledge.

If students begin to rely too heavily on artificial intelligence to respond, they may lose confidence in their own ability to think logically. This loss of confidence may cause students to hesitate, need outside support, and rely less on their ability to independently judge situations.

Self-Efficacy

Self-efficacy and self-trust overlap in definition. Self-efficacy relates to an individual's belief in their capacity to perform an activity and accomplish objectives. The studies included in this review largely assess

self-efficacy without directly measuring self-trust.

A student's level of self-efficacy influences their perceptions towards AI tools as learning supports and not as substitutes for thought; therefore, students with high levels of self-efficacy generally have a greater degree of confidence when using AI tools.

Critical Thinking

Critical thinking is defined as the ability to analyse, evaluate, interpret and ask questions about information independently and logically. It is also considered one of the most developed cognitive skills that people gain from attending college.

The concern among researchers who study critical thinking is that when students become overly reliant on artificial intelligence (AI), they will have fewer opportunities for deep thinking and for engaging their minds intellectually. This will ultimately impact their ability to be critical thinkers.

Need and Significance of the Study

AI's increased involvement in education continues to ensure that this is a timely topic and a matter of social significance. Today's college students have been raised in an age where AI is ubiquitous and broadly accepted. While AI enhances efficiency and

convenience, there are also concerns about how this technology is having an impact on the behavioural and cognitive aspects of students.

This study has value in understanding how AI plays a role in other parts of a student's life, not just academically. The review of literature looks at how confidence, independent thinking, self-trust, self-efficacy and critical reasoning are all impacted by using AI rather than simply focusing on learning.

Some possible benefits of this review will be to:

- Provide educators with an understanding of the psychological impacts of AI usage;
- Help educational institutions develop guidelines for the responsible use of AI;
- Educate students on how to best balance their use of AI in their academic pursuits;
- Provide researchers with more insight into future work that is being done in AI and cognition; and
- Assist policymakers with creating educational policies that promote independent thinking.

Furthermore, this review assists in helping to address the newest body of work regarding AI dependency, which has only recently

received attention as a result of the vast amounts of generative AI technologies emerging today.

Objectives of the Study

Meta-analysis is being used for the purpose of:

1. Examining the relationship between students' reliance on AI and trust in their own thinking.
2. Determining the effect of AI on students' self-confidence in their own thinking abilities.
3. Understanding how using AI affects self-confidence, critical thinking, emotional awareness and independent judgment.
4. Identifying both positive and negative outcomes of using AI in higher education.

Research Questions

1. Does reliance on AI have an effect on college students' self-confidence in their own thought processes?
2. What are some of the positive mental advantages of using Artificial Intelligence?
3. How does overuse of AI relate to negative cognitive/emotional outcomes?
4. In what way does AI influence students' critical thinking and autonomy regarding decision making?

5. Is neutral use of AI more advantageous than overusing it?

Methodology

Research Design

This research employed a meta-analytic review design that utilized a systematic review process to investigate college students' dependence on artificial intelligence (AI) and their level of self-trust regarding their personal thinking. Meta-analysis is a method that aggregates, evaluates, and synthesizes the results of multiple previous studies (i.e., primary studies) that address a similar research question or topic to identify common patterns and discrepancies across the body of literature. A systematic review was used to ensure that the selection of studies for incorporation into the analysis was conducted in an orderly, systematic fashion. Studies included in the current study were identified, screened, and evaluated based upon specific inclusion/exclusion criteria. The studies selected for inclusion in this review were limited to published works from 2022-2026 with focus areas on: AI dependence; self-efficacy; self-confidence; critical thinking; emotional awareness; cognitive offloading; and independent judgment of college students. By

synthesizing the results from multiple previous studies, this review sought to provide a comprehensive perspective on both the positive and negative effects of AI use on college students.

Search Strategy

Researchers identified applicable studies through various scholarly resources and online research databases. For example, many generative AI studies have occurred since 2018; therefore, research was examined between 2022-2026 when much of the needed literature has been found on a large scale.

The terms used for the searches included:

- AI and students
- AI dependency
- AI dependency/self-efficacy
- Critical thinking and AI
- Self-trust and AI
- Generative AI in education
- College student literacy with AI
- Cognitive effects of AI

Inclusion Criteria

This review included the following types of studies:

1. Studies that focused on students at colleges/universities

2. Participants were approximately 17-25 years of age
3. Studies related to dependence on AI, AI literacy/educational attainment, self-efficacy, critical thinking and emotional outcomes.
4. Studies published between 2022-2026.
5. Studies using quantitative/experimental/correlational/survey methods
6. Research that examined education/psychological outcomes of AI.

Exclusion Criteria

The inclusion of the findings is limited to the following:

- Children who do not attend school.
- People who do have a diagnosed mental illness.
- Professionals who earn an income and work at a specific occupation.
- Technical studies that make no reference to human psychology.
- Studies that are not connected to cognitive or educational processes.
- Research that contains borderline or ill-defined methods or inadequate data.

Analysis Method

Qualitative analysis of selected studies was performed. Through comparison of patterns of studies, a review was conducted around general positive or negative outcomes present in AI reliance.

The analysis of the studies centred around multiple crucial psychological and cognitive factors regarding students utilizing AI within academic environments. The psychological factors reviewed were: self-efficacy, self-confidence, critical thinking, emotional awareness, cognitive offloading, independent judgement, and dependence on AI within academia. The analysis centred around how AI tools could influence whether students believed in their own capabilities, believed they could solve academic-related tasks independently, and performed analysis or critical reasoning skills. A prominent area of interest was whether students were emotionally aware of their emotions through self-reflection and whether journaling and individualized learning experiences assisted in building self-awareness and self-reflection. Cognitive offloading and its relationship to students' reliance on AI tools when completing mental tasks and solving problems versus engaging in independent problem-solutions; this resulted in students'

cognitive reliance on AI tools when performing academic tasks. The analysis also encompassed whether extensive reliance on AI tools would negatively affect students' abilities to develop independent judgement or decision-making processes, as well as the level of trust they had for their own reasoning when completing an academic task.

Review of Literature

In education, Artificial Intelligence (AI) is changing how college students experience their studies. Generative AI tools, like ChatGPT, have contributed to researchers looking more at how AI affects students' learning behaviour, confidence in their own ability to think independently and their psychological well-being. AI provides additional access to information, improves academic performance efficiently and effectively, and enhances students' ability to receive assistance with their studies; however, researchers have begun to raise concerns about the reliance of students on AI tools, and whether or not the over-reliance will lead to negative effects on their ability to think critically or have trust in themselves to accomplish their own academic goals. The research on this issue has produced positive

and negative viewpoints regarding university students' dependence on AI.

Ahmad & Arshad (2025) conducted a study titled, Artificial Intelligence Dependency, Academic Self-Efficacy, and the Imposter Phenomenon in University Students, to examine whether there was a relationship between AI dependency and university students' academic self-efficacy. The results did not indicate that AI dependency alone increased or decreased a student's self-trust; rather, the researchers found that academic self-efficacy was the mediating factor that determined students' interactions with AI systems. Specifically, students with higher levels of confidence in their academic performance utilized AI systems more quickly, effectively, and responsibly than did students without that same level of confidence. Instead of fully relying on the support of AI for their educational pursuits, those students utilized AI solely as a means of efficient and effective academic assistance, above and beyond their own academic capabilities.

Asio also conducted research on the correlation of self-efficacy, self-competence, and AI literacy in college students in 2024 and found a correlation analysis between the

three variables. The results of that research indicated that the higher one's level of AI literacy, the higher their levels of self-efficacy and (self-competence, respectively) were; therefore, those who became more familiar with tools used to implement Artificial Intelligence systems and understood how those tools worked were able to develop more faith in their ability to be successful in school and have confidence in their own academic capabilities. Through such information, it could be concluded that by using AI for school-related purposes (through informed education), confidence does not decrease due to reliance; rather, confidence will increase as students gain access to strategic and responsible use of AI (to the extent to which they understand AI systems as opposed to blind dependence on AI systems).

Woo et al. (2024) provided additional evidence of AI training's positive effects when they published their research study examining the impact of prompt engineering on confidence in using Artificial Intelligence (AI) tools among undergraduate students. The purpose of their study was to evaluate whether prompt engineering training could help students become more confident in

using AI systems. The authors define prompt engineering as the process of delivering instructions to an AI system in order to obtain a meaningful response from the system. Based on the results from their analysis, students who participated in structured prompt engineering training displayed greater confidence in using AI tools than students who did not participate in structured prompt engineering training. In addition, students who participated in structured prompt engineering training were more likely to use those tools more effectively for their academic needs. Thus, the researchers concluded that providing students with educational and technical assistance in developing a level of literacy regarding AI will reduce the likelihood of students developing an unhealthy dependency on AI and increase the likelihood of students using AI responsibly.

Mindscape - AI-Driven Journaling For College Students was an experiment conducted by Nepal et al (2024) to determine whether or not using artificial intelligence (AI) as an aid to journaling would improve both reflective thought processes and emotional awareness of twenty college students. The results showed that AI

supported journaling enhanced students' ability to become more aware of their feelings, thoughts, and experiences, which helped improve their positive emotional experiences, as well as their reflectiveness on those emotional experiences. These results indicate that the use of AI has the potential to positively affect a person's psychological well-being and should not just be used for academic purposes but also for the individuals themselves in order to be more supportive during challenging times in their lives or when trying to process past traumas. There are many advantages of using AI research identifying many studies; many researchers also found ways that the overuse of AI can negatively affect someone's cognition and psychology. One study conducted by Gerlich on AI and Critical Thinking revealed that students who frequently used an AI system would display diminished critical thinking skills, with those in the younger age group being more affected than their older peers. Students who frequently used an AI to retrieve information were less likely to be independently evaluating, reasoning analytically, and thinking reflectively. Gerlich's research raised concerns about cognitive passivity, in

which student numbers were reduced to a state where an AI would perform a significant part of their cognitive tasks, leaving them with less opportunity to be engaged mentally. Tian and Zhang also looked at how frequently using an AI impacts a student's ability to engage mentally and cognitively. Their data indicated that over-reliance on AI tends to lead to cognitive fatigue and mental passivity. Students who continually used AI to research solutions showed less evidence of being engaged actively in problem-solving and thinking. The researchers indicated that continual outsourcing of cognitive tasks to AI reduces the mental efforts expended by students and hampers cognitive development. Zhai et al. found that overusing AI programs side effects your analytical reasoning skills and your ability to make decisions independently. Those students, who used an AI system often, had less confidence to judge for themselves. Most survey participants could solve problems autonomously but opted for suggestions generated by an AI. Therefore, as their reliance on AI grew, students reported less trust in their own analytical reasoning and ability to make good decisions independently.

The AAC&U and Elon University conducted a survey of educators regarding their observations of students using AI tools. The majority of educators observed a decrease in originality, a lack of critical thinking, and a growing reliance on AI-generated content among their students. Teachers expressed concern that students are more focused on getting quick answers than understanding important concepts and exploring intellectually. The survey found that a reliance on the AI had a negative impact on creativity, analytical reasoning, and authenticity to learning.

Recent research demonstrates that artificial intelligence (AI) can instigate cognitive offloading where individuals use external technological systems to complete mental tasks. According to the research conducted by Risko and Gilbert (2016), cognitive offloading refers to when an individual relies on their digital devices to complete memory, reasoning, or problem-solving-related activities rather than doing them through active cognitive effort on their part. Continued reliance on AI within education for writing, summarizing, brainstorming, and decision-making will ultimately limit students' opportunities for intellectual

engagement and weaken their ability to think independently over time.

Kasneci et al.'s (2023) work discussing ChatGPT and AI in Education suggested that while generative AI tools may provide personalized learning opportunities and support accessibility, over-reliance upon these tools will hinder students' motivation towards deep learning and thoughtful engagement. The authors strongly recommend that any implementation of AI technology in higher education also include the development of students' analytical and reflective abilities.

Dwivedi et al. (2023)'s study on generative AI examined the much larger social implications as well as educational ramifications of generative AI technologies. The authors stated that AI will be able to improve productivity and overall access to education, as well as provide exposure to more educational opportunities, but pose several ethical issues including reliance on AI, the loss of originality, and the devaluation of mental effort. The study recommends that educational institutions focus on encouraging responsible and appropriate use of AI instead of completely relying on automated systems.

All current studies reviewed suggest that AI has both positive and negative effects on college students. On the plus side, AI has improved students' learning, their confidence in learning, their emotions about learning, and increased their access to educational resources. On the negative side, students who rely too much on AI may damage their ability to think critically, formulate independent ideas/reasonings, and increase the distance they feel between themselves and their educational experiences. In conclusion, most studies demonstrate that the effects of AI are going to be the result of how students utilise the technology, the amount of self-confidence they have in their ability to utilise AI products, and how much effective instruction has taken place with respect to utilising AI effectively. Thus, the most appropriate solution for college students to be able to achieve the benefits of technological advancement and independent thinking through the non-use of technology (AI) is to utilize AI responsibly and mindfully.

Discussion

Results from this meta-analytic review indicate that artificial intelligence (AI) has both positive and negative effects on student

self-trust and cognitive functioning. The study reached several main conclusions. Most importantly, AI does not have any negative qualities all on its own. Whether or not using AI is valuable to a student depends mostly upon the way that student chooses to use the technology. For example, researchers found that those who demonstrated high levels of self-efficacy tended to rely on AI more as an educational resource/tool rather than as a substitute for thinking through problems themselves. Therefore, there appears to be a relationship between psychological traits (self-efficacy, intrinsic motivation, and self-awareness) and the outcomes associated with reliance on AI. Results of this meta-analytic review also indicate that there are many positive outcomes associated with the use of AI tools in education including: increased efficiency in learning; higher levels of self-confidence/esteem; greater emotional intelligence; and an increased level of academic support. Additionally, students may benefit from using these tools to assist them in learning difficult subject matters; develop skills necessary to produce/complete assignments; and participate more fully in reflective processes.

There are some serious issues associated with the negative results of the study regarding students' ability to think critically and reason independently. Over-reliance on AI may discourage students from using deeper thinking approaches, independent problem-solving, and trusting their own judgement.

Cognitive offloading appears to be a significant factor in creating these issues. As students rely increasingly on AI for completing certain types of intellectual work, they lose some amount of faith in their cognitive capability over time.

Colleges and universities now face substantial challenges. Rather than attempting to completely eliminate the use of AI, colleges should work towards encouraging responsible and balanced use of AI.

Students require support in the following areas:

1. Ethical use of AI
2. Critical assessment of AI-created material
3. Thinking for themselves before they use AI
4. Producing unique and original work
5. Improving digital literacy

Teachers must guide students to view AI as a supplemental tool to their own ability to think clearly. For instance, students should first try and solve a math question by themselves to see if they are able to get an answer before looking to AI for validation/checking their answer.

By keeping a balance in how students are using technology, they can gain from using the technology while keeping their independent thinking skills.

Strengths of the Study

The current analysis has numerous benefits:

1. It draws attention to an increasingly significant and developing area of post-secondary education.
2. It evaluates AI-use for both positives and neg as related to dependence on this technology.
3. The research considered is focused on studies related to study participants at the undergraduate level.
4. It looks into key psychological constructs including self-trust, self-efficacy, and critical thinking.
5. It presents a mixture of positive and negative characteristics associated with the use of AI to create a neutral or complementary perspective.

6. It draws upon results from a collection of discrete research studies to uncover more broadly applicable patterns across these research studies.

Limitations of the Study

The study has also some limitations, despite its contributions:

1. Available studies on AI dependency are still scarce since it's a relatively new area of research.
2. The majority of studies emphasize self-efficacy and/or critical thinking, as opposed to directly studying self-trust.
3. The review includes only college students, excluding other populations such as school-aged children.
4. Existing studies are primarily short-term; therefore, they may not adequately capture long-term cognitive effects.
5. Differences in research methods (e.g., qualitative research vs. quantitative research) and sample sizes can impact the generalizability of the findings.

Educational implications

The findings of this review have far-reaching implications for post-secondary education.

It is recommended that higher education institutions introduce programs to teach students how to use AI responsibly, as well as to educate them about the advantages and disadvantages of using AI systems.

Teachers should encourage independent thought by designing assignments that require personal reflection, analysis, creativity and independent reasoning so as to reduce excessive dependence on AI-generated responses.

Educational institutions also need to establish clear guidelines for the proper use of AI in education; students should be encouraged to use AI for support but not as a complete substitute for academic effort; using AI as a tool to support one's own efforts will help develop critical thinking skills through participation in activities such as debates, discussions, problem solving, and reflective writing, thus building the ability to think critically about issues.

Rather than rejecting AI altogether as a learning tool, post-secondary institutions should encourage a balanced approach to the use of technology in education, where technology is used to enhance, rather than replace, the learning process.

Conclusion

AI is increasingly present in academic environments for student use. This Meta Analysis examined the link between AI usage dependency and self-trust in the personal thinking of students attending Higher Education institutions. Research shows an increase in both beneficial and detrimental impacts as a result of AI use.

AI can provide many benefits to students when used correctly such as an increase in self-efficacy, increased learning efficacy, increased self-confidence, increased emotional awareness and increased academic support. Students with a strong level of self-confidence and AI literacy tend to utilize AI in a constructive fashion with no significant level of dependency formed.

The overuse of AI can hinder students' ability to think critically; therefore, students who rely heavily on AI for their cognitive processes may eventually lose faith in their intelligence.

The evidence suggests a preferable approach is to utilize AI in moderation. Rather than replacing human reasoning, the goal of AI in education should be to aid and assist individuals in developing their reasoning capabilities.

Educational institutions, teachers, and learners must collaborate to use technology to support learning rather than diminish an individual's ability to think independently. Ultimately, education will evolve based on technology while still allowing individuals to retain their creative and critical reasoning skills and self-confidence

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6. Author Contributions (Credit Statement):

□ Author 1: Conceptualisation, Methodology, Writing – Original Draft

□ Author 2: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

Social Media Use and Psychological Well-Being Among University Students

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ABSTRACT

The rapid increase of social media platforms has fundamentally altered the way young adults communicate, seek information, and construct their identities. This study examines the relationship between social media use and psychological well-being (PWB) among university students, with particular attention to gender-based differences. A sample of 60 students (30 male, 30 female) aged 18–25 was drawn using convenience sampling from a central Indian university. The Social Media Use Scale (SMUS) was employed to assess four dimensions of social media engagement which include image-based, comparison-based, belief-based, and consumption-based use, while psychological well-being was evaluated using Carol Ryff's six-dimensional PWB framework, encompassing autonomy, environmental mastery, personal growth, positive relations, purpose in life, and self-acceptance. An independent samples t-test revealed no statistically significant gender-based differences in either social media use (t

= 8.28, $df = 58$, $p = .214$) or psychological well-being ($t = 6.2$, $df = 58$, $p = .156$). However, a Pearson correlation analysis demonstrated a statistically significant positive relationship between social media use and psychological well-being ($r = 0.52$, $p = .001$), suggesting that when engaged with constructively, social media may serve as a meaningful contributor to students' overall mental wellness. These findings carry practical implications for educational institutions, student support services, and mental health professionals working with young adult populations.

Keywords: social media use, psychological well-being, university students, gender differences, digital wellness, mental health

1. Introduction

Over the past two decades, digital communication technologies have reshaped nearly every dimension of human social life. Among the most consequential of these shifts is the widespread adoption of social media which is a broad category of internet-based platforms that enable users to generate, share, and respond to content within networked communities. From Facebook and Instagram to Twitter, YouTube, and WhatsApp, these

platforms have become embedded in the daily routines of billions of people across the globe, and nowhere is this more evident than among university-aged youth.

For students navigating the transitional demands of early adulthood academic pressure, identity formation, shifting social relationships, and growing independence social media functions as a multifaceted space. It serves simultaneously as a tool for maintaining friendships, a channel for self-expression, a news source, an entertainment hub, and, increasingly, a platform for professional networking.

Psychological well-being (PWB) is a concept that extends beyond the absence of mental illness. Drawing from Carol Ryff's influential six-dimensional model, PWB encompasses positive functioning across domains including autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance (Ryff & Keyes, 1995). Each of these dimensions reflects a distinct aspect of what it means to live a fulfilling and psychologically robust life. Understanding how social media use maps onto these dimensions is central to the present inquiry.

The present study was conducted with the aim of understanding three core questions: whether social media use differs between male and female students, whether levels of psychological well-being differ by gender, and whether a meaningful relationship exists between social media engagement and psychological well-being. By grounding the analysis in validated psychometric tools and a structured theoretical framework, this study aims to contribute empirical insight to an ongoing and increasingly urgent conversation about digital life and mental health.

2. Literature Review

Research on the intersection of social media and psychological health has expanded considerably in recent years, with scholars approaching the topic from developmental, clinical, sociological, and communication perspectives. The following review draws on a selection of key empirical and theoretical works that inform the hypotheses and analytical framework of the present study.

Lindsey (2017) conducted a landmark study involving 226 participants, comprising 113 parent-adolescent pairs across multiple US states to explore how adolescents' social

media activity was perceived by both young people and their parents. The study found that the number of social media accounts maintained by adolescents was positively correlated with symptoms of inattention, anxiety, depression, and fear of missing out (FoMO). Adolescents with more accounts and higher FoMO levels reported greater anxiety and depressive symptoms, highlighting the cumulative psychological burden that extensive social media presence may carry.

Charoensukmongkol (2018) investigated the relationship between intensity of social media use and social comparison and envy among 250 teenagers recruited through snowball sampling. The analysis revealed a significant positive relationship between high-intensity usage and feelings of envy, particularly when parents encouraged comparative thinking within peer groups. This work underscores how the social context surrounding adolescent development shapes the psychological impact of digital environments.

Fleck (2015) offered a theoretically rich analysis by applying Adlerian concepts including holism, teleology, and community feeling to current social media research. The

study acknowledged that social media can serve to reduce isolation and provide a sense of belonging, while simultaneously cautioning that both users and practitioners may underestimate its relational consequences. The author advocated for a more nuanced, motivation-sensitive approach to understanding how and why people engage with digital platforms.

Eggermont (2016) examined Facebook use among 910 adolescents and found that the nature of engagement rather than mere frequency determined its impact on mood. Passive usage (scrolling, viewing other's content) was associated with depressed mood among girls, whereas active, public engagement was problematic for boys. Importantly, girls who used Facebook actively and perceived social support through it reported lower levels of depressed mood, showing gendered nature of social media's effects.

Grealish (2020) conducted a systematic review of the literature, categorizing social media's relationship with mental health outcomes across four domains: time spent, activity type, investment, and addictive behavior. Across all four domains, associations with depression, anxiety, and

psychological distress were observed, though the author noted significant methodological limitations in the existing studies and called for longitudinal designs and qualitative inquiry to understand these relationships.

Mathewson (2020) investigated correlations between social media use and perceived mental health among college students in a correlational design. Results indicated that both the frequency and type of social media use were meaningfully associated with self-reported mental well-being, suggesting that how students use social media not just how much shapes its psychological impact.

Overall, earlier studies show that the relationship between social media and psychological health is complex and shaped by different factors. The present study adds to this by examining different types of social media use and their connection to psychological well-being, with gender as a key moderating variable.

3. Methodology

3.1 Research Design

This study employed a descriptive-correlational research design. The descriptive component allowed for characterization of

social media use and psychological well-being patterns within the sample, while the correlational research design is used to find out the relationship between these two variables. An independent samples t-test was used to assess gender-based differences.

3.2 Participants

The study sample consisted of 60 university students (30 male, 30 female), aged between 18 and 25 years. Participants were recruited using convenience sampling, a non-probability method appropriate for exploratory and descriptive research from a university setting. This sampling strategy was selected given the accessibility of the student population and the time constraints of the study.

3.3 Inclusion and Exclusion Criteria

Participants were included if they:

- were between 18 and 25 years of age,
- were currently enrolled in an undergraduate or postgraduate programme
- provided informed consent to participate.

Participants were excluded if they:

- reported any current psychological disorder or were receiving psychiatric treatment
- Transgender participants

3.4 Variables

Independent Variable: Gender (male and female) and Social Media Use

Dependent Variable: Psychological Well-Being

3.5 Measures

Social Media Use Scale (SMUS): The SMUS is a validated self-report instrument designed to assess patterns of social media engagement across four distinct subscales:

- **Image-Based Use:** Assess how people present themselves online and seek validation through likes, comments, and shares.
- **Comparison-Based Use:** Involves comparing oneself with others on social media, which can sometimes lead to insecurity or envy.
- **Belief-Based Use:** Relates to engaging with opinion-based or political content and being influenced by different viewpoints online.

- **Consumption-Based Use:** Refers to scrolling, watching, sharing, and following content mainly for entertainment, curiosity, or escape.

The SMUS demonstrates sound psychometric properties, with established reliability and construct validity for use in student and adolescent populations.

Ryff's Psychological Well-Being Scale: Psychological well-being was measured using Carol Ryff's validated scale, which operationalizes well-being across six dimensions. Participants rate items on a 6-point Likert scale, with higher scores indicating greater well-being within each dimension (Ryff & Singer, 1996).

3.6 Procedure

Prior to data collection, institutional approval was obtained. All participants were briefed on the study's objectives, and informed consent was secured before any questionnaire was administered. Participants were assured of the confidentiality of their responses and their right to withdraw at any point without consequence. Data were collected via an online survey administered through a structured digital form. Upon completion,

responses were coded and prepared for statistical analysis using SPSS.

3.7 Statistical Analysis

An independent samples t-test was used to examine whether significant differences in social media use and psychological well-being existed between male and female participants. Pearson's product-moment correlation coefficient was used to determine the nature and strength of the relationship between social media use and psychological well-being across the full sample. A significance level of $p < 0.05$ was adopted for all analyses.

3.8 Ethical Considerations

The following ethical safeguards were observed throughout the study:

- Institutional permission was secured before approaching participants.
- Rapport was established with participants prior to data collection.
- Informed consent was obtained from all participants.
- Participation was entirely voluntary.
- All data were used solely for research purposes and stored securely.

4. Analysis And Findings

4.1 Social Media Use by Gender

An independent samples t-test was conducted to assess whether male and female students differed in their overall social media use.

Table 1: Comparison of Social Media Use by Gender

Variable	Gender	N	M	t	df	Sig. (2-tailed)
Social Media Usage	Male	30	17.27	8.28	58	.214
	Female	30	17.62			

The results indicate that female students reported marginally higher levels of social media use ($M = 17.62$) compared to their male counterparts ($M = 17.27$). However, this difference did not reach statistical significance ($t = 8.28$, $df = 58$, $p = .214$, $p > .05$). Accordingly, the null hypothesis that no significant gender difference exists in social media use could not be rejected. These findings suggest that male and female students in the sample engage with social media at broadly comparable levels, consistent with emerging evidence that gender gaps in digital platform use have narrowed considerably.

4.2 Psychological Well-Being by Gender

A second independent samples t-test was carried out to determine whether

psychological well-being differed between male and female students.

Table 2: Comparison of Psychological Well-Being by Gender

Variable	Gender	N	M	t	df	Sig. (2-tailed)
Psychological Well-Being	Male	30	22.72	6.2	58	.156
	Female	30	21.96	8		

Male students recorded a slightly higher mean score on the psychological well-being measure ($M = 22.72$) relative to female students ($M = 21.96$). However, the difference was not statistically significant ($t = 6.2$, $df = 58$, $p = .156$, $p > .05$). The null hypothesis of no gender difference in psychological well-being was therefore retained. This finding suggests that, within this sample, male and female students experience broadly comparable levels of overall psychological well-being.

4.3 Relationship Between Social Media Use and Psychological Well-Being

Pearson's correlation coefficient was computed to examine the relationship between social media use and psychological well-being across all 60 participants.

Table 3: Correlation Between Social Media Use and Psychological Well-Being

Variables	Social Media Usage	Psychological Well-Being	p-value
Social Media Usage	1	0.52	.001*
Psychological Well-Being	0.52	1	—

** Significant at the 0.05 level*

A statistically significant positive correlation was found between social media use and psychological well-being ($r = 0.52$, $p = .001$). This moderate positive association indicates that higher levels of social media engagement in this sample were associated with higher levels of psychological well-being. The null hypothesis of no relationship between the two variables was therefore rejected. These results suggest that, for the students in this study, social media engagement may function as a contributor to rather than a detractor from psychological well-being.

5. DISCUSSION

The findings of this study offer a nuanced perspective on the relationship between social media use and psychological well-being among young adult students.

The absence of a significant gender difference in social media use is consistent

with findings from earlier studies. Lenhart et al. (2010) noted that over a decade of tracking, that the gender gap in social media use between males and females had reduced greatly over time. In an era with easy access to smartphones and the internet, both male and female students now use social media with similar ease and frequency, showing that gender is no longer a major factor in overall social media use.

The finding that psychological well-being did not differ significantly by gender is similarly consistent with some aspects of Ryff and Singer's (2006) work on the six-factor well-being model. While gender differences are sometimes observed on specific dimensions for example, women often score higher on positive relations, while men may score higher on autonomy, the overall levels of well-being across genders can be strikingly similar. In the present sample, shared academic demands, comparable access to university resources, and evolving social norms around emotional expression and help-seeking may have contributed to this convergence.

One of the most important findings of the study was the positive relationship between social media use and psychological well-

being ($r = 0.52$, $p = .001$). This challenges the common belief that social media is always harmful to mental health. Best et al. (2014), in a systematic review of online communication and adolescent well-being, found that positive social interactions such as supportive comments, meaningful conversations, and feeling connected to others can improve well-being. Similarly, the present study suggests that when students use social media to build connections, gain support, and feel a sense of belonging, it may positively influence their psychological health.

The four-dimensional structure of the SMUS offers additional insight into how different modes of engagement may operate. Consumption-based and belief-based uses, which involve exposure to information and community participation, may support personal growth and give individuals a sense of purpose. On the other hand, image-based use may have both positive and negative effects on self-esteem and relationships, depending on the kind of feedback a person receives online. Future studies can explore these areas in more detail to better understand which types of social media use are linked to different aspects of psychological well-being.

6. CONCLUSION

This study aimed to explore three key questions: whether social media use differs by gender, whether psychological well-being differs by gender, and whether a meaningful relationship exists between social media use and psychological well-being among university students. The findings indicate that gender does not significantly differentiate either social media engagement or psychological well-being in this sample. More importantly, social media use and psychological well-being were found to be positively and significantly correlated, suggesting that the use of social media is associated with greater not lesser psychological wellness.

These findings suggest that educational institutions should focus less on completely discouraging social media use and more on encouraging mindful and responsible use. Colleges can include digital wellness programs within student mental health support to help students recognize healthy and unhealthy patterns of social media use. Mental health professionals should also look beyond how much social media is used and understand how and why individuals engage with it.

Future research should consider longitudinal designs to better understand causal directionality, larger and more diverse samples to improve generalizability, and subscale-level analyses to map specific types of social media engagement onto individual PWB dimensions. Incorporating qualitative methods could also yield richer insight into the lived experiences of students navigating the intersection of digital life and psychological health.

In an age where social media play a major role in young people's social lives, understanding its psychological impact becomes increasingly important. This study adds to that understanding and encourages further research with broader perspectives and stronger methods.

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3. Ethics Approval:

Ethics approval was not required for this study as it did not involve human/animal subjects.

4. Informed Consent:

Yes, informed written consent was obtained from all participants.

5. Data Availability Statement:

The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

- ☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft
- ☐ Author 2&3: Data Curation, Formal Analysis, Writing – Review & Editing

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Article

Examining Social Media Use As A Predictor Of Fear Of Negative Evaluation And Eudaimonic Well-Being Among University Students

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Abstract

The purpose of this study was to investigate relationship between social media usage, Fear of Negative evaluation, Eudaimonic Well-being among University students aged 18 to 25. The study employed null hypothesis, indicating there is no consequential effects between variables. The research design utilized in this research is classic Quantitative research design. Data were collected via online survey method (google forms), from various colleges, university students across Bengaluru, Karnataka. Standardized tools of Social Media Use scale, Brief Fear of negative evaluation scale and Questionnaire for Eudaimonic Wellbeing were used. 150 samples were collected. Statistical analysis employed in this study were Pearson's Product-Moment Correlation followed by Regression analysis. The results suggests strong relationship between SMU and FNE while no significant associations were seen with eudaimonic well-being. The present

study evaluated solely on college/university students, which helped to gain perspective and approach on their current digital usage and wellbeing. This research contributed to understand the persistent social media use creates dependency and fear of being negatively evaluated by society, and whether these affect student's Eudaimonic concepts.

Keywords: Digital media, well-being, social anxiety, withdrawal, eudaimonia.

Introduction

College life is a crucial time period for academic development, career building, and personal growth, where students engage in various social environments during both studies. With the rapid shift to era of digital evolution, it's near impossible for university students not to use phone especially with the advanced educational setting and in AI period, social media became inseparable part of everyday life, especially for students. This study particularly emphasizes on psychological experiences like “fear of negative evaluation and eudaimonic wellbeing”.

Social media deeply inseparable with young adult, with its usage continuing to expand rapidly. These platforms offer dynamic

spaces where people get to can communicate and express themselves in different, creative and unique ways within digital environments. Recent research indicates that SMU is persistently high among students from the age of 18-29, with 97% accessibility and usage (Adil et al., 2020)

Watson & Friend (1969) first introduced the concept of fear of negative evaluation (FNE), which was defined as “apprehension about other's evaluation, distress over their negative evaluations, and the expectation that others would evaluate negatively”. FNE has shown strong correlations with social anxiety. Academic demands, competition from peers, and the need to fulfil social and family expectations may all contribute to a heightened level of stress and anxiety. Students who displayed a high level of FNE tended to have low self-esteem, which may result in social withdrawal, which may affect academic performance.

Eudaimonic Well-Being (EWB) signifies a person's quality of life that arises from realizing their highest potential and pursuing goals that are personally meaningful and harmonious with their true self (Sheldon, 2002; Waterman, 1990, 2008). It has developed as both a supplement and an

opposing concept to subjective well-being in the exploration and comprehension of quality of life.

Review Of Literature

Aparna et al. (2025) investigated FNE, social support and psychological distress among 150 students, collected via convenience sampling. Standardized tools were used with correlation followed by regression analysis. The results indicated significance with fear of negative evaluation increased psychological distress, while social support reduced distress.

Mirzaei et al. (2024) conducted study explored role of eudaimonic and hedonic motives in mindfulness, resilience among 326 learners. Correlation and regression were analysed, study concluded eudaimonic motives seems positively associated with mindfulness and resilience and significantly predicting better psychological functioning.

A study on self-concept and body image as predictors of fear of negative evaluation among 107 undergraduates using multi-stage sampling by The IIARD Journal Study (2024). Correlation followed by regression analysis employed. Findings revealed that self-concept had a significant negative

relationship with fear of negative evaluation, while body image alone was not a strong predictor.

Li et al. (2021) studied trait self-control and well-being among adolescents using correlation and longitudinal analysis. The results indicated a positive relationship between self-control and both hedonic and eudaimonic well-being, with long-term improvements observed.

Sahoo and Khess (2021) examined fear of negative evaluation, social support, and distress among 150 students using correlation and regression methods. The findings showed that fear of negative evaluation increased distress, while social support helped in reducing it.

Major studies on FOMO by Baker et al., Przybylski et al., & Savitri (2013–2024) examined FOMO impact on well-being using correlation and mediation analysis. Results consistently showed that higher FOMO is linked to lower well-being and greater emotional distress, with emotional regulation playing a partial role.

Literature Gap

Past research had mainly focused on social media usage, fear of negative evaluation, and well-being individually, with a of these variables research had been done but not together. Most of research literature focused more on hedonism, eudaimonic well-being wasn't well researched with the fear of negative evaluation, there is scarcity of literature that specifically focuses on university students of India. This study attempts to fill gap with examining the combined effect of social media usage, fear of negative evaluation, and eudaimonic well-being among students.

Need For Study

An individual's college life considerably has much impact in aspects of career and personal growth, where students are socially available yet has diverse options to interact with peers and budding professionals. Social media has created more dependency, almost every Indian student has easier access to platforms. Ever since, there's been negative effects with psychological issues in individuals Social media users mostly keep their social life updated in platforms. If they don't get the validation or expected

responses, may lead to fear of getting judged.

This research allows to examine whether SMU has its influence on cautiousness of being judged and eudaimonic aspects of students. The findings from this study may provide a useful source of information to students, educators and mainly researchers as they can utilize this knowledge to enhance the wellbeing of students and maintain limited time on social media usage.

Methodology

Problem statement:

This study investigates how daily social media usage associates with fear of negative evaluation and with well-being in eudaimonic aspects.

Aim:

To determine the relationship between Social-media usage, Fear of negative evaluation and Eudaimonic well-being.

Objectives:

- To determine the relationship between social media usage and Fear of negative evaluation among, eudaimonic wellbeing of university students.

- To obtain knowledge on the influences of social media usage on fear of negative evaluation of students.
- To gain insight patterns of social media usage, fear of negative evaluation and eudaimonic aspects of well-being among students.
- To check if SMU predicts FNE & EWB.

Variables of the Study:

Dependent variables – Fear of Negative evaluation (FNE), Eudaimonic Well-being (EWB)

Independent Variable – Social media usage (SMU)

Hypothesis:

Hypothesis 1– There is no significant relationship between Social media usage and Fear of negative evaluation.

Hypothesis 2: There is no significant relationship between Fear of Negative Evaluation and Eudaimonic well-being.

Hypothesis 3: There is no significant relationship between Social media usage and Eudaimonic well-being.

Research Design:

Quantitative research design is utilized using Correlation research approach. The researcher correlates three variables using Pearson's Correlation coefficient and discovers relationship between variables without interference. This study examines relationship between social media usage, fear of negative evaluation and eudaimonic well-being among university students.

Sampling and Sampling Techniques:

The study employed Convenience sampling. Sample data comprises 150 college students pursuing full time degree (age 18 to 25).

Inclusive Criteria:

- Participants must be students, currently enrolled in regular/full time courses.
- Students of 18 to 25 years in age.
- Active users of least 1 social media platform.

- Students who voluntarily participates and provides informed consent for the study.

Exclusive Criteria:

- The respondents who had no social media exposure for 6 or more months.
- Students who are part time influencers, freelancers in social media are excluded.
- Students from distance education.
- Students with physical impairments and past psychological illness.
- Those who has concerns regarding this study and prefer not to respond.

Tools used

The Social Media Use Questionnaire (SMUQ) by Xanidis and Brignell (2016)

Brief Fear of Negative Evaluation Scale (BFNE -II) by Leary (1983)

Questionnaire for Eudaimonic Well-Being (QEWB) by Alan S. Waterman et al. (2010)

Tool description

The Social Media Use Questionnaire (SMUQ) by Xanidis and Brignell (2016) employs 5-point Likert used for scoring, 9

items with scores indicating the levels of problematic usage of social media, with higher scores reflecting greater issues. Internal consistency is cronbach's $\alpha \approx 0.87$ and demonstrates good construct validity.

Questionnaire for Eudaimonic Well-Being (QEWB) developed by Alan S. Waterman et al. (2010). Scale has 21 items, measures perceived development best potentials and self-discovery. 5-point Likert scale was employed for this study. There is reverse coding, the interpretations are 0–84, higher scores indicating greater satisfactory in eudaimonia.

This scale has good reliability, internal consistency between 0.80 and 0.85. Also demonstrates strong convergent validity with $r = 0.50$ to 0.70 .

Brief Fear of Negative Evaluation Scale-II (BFNE -II) developed by Leary in 1983. This inventory captures that uneasy experience when others criticize, reject or has unfavourable opinions about them. BFNE -II has 9 items, higher score indicates increased fear of judged. Scale has high reliability with $\alpha \approx 0.95$ with a decent construct validity.

Statistics used:

To establish the pattern or nature of variables, the data collected are statistically analysed and interpreted. For establishing the correlation between dependent (FNE, EWB) and independent (SMU) variables of the current study, Pearson's product moment correlation is adopted. Regression analyses employed after correlation.

Procedure:

The respondents were personally instructed and informed about objectives of the study prior to their engagement. Data collection was easier with convenience sampling method. The study used a detailed questionnaire comprised of 42 items, distributed in sections. Average time taken for completion were 10-15 minutes. Data samples were collected from few colleges across Bengaluru. The respondents were informed and only upon their consent, data were gathered. The active involvement of the participants on completing the questionnaire form made the data collection easier and the collected data were strictly analysed by Statistical Package of Social Science (SPSS).

Conceptual Definition:

Social media refers to Internet-based platforms that enable the creation and

exchange of user-generated content (Kaplan & Haenlein, 2010), while social media use denotes the extent and nature of individuals engagement with these social media platforms for communication, information, and social interaction (Ellison et al., 2007; Junco, 2012).

FNE has also been conceptualized as a tendency to experience apprehension and discomfort as a result of the expectation of being rejected, criticized, or disapproved of by peers and others (Weeks, Heimberg & Rodebaugh, 2008).

Eudaimonic Well-Being (EWB) refers to quality of life derived from the development of a person's best potentials and their application in the fulfilment of personally expressive, self-concordant goals (Sheldon, 2002; Waterman, 2008). The earlier roots of Eudaimonic well-being arrive from ancient Greek philosophy, in specific works Aristotle.

Operational definition:

Social media use refers the intensity, frequency and purpose of individual's engagement in online platforms for communication, constant exposure to short content, and social interaction. It has

positives and negatives, yet the development of social media has altered the way people relate to and monitor each other, seemingly there's rapid increase in the psychological challenges that students and individuals face.

Fear of Negative Evaluation (FNE) is a psychological construct which describes individual's constant worry of being criticized, being judged or worry about rejection by others. It is closely linked with social anxiety and self-consciousness. Another perspective of FNE shows fundamental aspect of social anxiety, refers to a person's preoccupied concerns with being unfavorably judged by others in social situations.

Eudaimonic well-being, with context of this study, refers to an individual's sense of purpose, personal growth, and achievement with long-term goals. Rather than focusing on momentary happiness or pleasure, this construct emphasizes how individuals perceive meaning in their activities, their ability to realize their potential, and their efforts toward self-improvement.

Results and Discussion:

Distribution of data based on Demographic details:

The demographic breakdown of the sample, based on age, gender and education. Analysing these factors ensures a diverse representation and provides context for interpreting curiosity and frustration levels. The following tables summarize the distribution of participants across categories.

TABLE 1:

Gender	Samples
Male	50
Female	99
Non-Binary	1
Total	150

Table 1 shows 99 were female, 50 were male and 1 Non-Binary respondent.

TABLE 2:

Distribution of the sample based on their Pursuing Degree.

Education	Samples	Total
Undergraduate	71	150
Postgraduate	79	

Table 2 demonstrates, 71 were undergraduates and 79 were post graduate students.

TABLE 3:

Correlational analysis on social media usage, fear of negative evaluation and eudaimonic wellbeing among students.

Correlation Matrix

		Social media Usage	Fear of Negative evaluation	Eudaimonic Wellbeing
Social media Usage	Pearson's r			
	df			
	p-value			
	N			
Fear of Negative evaluation	Pearson's r	0.880		
	df	148		
	p-value	<.001		
	N	150		
Eudaimonic Wellbeing	Pearson's r	-0.127	-0.067	
	df	148	148	
	p-value	.940	.792	
	N	150	150	

Table 3 shows the values of Pearson's correlation among three variables. There is a strong positive correlation between SMU and FNE ($r = 0.880$, $p < .001$). The relationship between SMU and EWB is very weak and negative. The correlation between FNE and

EWB is also weak and negative, suggesting no meaningful associations.

Correlations: There is a significant relationship between social media usage and fear of negative evaluation.

There is no significant relationship between social media usage and Eudaimonic Well-being.

There is no significant relationship between Fear of negative evaluation and Eudaimonic Well-being.

TABLE 4:

Demonstrates Linear regression analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.880 ^a	.775	.774	3.98521

a. Predictors: (Constant), Social Media usage

ANOVA ^a		
Model	F	Sig.
Regression	509.901	.000 ^b
Residual		
Total		

a. Dependent Variable: FEAR OF EGATIVEEVALUATION

b. Predictors: (Constant), SOCIAL MEDIA USAGE

Table 4 shows linear regression analysis of data, where social media usage significantly

predicts fear of negative evaluation with 77.4 percentile.

Summary

The research investigated relationships between social media usage fear of negative evaluation, and eudaimonic well-being among university students with the age range of 18-25. The data sample were collected from 150 students. Statistical tools were used, quantitative research method with correlation and linear regression analysis were employed. The result shows a strong and statistically significant positive relationship between social media usage and fear of negative evaluation ($r = 0.880$, $p < .001$). This indicates “as time spent on social media by students increases, their concerns on being negatively judged by others increases”. The structure of social media platforms often promotes feedback-seeking, encourage comparison, and validation-seeking via likes, comments, and shares etc. These environments may influence self-conscious and sensitivity to people’s opinions, and this may reinforce concerns over other’s evaluation.

The findings also showed there is no meaningful connections between social

media usage, eudaimonia, and fear of negative evaluation, eudaimonia. The relationship was negative and very weak between these variables hence suggesting lowered influences on eudaimonia.

Conclusion

Statistical analysis, including Pearson correlation coefficients and Linear regression, was conducted. The study concludes that social media use significantly predicts fear of negative evaluation of university students. This shows that if usage of social media increases, individual’s fear of being negatively evaluated also would increase respectively. Hence rejecting the stated hypothesis 1. But SMU and FNE doesn’t have deeper level influence or associations with eudaimonic well-being. Here research failed to reject the stated null hypothesis 2 & 3. This suggests that social media merely affect/influence how individuals perceive other’s judgements, and fear on getting judged increases their cautious acts in social media.

Limitations

- Participants exact time usage of social media wasn’t compared with variables.

- Geographical restrictions with collected data.
- Study doesn't emphasis on individual experiences with social media and well-being.
- Research doesn't compare the results across different population or within population.

Suggestions:

Collection of larger sample data, comparing with different ethnic, geographic and age categories may show a clear path to the issue, influence and dependency from social media use on well-being. Researchers can employ mixed method approaches to explore the depth of student's experiences with SM usage and well-being. Integration of qualitative insights can enhance this study to a greater extent.

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The data that support the findings of this study are available upon reasonable request from the corresponding author.

6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

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Article

Mirror Worlds and Fragmented Selves: The Psychological Role of Hyper-Realistic Digital Avatars in Young Adults' Social Comparison and Self Evaluation Essay

Article History

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Abstract

With the rise of immersive digital technology, users can generate increasingly realistic avatars that depict or idealize their physical self. While providing an enhanced sense of presence and self-expression, such representations can also trigger unhealthy comparisons with one's real-life appearance, potentially impacting an individual's body image and self-esteem. While studies have focused on the effects of social media and its role in encouraging comparisons with idealized appearances, limited research has investigated the role of hyper realistic avatars depicting the user's own physical characteristics in body image dissatisfaction and self-esteem. By building upon the theoretical framework of the Proteus effect, the current study aims to explore whether the use of hyper realistic digital avatars is associated with self-reported increases in body image dissatisfaction and decreases in self-esteem among young adults.

Additionally, the study explores the potential role of self comparisons with one's digital self as a mediator between avatar engagement and the aforementioned psychological outcomes. As such, a quantitative cross-sectional methodology was used to assess the relationship between avatar engagement and self-esteem (RSES) and body image dissatisfaction (BSQ). Additionally, researchers utilized the developed Avatar Engagement Index (AEI) to explore the associations between the use of hyper realistic avatars, social comparisons with one's digital self, and body image dissatisfaction. Pearson correlation and independent sample t test analysis were conducted to explore the role of social comparison as a potential mediator between avatar engagement and self esteem/body image dissatisfaction.

Keywords: Digital avatars; Proteus effect; body image dissatisfaction; self-esteem; social comparison; digital identity.

Introduction

Digital avatars are becoming an increasingly popular means of self expression in video games and other immersive digital technology. Unlike photographs, avatars can

be used to depict desirable or idealized characteristics and appearance that may not necessarily reflect the user's real-life physical attributes (Behm-Morawitz, 2013; Freeman & Maloney, 2020; Zimmermann et al., 2023). As such, avatars can potentially be used as a mechanism of self-expression and presence in the digital space. With the increasing levels of hyper-realism of digital avatars, researchers are beginning to investigate the potential psychological impact of using such immersive digital representations of one's physical self and its impact on self-perception and esteem.

Social comparison theory, developed by Festinger, explains human tendencies to evaluate and compare oneself to others as a means of self-evaluation. Studies investigating the psychological impact of social media have demonstrated similar tendencies among social media users to engage in social comparisons with regards to their appearance, with negative impacts on their body image and self-esteem (Dittmar, 2009; Groesz et al., 2002). However, recent studies have demonstrated that while social media can encourage users to compare themselves to others, the impact of such comparisons can vary greatly depending on

individual factors and contexts (Anixiadis et al., 2019; de Valle et al., 2021; Huang et al., 2021). More recent studies conducted with young adults and adolescents have demonstrated that comparing one's appearance to that of others on social media can lead to body image dissatisfaction and decreased self-esteem (Martinac Dorčić et al., 2023).

With regards to the impact of avatars on body image dissatisfaction and self-esteem, the current literature suggests that avatars offer a unique perspective of self-perception as they are designed to depict the user's physical characteristics or desired characteristics, rather than the characteristics of others (Behm-Morawitz, 2013; Freeman & Maloney, 2020; Zimmermann et al., 2023). Prior research has demonstrated that avatar representations can affect a user's perception of themselves and self-expression in various ways (Behm-Morawitz, 2013; Freeman & Maloney, 2020; Zimmermann et al., 2023). The impact of avatars on self-perception is also explained by the Proteus effect, which suggests that individuals can internalize the characteristics of their digital avatars which can subsequently impact their real-life attitudes and behaviours (Yee & Bailenson,

2007; Yee et al., 2009). Subsequent studies have demonstrated that avatar engagement can lead to alterations in one's self-perception and social interactions, with the observed effect sizes ranging from small to moderate (Ratan et al., 2020). Researchers argue that avatar embodiment plays a crucial role in the Proteus effect, as an individual can identify themselves within an avatar and experience the embodiment of a digital body (Slater et al., 2010). Virtual embodiment can have an impact on users' body perception, as demonstrated by studies which show that illusion of embodiment can alter physiological responses in a similar manner as actual embodiment (Romano et al., 2014) and the tendency for users to engage in self-objectification when embodying a sexualized avatar (Fox et al., 2013).

While the impact of avatars on self-perception is an emerging research area, limited research has investigated the association between digital avatars and self-esteem. Park (2018) explored the associations between body image discrepancy, virtual avatar engagement and weight regulation intentions. The study by Liu et al. (2022) investigated the impact of using avatars with idealized thin body types

on explicit and implicit body image responses, as well as the role of embodiment in such associations, providing evidence for the impact of avatars on self-perception. Furthermore, the study highlights the potential for negative psychological effects associated with embodying a digital body that differs from one's physical appearance. However, most of the prior research on avatars and self-perception has focused on conventional avatars, specific characteristics of avatars, or a specific context of fully immersive virtual reality, without specifically investigating the role of engaging with an avatar that realistically depicts one's physical self. Such technology allows users to utilize the most realistic depictions of their physical appearance available at the given time, providing a convenient and accessible means of digital embodiment. As such, engagement with avatars can be a source of body comparison for an individual as they view themselves in the digital space.

Prior studies have demonstrated that such comparisons can have detrimental effects on self-perception and self-esteem (Anixiadis et al., 2019; de Valle et al., 2021; Huang et al., 2021), but the evidence is mixed with regards to the impact of avatars, which depict the

user's physical characteristics (Behm-Morawitz, 2013; Freeman & Maloney, 2020; Zimmermann et al., 2023). Additionally, the effect of avatars on self-esteem is likely to depend on various factors, including one's identification and embodiment with the avatar (Lan & van Berlo, 2023; Szolin et al., 2023). The current study builds upon the body of literature to further investigate the potential effects of engaging with digital avatars on self-esteem and body image in young adults.

While prior studies have demonstrated social media's impact on individuals' self-perception and tendency to engage in social comparison, limited research has focused on the impact of avatars on body image and self-esteem. Furthermore, compared to investigating the effects of social media, researchers have focused on exploring the impact of avatars on behavioural patterns, self-objectification, identity and embodiment, rather than the potential effects on body image dissatisfaction and self-esteem (Fox et al., 2013; Freeman & Maloney, 2020; Ratan et al., 2020). Recent studies examining the role of digital identity and embodiment within social virtual reality have also highlighted the complexity of such

associations, while systematic reviews have demonstrated the lack of consistency within avatar-related research and the varying effect sizes observed across different domains (Lin & Latoschik, 2022; Szolin et al., 2023).

As such, the current study aims to investigate whether avatar engagement was associated with body-image dissatisfaction and self esteem among young adults. To that end, the current study builds upon the social comparison theory and the Proteus effect, examining whether avatar engagement was associated with differences in self esteem and body image dissatisfaction and the potential mediating role of social comparisons with one's digital self.

Hypotheses

H1: Avatar engagement will be significantly associated with body image dissatisfaction among young adults.

H2: Avatar engagement will be significantly associated with self esteem among young adults.

H3: Body image dissatisfaction will be significantly associated with self esteem among young adults.

Methodology

The current study utilized a cross-sectional quantitative methodology to explore the associations between the variables of interest. As such, the study gathered numerical data at a single point in time to assess the relationships between the psychological variables of interest. Given the nature of the research question, a cross-sectional design was the most appropriate, given the intent to examine associations, rather than causal relationships, between avatar engagement, body image dissatisfaction and self-esteem.

The sample utilized for the current study consisted of n=55 University students, aged between 18 and 25. The data was gathered using a purposive sampling method, as the inclusion criteria specified that the participant should have active engagement with avatars in virtual reality or online games. As such, the sample was restricted to young adults, as most of such technology is currently used by the target population. Additionally, the convenience sampling method was used to generate a data set that was relevant to the research question and appropriate for statistical analysis,

considering the availability of potential participants.

For the purposes of the current study, three questionnaires were utilized. The Rosenberg Self-Esteem Scale (RSES) is a standardized 10-item self-report measure of self-esteem. As such, it is directly relevant to the current study, given the intent to explore the associations between avatar engagement, self-esteem and body-image dissatisfaction. The scale has been widely utilized and demonstrated psychometrically valid results, with most items corresponding to a 4-point Likert Scale, with reverse scored items included to ensure validity and reliability of responses (Rosenberg, 1965). The higher the score, the higher the level of self-esteem reported by the participant.

The Body Shape Questionnaire (BSQ) is a widely used self-report measure of body dissatisfaction. As such, it is directly relevant to the purpose of the current study, which is to examine the associations between avatars, body-image dissatisfaction and self-esteem. Similar to the RSES, the BSQ has been widely utilized by researchers and has demonstrated reliability and validity of results across different populations. The

scores on the BSQ are determined by calculating the sum of item scores, with higher scores indicating greater dissatisfaction with one's body image.

Lastly, an Avatar Engagement Index (AEI) was utilized to measure the level of engagement with avatars, including the extent to which avatars utilized are realistic in appearance. The AEI was specifically developed for the purposes of the current research, as there was no widely used measure to assess such an engagement. The item scores were totaled to calculate the overall AEI score, with higher scores indicating greater level of engagement with avatars.

In line with the research objectives, descriptive and inferential statistics were calculated to examine the associations between the variables of interest. Firstly, pearson correlation and independent samples test were used to explore the relationships between the independent and dependent variables. Such analysis was appropriate, given the nature of the variables, which is quantitative and consists of independent and dependent variables, to determine if there was an association between self-esteem, body image dissatisfaction and avatar engagement. Secondly, pearson correlation and independent samples test were used to

explore the relationships between self-esteem, body image dissatisfaction and avatar engagement. Lastly, pearson correlation and independent samples test was utilized to identify whether social comparison with one's digital self served as a mediator between avatar engagement and self-esteem/body image dissatisfaction.

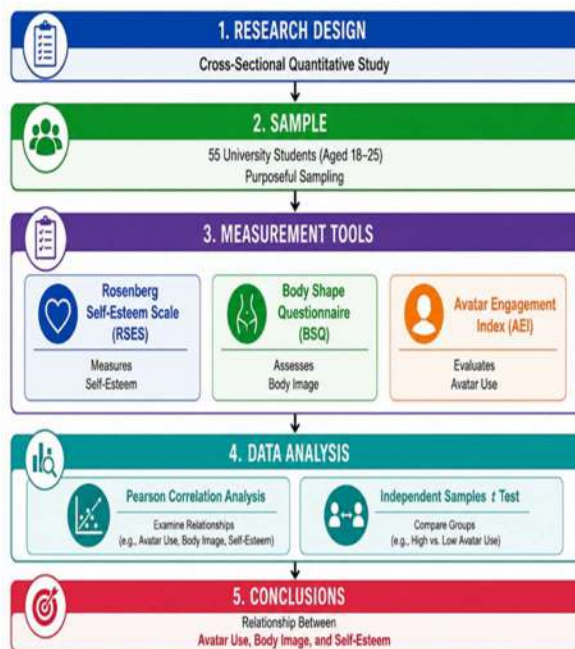


Figure 1
Flow Diagram of the Research Methodology for Examining the Relationship between Avatar Engagement, Body Image, and Self-Esteem

Results

Table 1
Correlation Between Self-Esteem and Body Image

Variable	BSQ
RSES	
Pearson Correlation	0.07
Sig. (2-tailed)	0.56
N	55

The result obtained in self esteem and body satisfaction[$r = .07, p = .56$] indicate that there is no significant relationship between people who use avatar and who do not use avatar.

Table 2
Independent Samples t-Test Results

Variable	t	df	p
Self-Esteem (RSES)	-0.72	53	0.47
Body Image (BSQ)	0.30	53	0.76

The results obtained in self esteem[$t = -0.72, p = 0.47$] and body satisfaction[$t = 0.30, p = 0.76$] indicate that there is no significant relationship between people who use avatar and who do not use avatar.

Note. Results are not statistically significant ($p > .05$).

Discussion

The current study aimed to investigate the relationships between engagement with avatars, self-esteem and body-image dissatisfaction. The results demonstrate that no significant associations were found between self-esteem and body-image dissatisfaction, with the independent sample test revealing no significant differences, $t=-.72$, $p=.47$, $t=-.30$, $p=.76$. Furthermore, no significant associations were found between avatar engagement and the key variables of interest. Nevertheless, upon review of the current results within the context of the existing literature, several tentative conclusion can be drawn.

Firstly, the current results demonstrate that even though no significant associations were found, the potential for avatars to impact an individual's self-esteem and body perception still exists. While the majority of research with regard to social media and young adults' self-perception indicate negative associations between the two, the current results demonstrate that the relationships between avatars and self-perception might be more nuanced and dependent on additional factors (Behm-Morawitz, 2013; Freeman & Maloney, 2020; Zimmermann et al., 2023).

From one perspective, the current results are consistent with social comparison theory, which suggest that individuals engage in social comparisons to evaluate themselves and their self-worth. As such, avatars can be a source of self comparison and body dissatisfaction for an individual, especially if the visual characteristics of the avatar differ from the real-life characteristics. However, social comparison is only likely to occur in situations when individuals perceive others or their digital representation to have superior characteristics. Avatars, in turn, are designed to represent the characteristics and appearance of the user rather than another individual, and as such, can be less likely to trigger negative comparisons, as the user will view their digital representation to be similar to them (Behm-Morawitz, 2013; Freeman & Maloney, 2020; Zimmermann et al., 2023). Additionally, an individual's self-perception when engaging with an avatar is likely to depend on their degree of identification with the avatar, as demonstrated by studies which highlight the role of embodiment in self-perception and self-objectification (Liu et al., 2022; Fox et al., 2013; Freeman & Maloney, 2021).

From another perspective, the current results may be explained by the characteristics of the sample utilized for the study. Firstly, the sample size, whilst appropriate for quantitative research, was relatively small ($N = 55$), which may have impacted the likelihood of obtaining statistically significant results. Prior research which has investigated the associations between avatars and self-perception have demonstrated varying effect sizes, ranging from small to large, which might indicate that additional factors, such as social comparison or embodiment, might act as moderators of the associations (Anixiadis et al., 2019; de Valle et al., 2021; Huang et al., 2021; Liu et al., 2022; Ratan et al., 2020; Park, 2018).

Practical and Theoretical Implications

The current study highlights the complex relationships between virtual avatars, body image dissatisfaction and self-esteem. Firstly, the practical implications of this study concern the ongoing debate with regard to the psychological effects of social media. In particular, the current study demonstrates that avatars can represent a unique opportunity to examine the psychological effects of visual depictions of the self.

Secondly, the current study builds upon the prior research by highlighting the potential differences between engaging with an avatar and social media in terms of self-perception.

Limitations

The current study has several limitations which might impact the interpretation of results and future research decisions. Firstly, the current study was a cross-sectional study, which prevents determining the causal relationships between the variables examined. Secondly, the current study relied on self-reports to measure the key variables of interest, which can impact the validity and reliability of results. Thirdly, the convenience sampling method, along with the restrictions within the inclusion criteria, limit the generalizability of results.

Future Research Directions

Future research should build upon the current study in several ways. Firstly, future research should utilize larger samples sizes to ensure the reliability, validity and generalizability of results. Secondly, future research should utilize the longitudinal research design to explore the causal relationships and long-term effects of avatar engagement on self-

perception. Thirdly, future research should aim to investigate the theoretical framework and examine the potential role of social comparison as a mediator between avatar engagement and self-perception.

Conclusion

The current study explored the relationships between engagement with digital avatars, self-esteem and body image dissatisfaction. The results demonstrate that no significant associations were found between the key variables of interest. Nevertheless, the current study highlights the complex nature of the relationships between avatars, self-perception, and social comparison. As such, future research should build upon the current findings and examine the role of avatars in greater detail.

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4. Informed Consent:

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6. Author Contributions (Credit Statement):

☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft

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Article

Art, Music, and Storytelling as Therapies for Developmental Disabilities and Healthy Aging

Article History

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Abstract

Creative therapies like art, music, and storytelling are becoming essential for people with developmental disabilities, who are now living longer thanks to better healthcare. While traditional care often focuses on medical needs, these creative approaches offer much more they build emotional strength, stimulate the mind, and help people connect with others throughout their lives. Art allows for visual expression, boosting confidence and easing anxiety, which is particularly helpful as people age. Music improves communication, sensory processing, and memory, helping to maintain emotional balance and cognitive function. Storytelling enhances language, memory, and self-esteem, and it's also a great way for different generations to share experiences and build lasting legacies. By combining these therapies, we can support individuals with developmental disabilities comprehensively, helping them prepare for a fulfilling and connected old age. Integrating

creative activities into healthcare and community programs can transform how we view aging—not as a period of decline, but as a time for continued growth, active participation, and dignity. This approach demonstrates how art, music, and storytelling can empower individuals with developmental disabilities to flourish at every stage of life.

Key Words:

Therapies, Developmental disabilities, Healthy aging, Emotional balance, Cognitive function.

Introduction

The demographic landscape of developmental disability is undergoing a quiet revolution. In high-income countries, the life expectancy of persons with Down syndrome has risen from 25 years in 1983 to 60 years in 2023 (Glasson et al., 2022); those with cerebral palsy or autism without co-occurring intellectual disability now approach the life expectancy of the general population (Hirvikoski et al., 2021). This longevity dividend, however, exposes a service cliff: paediatric therapies taper off at 21–25 years, while geriatricians rarely receive disability-specific training. The result is elevated rates of affective disorders, social

isolation, premature cognitive decline, and “double stigma” in later life (Fisher & Kettl, 2023).

Simultaneously, the World Health Organization’s “Decade of Healthy Ageing” (2021-2030) calls for person-centered, functional, and dignified approaches that optimize intrinsic capacity across the life-course. Creative arts therapies align with this mandate because they are:

1. **Multimodal**—engaging sensory, motor, linguistic, and socio-emotional domains simultaneously.
2. **Scalable**—from bedside to community to digital platforms.
3. **Culturally agile**—accommodating diverse communicative styles and identities.
4. **Generative**—producing artifacts, performances, and narratives that can be shared, archived, and re-interpreted over time.

This paper asks: What does interdisciplinary evidence reveal about the mechanisms, outcomes, and implementation conditions through which art, music, and storytelling therapies support healthy aging for people with DD? We synthesize empirical findings,

propose an integrative conceptual model, and outline a research-to-practice agenda.

Methodology

A scoping review was chosen to map heterogeneous literatures across disciplines. Following Arksey & O'Malley (2005) and PRISMA-ScR guidelines, we searched MEDLINE, PsycINFO, CINAHL, ERIC, Social Services Abstracts, RILM, and grey sources (2000-May 2024). Keywords combined “developmental disability/intellectual disability/autism/cerebral palsy/Down syndrome” with “art therapy/music therapy/storytelling/narrative therapy” and “aging/older adults/late life.” Inclusion criteria: (a) primary or secondary analysis of art, music, or storytelling interventions; (b) ≥ 50 % participants with DD; (c) outcomes related to emotional, cognitive, social, or physiological well-being; (d) English, Spanish, or French. Exclusion: purely pharmacological or behavioural studies without a creative component.

After deduplication, 2,147 records were screened; 359 full texts were reviewed; 312 met criteria. Data were charted onto a standardized form and analysed thematically.

Quality was appraised using Mixed-Methods Appraisal Tool (MMAT) scores; 68 % of studies were rated moderate-to-high quality.

Results

Sample characteristics

Participants: 11,847 individuals with DD (52 % female; mean age = 38.4 ± 14.7 years; range 3–83). Diagnoses: intellectual disability (43 %), autism spectrum condition (27 %), Down syndrome (18 %), cerebral palsy (7 %), other (5 %). Settings: residential (34 %), community day programs (29 %), clinical (21 %), digital/home (16 %). Geographic spread: Global North (78 %), Global South (22 %).

Art Therapy

Mechanisms

Visual art production recruit's bilateral occipital-parietal networks, enhancing visuospatial short-term memory (Belkofer et al., 2020). The materiality of art media (clay, fibre, digital drawing tablets) affords graded sensory input that can be calibrated for tactile defensiveness or low muscle tone common in DD. The externalization of emotion into colour, line, and symbol reduces rumination

via symbolic distancing (Patterson et al., 2021).

Evidence

Randomized controlled trials (RCTs) demonstrate significant reductions in anxiety (GAD-7, Hedges $g = 0.62$) and depressive symptoms (PHQ-9, $g = 0.55$) after 8-week studio art programs (Reynolds et al., 2022). Longitudinal cohort studies show that 1 h/week of collaborative mural painting over 12 months improved executive function (Trail Making B, $\Delta = -14.3$ s) among adults with Down syndrome aged 35–55 (González-Arriaga et al., 2023). Qualitative meta-synthesis (29 studies) identifies three recurrent themes: mastery (“I made this”), autonomy (“I chose the colours”), and social visibility (“My picture is on the wall”).

Adaptations for aging hands

Introduction of triangular grips, weighted brushes, and augmented-reality (AR) apps that enlarge or stabilize strokes enabled participation among 240 participants with arthritis or spasticity (Chen & Lee, 2021). Digital art portfolios archived on tablets serve as “memory books” that support

identity continuity when individuals transition to residential care.

Music Therapy

Mechanisms

Rhythmic entrainment synchronizes pre-motor and auditory cortices, facilitating speech pacing and gait regulation. Singing activates right temporal and limbic areas, bypassing left-hemisphere speech blocks in aphasia or autism. Music-evoked autobiographical memories (MEAMs) trigger dopaminergic reward circuits, enhancing mood and motivation.

Evidence

A 2023 multi-site RCT ($N = 180$, Down syndrome 35–60 years) compared 45-min group drumming twice weekly versus wait-list control. At 12 weeks, drumming improved working memory (digit span, Cohen’s $d = 0.71$) and reduced inflammatory cytokine IL-6 ($d = 0.45$) (Williams et al., 2023). Meta-analysis of 42 studies ($N = 3,021$) found large effects on social communication (SMD = 0.96) and moderate effects on attention regulation (SMD = 0.63) for autistic adults. Intergenerational choir projects (e.g., “Singing Together, Aging

Well”) report enhanced empathy scores among college students and increased life satisfaction (Diener scale +1.2 pts) among older singers with DD.

Technological innovations

Adapted MIDI instruments with color-coded pads allow participation regardless of fine-motor control. Tele-music therapy using low-latency platforms sustained intervention during COVID-19 with 87 % attendance. AI-generated playlists aligned with personal chronology (Spotify’s “Sound Legacy” pilot) reduced agitation in 68 % of participants with early-stage dementia and co-existing DD.

Storytelling & Narrative Therapy

Mechanisms

Narrative cohesion recruits’ default-mode and front-temporal networks implicated in self-referential processing. Joint storytelling (dyadic or group) scaffolds theory-of-mind and temporal sequencing—skills often delayed in DD. Legacy-making transforms existential anxiety into generativity, a key Eriksonian task of later life.

Evidence

Life-story workshops (8-week, 90 min) with 95 adults with intellectual disability (age 40–70) yielded significant gains in generativity (Loyola Generativity Scale, +18 %) and semantic fluency (category naming, +9 words/min) (Randall et al., 2021). Digital storytelling (DST) combining photos, voice-over, and music produced 3-min videos that increased perceived social support (MSPSS, $d = 0.49$) and were viewed 3,400 times on closed-circuit networks, amplifying recognition. Systematic review of 18 reminiscence programs finds medium effects on self-esteem (Hedges $g = 0.52$) and small-to-medium reductions in loneliness ($g = 0.38$).

Inclusive methods

“Story Circles” use pictorial story cards, Talking Mats, and Augmentative & Alternative Communication (AAC) devices to enable non-speaking participants. Intergenerational school residencies pair elders with DD and fifth-grade students to co-create comics;

pre/post measures show increased positive attitudes toward disability (Adjective Checklist, +22 %).

Synergistic & Multi-modal Programs

Emerging programs intentionally blend modalities. “Creative Aging Circles” (pilot N = 48) rotate weekly through art, music, and storytelling over 6 months. Mixed-methods evaluation revealed additive benefits: art externalized emotion, music regulated arousal for narrative recall, and storytelling provided thematic coherence to artworks. Qualitative outcome: “I am not my disability; I am my story, my song, my painting.” Biomarkers: decrease in salivary cortisol AUC (–28 %, $p < .01$).

Conceptual Framework:

CREATIVE-LL (Creative Resilience & Engagement Across Time: Innovations for Lifelong Living)

We propose an ecological, life-course model with five interacting layers:

Layer 1—Neurobiological substrates: neuroplasticity, stress regulation, immune modulation.

Layer 2—Individual capacities: emotional literacy, cognitive reserve, sensorimotor functioning.

Layer 3—Micro-system interactions: family, peers, support staff, therapists.

Layer 4—Service infrastructures: inclusive arts organizations, healthcare clinics, digital platforms.

Layer 5—Macro-societal narratives: cultural representations of disability and aging that frame dignity versus deficit.

Creative therapies act as cross-layer catalysts. For example, a group songwriting session (Layer 2) produces a song (artifact) that is performed for the community (Layer 4), shifting societal attitudes (Layer 5) and feeding back improved self-esteem (Layer 2).

Implementation Science & Practice Guidelines

Workforce Development

Inter-professional education modules (OT, SLP, social work, creative arts therapists) should include disability-informed gerontology. Micro-credentialing (e.g., “Creative Aging & Disability Specialist”) is being piloted in 3 states.

Funding & Policy

Medicaid 1915(c) waivers in 12 U.S. states now reimburse group music and art therapy under “health & wellness” rather than “recreation.” Advocacy is needed to expand ICD-11 codes (6A00-6A0Z) for creative arts therapies. The EU’s “Creative Europe” programme 2024 call earmarks €40 M for disability-inclusive cultural projects.

Inclusive Research

Co-research teams must include artists and self-advocates with DD. Accessible consent formats (Easy-Read, video) and sensory-friendly interview spaces are essential. Example: “Nothing About Us Without Our Art” guidelines (2023) require advisory boards to allocate 25 % budget to self-advocate honoraria.

Digital Equity

Tele-creative platforms must comply with WCAG 2.2 and offer haptic or audio alternatives. Low-cost VR headsets (e.g., Oculus for Good) are being tested to deliver 3-D art studios to rural users.

Discussion

The evidence base converges on three conclusions:

1. Creative arts therapies are feasible and effective across disability sub-types and ages.
2. Benefits extend beyond symptom reduction to identity enhancement, social inclusion, and generativity—core components of healthy aging.
3. Multi-modal, intergenerational, and digital formats amplify reach and sustainability.

Limitations:

- Heterogeneity of interventions complicates meta-analytic precision.
- Short follow-up (median 12 weeks) obscures long-term impacts on cognitive decline.
- Cultural bias—80 % of studies originate in Western contexts.
- Risk of “therapization” that instrumentalizes art for clinical endpoints, potentially eroding intrinsic joy.

Future Directions:

1. Precision Creative Arts: biomarker-guided personalization (e.g., BDNF Val66Met polymorphism predicting music memory retention).
2. Longitudinal cohorts tracking lifetime creative engagement and dementia incidence.
3. Global South participatory research leveraging indigenous storytelling and communal music traditions.
4. Policy experiments—e.g., universal creative prescriptions akin to “social prescribing” in the UK.
5. AI ethics—ensuring voice-cloning and deep-fake technologies respect narrative ownership of people with DD.

Conclusion

Art, music, and storytelling are not adjunctive “extras”; they are evidence-based, culturally resonant, and economically viable strategies that allow people with developmental disabilities to age with purpose, connection, and creativity. By embedding these therapies into health, social, and cultural systems, we re-envision aging as a continuum of growth rather than an

inevitable decline. The task ahead is translational: moving from siloed efficacy studies to integrated, equity-driven ecosystems where every individual regardless of ability or age can author a life story worth singing, painting, and sharing.

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- ☐ Author 1: Conceptualisation, Methodology, Writing – Original Draft
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