Research Article

Exploring Relationships Between School Burnout, Preference For Solitude, and Online Social Support in High School Students in India

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Abstract

Background: Adolescence is marked by academic stress and social change, often resulting in school burnout—characterized by exhaustion, cynicism, and inadequacy. Solitude is sometimes used as a coping mechanism, while online social support may provide relief but also risk increased stress.

Aim: This study examines the role of online social support in moderating the relationship between school burnout and preference for solitude among Indian high school students.

Methods: A quantitative survey was conducted with 516 students (grades 9–12). Participants completed the School Burnout Inventory (Salmela-Aro and Näätänen, 2005), Preference for Solitude Scale (Burger, 1995), and Online Social Support Scale (Nick et. al., 2018). Data were analyzed using correlation, regression, and moderation analyses in JAMOVI.

Hypotheses: The study hypothesizes that school burnout is related to and can predict preference for solitude, and that online social support moderates this relationship.

Results: School burnout has significantly low negative correlation with preference for solitude. Online social support does not moderate this relationship.

Conclusion: Findings suggest students experiencing burnout may avoid solitude, while online social support, though not commonly used as a coping mechanism, may heighten stress with excessive use.

Key words: school, students, burnout, solitude, support.

Introduction

Adolescence, specially with the added stresses posed by high-school, is a confusing and challenging phase of life for most, characterised by social and developmental complexities. Dealing with the pressures of high-school above and beyond significantly adds to the stress. Stress, when prolonged and unaddressed, tends to lead to burnout (Channawar, 2023). This phenomenon, though widely studied in workplace settings, is applicable in the context of high-school and adolescents as well (Chong, et. al., 2025). Making student well-being a priority necessitates focusing on their mental health and understanding the factors that play a role in affecting the same.

School burnout, a response to chronic stress due to school and academics, is characterized by cynicism, exhaustion, and feelings of inadequacy (Salmela-Aro et. al., 2009). School burnout as a concept has gained much attention in the last few years. Burnout is a major factor contributing to declining mental well-being and emotional difficulties in adolescents.

Adolescents, in this state of overwhelming stress, turn to various coping mechanisms, including but not limited to social withdrawal (Chong, et. al., 2025).

Preference for solitude may be understood as a desire for time alone for reasons such as reflection, introspection, and withdrawal to cope with stress. Solitude may be both adaptive and maladaptive, depending on the cause behind it. Voluntary solitude is usually adaptive, allowing for autonomy and emotional clarity. When involuntary or driven by stress, however, solitude signals avoidance and disengagement (Ren, 2016).

In the current digital age, the world online is more important and influential now than ever before, especially for adolescents. Online social support has emerged as an increasingly popular coping mechanism (Bremer and Brooks, 2025). Existing literature, however, is divided on whether or not online social support is a positively effective method of coping (Pantic, 2014).

Individually, these three constructs have received significant attention in the field of social science research. However, work that explores them in combination, seeing how they interact with each other, especially in adolescents, is scarce. Not many studies explore the relationship between school burnout and preference for

solitude, or the effects of online social support on the aforementioned relationship. The gap is further widened when the focus is shifted to Indian high-school students specifically, and their unique systems and challenges are considered.

The present study aims to look at the relationship between school burnout and preference for solitude, and if online social support moderates this association. Exploratory analyses are also conducted to identify other possible relationships between the variables.

Hypotheses

H1: School burnout is significantly associated with preference for solitude. H2: School burnout significantly predicts preference for solitude.

H3: Online social support moderates the relationship between school burnout and preference for solitude.

Review of Literature

School burnout

School burnout, characterized by exhaustion at school, cynicism towards the meaning of school, and feelings of inadequacy at school (Salmela-Aro et. al., 2009), has emerged as a significant concern, impacting students' academic performance, mental health, and overall well-being. Çam and Ögülmüs (2019) explore various theoretical perspectives on school burnout, emphasizing resource management, self-efficacy, and developmental transitions. These perspectives help educators design interventions to prevent burnout.

May et al. (2015) highlight the detrimental effects of burnout on academic performance and cognitive functioning, showing that burnout uniquely predicts lower GPA and impaired cognitive tasks. Similarly, Walburg (2014) identifies excessive academic demands, lack of rewards, and poor interpersonal relationships as key risk factors, linking burnout to anxiety, depression, and suicidal ideation.

Salmela-Aro (2008) examines school context, revealing that negative environments and lack of support contribute to burnout, particularly among girls and lower-achieving students.

Bask and Salmela-Aro (2012) further connect burnout to school dropout, showing that cynicism and feelings of inadequacy significantly increase dropout risk, particularly in high-achieving academic tracks.

Solitude

Solitude is a multifaceted experience with both positive and negative implications for well-being. Burger (1995) developed the Preference for Solitude Scale, demonstrating that solitude preference is distinct from social anxiety and can be a positive trait. Long and Averill (2003) further explored solitude's benefits, including increased creativity, self-reflection, and spiritual growth, while also noting potential risks like social withdrawal.

Nguyen et al. (2018) examined solitude's effects on affective experiences, showing that it generally lowers emotional arousal but can be beneficial when chosen voluntarily. Autonomy plays a key role in moderating solitude's impact, reducing stress and enhancing well-being.

Nguyen and Rodriguez (2024) expanded on this by distinguishing between objective solitude (physical aloneness) and subjective solitude (psychological disengagement), highlighting the need for clearer methodological approaches in solitude research.

Coplan et al. (2021) contextualized solitude within the COVID-19 pandemic, emphasizing its paradoxical nature—self-enhancing when voluntary but distressing when forced. Their work reinforced the importance of distinguishing between solitude as a choice versus an imposed condition.

Online social support

Online social support has emerged as a significant factor in mental health, influencing emotional well-being across different digital platforms. Frison and Eggermont (2015) examined how Facebook use relates to adolescent mental health, finding that passive use increases depression in girls, while active engagement can be beneficial if it fosters perceived social support. Similarly, Oh et al. (2014) found that supportive interactions on social networking sites enhance life satisfaction by strengthening a sense of community and perceived social support.

In health-related contexts, Yan and Tan (2014) demonstrated that online health communities provide valuable emotional and informational support, with emotional support

playing a crucial role in improving mental well-being. White and Dorman (2001) further explored online support groups, highlighting their benefits, such as accessibility and anonymity, but also noting risks like misinformation and lack of moderation.

Beyond traditional social media, Trepte et al. (2012) examined online gaming, revealing that gaming communities foster both bridging and bonding social capital, leading to meaningful social support both online and offline.

Rationale

Adolescence is a critical developmental stage marked by academic pressure, social changes, and emotional challenges, which can contribute to school burnout—characterized by exhaustion, cynicism, and feelings of inadequacy. As a coping mechanism, students may turn to solitude.

However, while solitude can provide temporary relief, excessive withdrawal may exacerbate burnout and hinder social and emotional well-being.

The role of online social support in this dynamic remains unclear. Research suggests that online social interactions can either mitigate distress by providing emotional and informational support (Yan & Tan, 2014; Oh et al., 2014) or contribute to negative outcomes depending on the nature of engagement (Frison & Eggermont, 2015). Furthermore, online communities, including gaming platforms, have been shown to foster both bonding and bridging social capital, which can enhance real-world social support (Trepte et al., 2012). Despite these insights, little research has examined how online social support influences the relationship between school burnout and preference for solitude. This study aims to bridge this gap by investigating whether online social support moderates this relationship, offering critical insights into how digital interactions shape adolescent coping strategies and mental health resilience.

Methods

Methodology

The study followed a quantitative, cross-sectional, correlational methodology, which was deemed appropriate for examining associations among the chosen constructs without experimental manipulation. A survey method was employed to efficiently collect data from a large adolescent population across India. A moderation analysis was conducted to evaluate whether online social support affects the relationship between school burnout and preference for solitude. This methodological approach aligns with the study's aim of identifying predictive relationships and testing conditional effects.

Research design

The study was quantitative and cross sectional in nature, employing the survey method to gather data from participants recruited via purposive sampling. The scales used for this study were the School Burnout Inventory, Preference for Solitude Scale, and Online Social Support Scale. They were checked for acceptable reliability and validity levels. These scales were collated into a single questionnaire. For data collection, the population being considered was high school students from grades 9 to 12. The administrative bodies of various English medium schools within the country, with no bar on location, were contacted for help regarding the same. The data was then analysed using the JAMOVI software, utilising the functions of correlation, regression, and moderation. The variables being studied were school burnout (independent variable), preference for solitude (dependent variable), and online social support (moderating variable).

Sample

Size and characteristics: 516 students of grades 9 to 12 from English medium schools across India.

Sample collection was done via purposive sampling, by contacting the administrative bodies of various English medium schools within the country, with no bar on location. These contacts were made largely based on existing social and professional connections. Individual students were also contacted. All contact and communication occurred online, over email and text, and video meetings if necessary. The administrative bodies and the individual students were given access to an online questionnaire created by using the three chosen scales. They were then requested to circulate the questionnaire to eligible students and elicit responses. The population under consideration was high school students from grades 9 to 12.

Inclusion criteria:

1. Residing in India
2. Attending an English medium school
3. Studying between grades 9 to 12

Students who were in the Indian education system and were accustomed to the same were chosen so as to standardize the major educational experiences of students to a large extent, and address common milestones such as board exams. English medium schools were made a requirement as the questionnaire was in English, and the medium of instruction being English ensured that the students would be able to fully understand the items in the questionnaire. The study focused on high school students and hence grades 9 to 12 were chosen.

Procedure

The acquired sample was given an online questionnaire created by collating the School Burnout Inventory, the Preference for Solitude Scale, and the Online Social Support Scale. The answers collected were converted into scores and further into numerical data with the help of MS Excel. This data was then analyzed using the JAMOVI software. School burnout and preference for solitude were tested for correlation and regression while tests were run to see if online social support moderated the presumably existing school burnout–preference for solitude relationship. Three open ended questions were also asked and the answers were run through basic content analysis to further supplement the results. The results of these analytical tests were then interpreted and explained on the basis of existing reviewed literature.

Scales:

1. **Preference for Solitude Scale:** Authored by Burger (1995), the scale uses 12 forced-choice items. It has three factors: Need for Solitude, Enjoyment of Solitude, and Productivity During Solitude. Internal consistency (K-R 20) ranged from 0.70 to 0.75, with test-retest reliability at r = 0.72 (3–4 weeks) and r = 0.76 (6–8 weeks). The scale showed convergent validity and divergent validity, confirming a stable three-factor structure.
2. **The Online Social Support Scale:** The Online Social Support Scale (OSSS) by Nick et al. (2018) measures online social support through 40 items across four subscales: Esteem/Emotional Support, Social Companionship, Informational Support, and Instrumental Support, rated on a 5-point Likert scale (0–4). Factor analysis confirmed its four-factor structure, with high reliability (α = 0.94–0.95) and convergent validity (r = 0.38 with in-person support). It also showed discriminant validity with low social desirability bias.
3. **The School Burnout Inventory:** The School Burnout Inventory (SBI) by Salmela-Aro & Näätänen (2005) assessed school burnout through 9 items across three factors: Exhaustion, Cynicism, and Inadequacy, rated on a 6-point Likert scale (1–6). Confirmatory factor analysis confirmed its three-factor structure, with high internal consistency (α = 0.80–0.88), strong test-retest reliability, and convergent validity.

Data analysis:

The data was analysed using the JAMOVI software. H1 was analysed using correlation to look for the existence of a relationship between the variables, H2 was analysed using linear regression to understand the extent to which school burnout could predict preference for solitude, and H3 was analysed using mediation to see if online social support affected the relationship between school burnout and preference for solitude. Exploratory findings were examined using correlation and linear regression. Basic content analysis was used to categorize student reflections to gain a better understanding of their opinions and viewpoints.

Results

The demographic distributions of the participants have been summarized as follows:

1. Gender:
    a. Male = 40.4%
    b. Female = 58.7%
    c. Prefer not to say = 0.9%

2. Age:
    a. 13 years = 2.9%
    b. 14 years = 26.7%
    c. 15 years = 33.3%
    d. 16 years = 21.7%
    e. 17 years = 12.0%
    f. 18 years = 2.9%
3. Grade:
    a. 9th grade = 33.8%
    b. 10th grade = 33.1%
    c. 11th grade = 19.4%
    d. 12th grade = 13.7%
4. Type of residence:
    a. Urban = 92.3%
    b. Rural = 7.7%

The descriptive statistics of the three variables have been elaborated in Table 1. The variables have been represented as "SBI score" for School Burnout, "OSSS score" for Online Social Support, and "PFS score" for Preference for Solitude.

Table 1 Descriptive Statistics of Variables

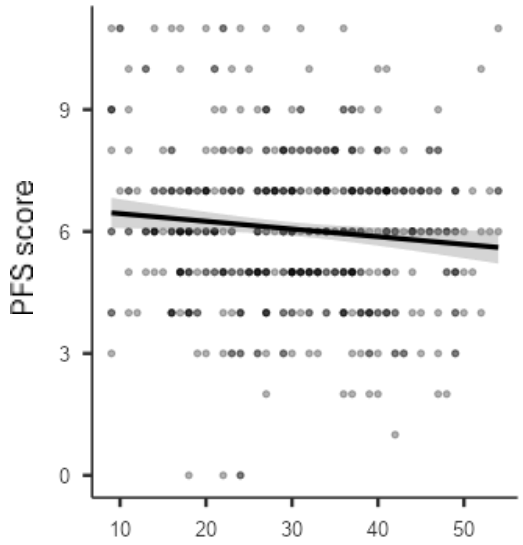
Variables	SBI score	OSSS score	PFS score
N	516	516	516
Mean	30.4	52.9	6.05
Median	30.0	46.0	6.00
Mode	30.0	0.00	6.00
Standard deviation	10.9	40.8	1.92
Minimum	9.00	0.00	0.00
Maximum	54.0	160	11.0

Table 2 and Figure 1 show the correlation between School burnout (SBI score, n=516, SD=10.9) and Preference for Solitude (PFS score, n=516, SD=1.92). This tests H1, which hypothesizes that a relationship between School Burnout and Preference for Solitude exists.

Table 2 Correlation Matrix Between SBI Score and PFS Score

Variable		SBI score	PFS score
SBI score	Pearson's r	—	
	p-value	—	
PFS score	Pearson's r	-0.1	—
	p-value	0.02	—

Figure 1 Correlation Plot



As is seen in Table 2 and Figure 1, there exists a weak but statistically significant negative correlation between School Burnout and Preference for Solitude (r=-.1, p=.02). This means that as School Burnout increases, Preference for Solitude slightly decreases. Hence, H1 is accepted.

H2 hypothesizes that School Burnout can predict Preference for Solitude. A linear regression analysis was run, and Table 3 and Table 4 explain the same.

Table 3 Model Fit Measures

Model	R	R^2
1	0.1	0.01

Table 4 Model Coefficients - PFS score

Predictor	Estimate	SE	t	p
Intercept	6.63	0.25	26.43	< .001
SBI score	-0.02	0.01	-2.43	0.02

R value indicates the correlation between observed and predicted values of the dependent variable (Preference for Solitude), while R^2 value tells us how much of the variation in the dependent variable (Preference for Solitude) is determined by the predictor variable (School Burnout). As Table 3 shows, R=.1, which indicates a weak positive correlation between observed and predicted values of Preference for Solitude. R^2=.01, which says that only 1% of the variation in Preference for Solitude is determined by School Burnout. This shows us that School Burnout can very weakly predict Preference for Solitude.

Table 4 shows us the specifics of this prediction. The intercept value says that when SBI score=0, the predicted PFS score=6.63. SBI score coefficient indicates that for every 1 unit increase in SBI score, PFS score, on average, decreases by .02 units. Since the p value is less than .05 (p=.02), the prediction is statistically significant. Thus, while School Burnout's ability to predict Preference for Solitude is weak, it is statistically significant, allowing us to accept H2.

H3 hypothesizes that Online Social Support moderates the relationship between School Burnout and Preference for Solitude. A moderation analysis was run to test the same, and is depicted in Table 5.

Table 5 Moderation Estimates

	Estimate	SE	Z	p
SBI score	-0.02	0.01	-2.45	0.01

OSSS score	0.00	0.00	1.44	0.15
SBI score ✻ OSSS score	1.71e-4	1.82e-4	0.94	0.35

Table 5 shows us that School Burnout is a statistically significant negative predictor of Preference for Solitude (SBI score p=.01), which agrees with the results established previously. Online Social Support does not independently predict Preference for Solitude (OSSS score p=.15). Online Social Support also does not statistically significantly moderate the relationship between School Burnout and Preference for Solitude (SBI score * OSSS score p=.35). Thus, H3 is rejected.

An emergent finding that was not originally testing a priori hypothesis shows that, as seen in Table 6, Online Social Support and School Burnout are weakly, but statistically significantly (p=.002), positively correlated. This means that as Online Social Support increases, School Burnout also slightly increases.

Table 6 Correlation Matrix Between OSSS Score and SBI Score

Variables		OSSS score	SBI score
OSSS score	Pearson's r	—	
	p-value	—	
SBI score	Pearson's r	0.13	—
	p-value	0.002	—

A regression analysis was run to check if Online Social Support could predict School Burnout, and the results are displayed in Table 8 and Table 9.

Table 8 Model Fit Measures

Model	R	R^2
1	0.13	0.02

Table 9 Model Coefficients - SBI score

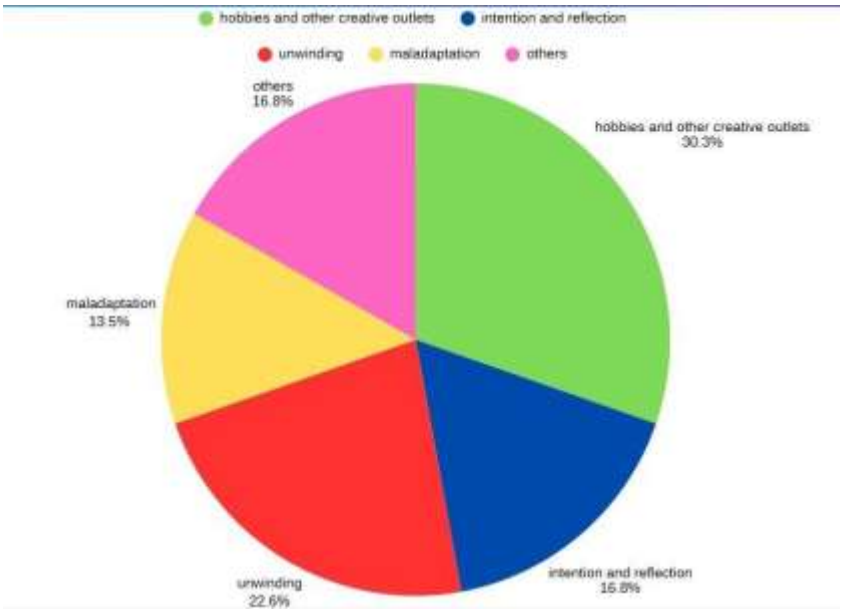
Predictor	Estimate	SE	t	p
Intercept	28.55	0.78	36.76	< .001
OSSS score	0.04	0.01	3.05	0.002

Table 8 shows that observed and predicted values of School Burnout are weakly positively correlated (R=.13) and that 2% of the variation in School Burnout is explained by Online Social Support (R^2=.02). Table 9 shows that for every 1 unit increase in OSSS score, SBI score increases by .04 units (OSSS score coefficient=.04). P value being less than .05 (p=.002) indicates that is variation is statistically significant, thus saying that Online Social Support's ability to predict School Burnout is weak, but statistically significant.

The results of the content analysis of the student reflections are summarized in Figure 2, Figure 3, and Figure 4.

The first question asked was "How do you deal with stress?" The answers were divided into five broad categories: hobbies and other creative outlets, intention and reflection, unwinding, maladaptation, and others. 'Hobbies and other creative outlets' included answers pertaining to writing, music, games, artwork, etc. 'Intention and reflection' was comprised of talking to others, praying, productivity, and empathy and gratitude. 'Unwinding' primarily talked of relaxation and distraction, and sleep. 'Maladaptation' included self-isolation, pushing through without reaching out for help, binge eating, etc. 'Others' held all the answers that did not fall in any of the previous categories. 464 out of 516 participants answered, and most answers fell under more than one category. Answers were counted for each category they belonged to.

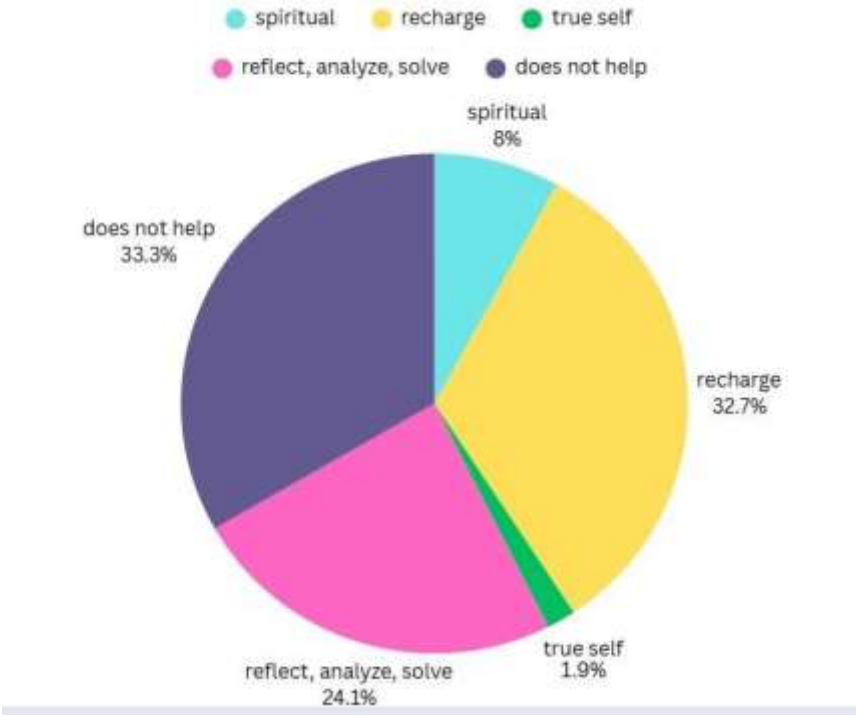
Figure 2 How Do You Deal with Stress?



The second question asked was “In what ways do you regarding solitude as an option to deal with school stress?” Fewer participants chose to answer this question, and even among those who answered, a sizeable percentage misunderstood the question, providing answers instead for how schools can work towards reducing stress in students. These erroneous answers were not analysed. As a result, of 343 total answers to the second question, only 162 answers could be analysed. The answers were once again separated into five categories, but this time without any overlap. Only one category was assigned per answer. The categories were: spiritual, recharge, true self, reflect analyse solve, and does not help. ‘Spiritual’ answers included meditation, prayer, etc. ‘Recharge’ comprised mainly of answers talking about pursuing hobbies, relaxing, etc.

Respondents with ‘True self’ answers talked about being able to learn more about themselves and discovering their personalities. ‘Reflect analyse solve’ answers spoke of self-reflection, problem solving, analysis of feelings, etc. ‘Does not help’ answers categorically voiced opinions against solitude being helpful for stress management.

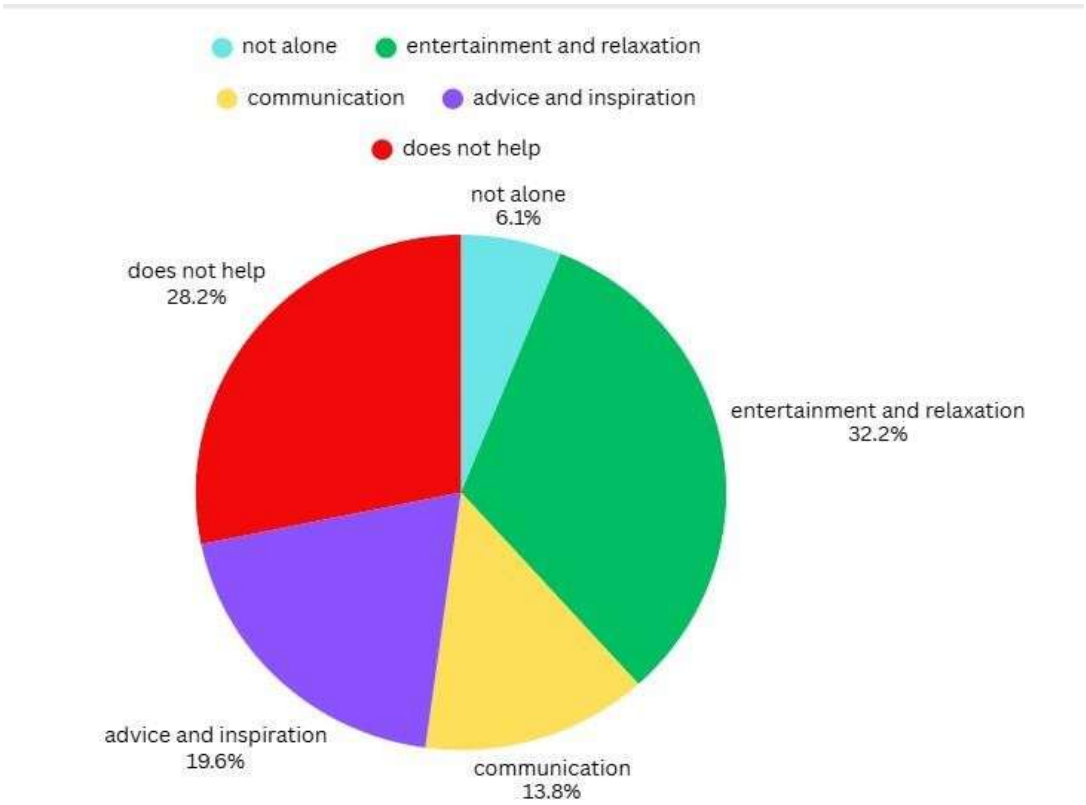
Figure 3 In What Ways Do You Regarding Solitude as an Option to Deal with School Stress?



The third and final question asked “How does online social support help you deal with school stress?” This question closely relates to H3, which hypothesises that online social support moderates the relationship between school burnout and preference for solitude. 326 answers could be analysed. The analysis followed the same method as the second question, with answers being classified into five categories, and each answer only being allotted to a single category.

The categories created for this question were: not alone, entertainment and relaxation, advice and inspiration, communication, and does not help. ‘Not alone’ answers talk about online social support helping respondents realise they were not the only ones facing school stress. Some respondents used online social platforms for ‘Entertainment and relaxation’ while some used them for ‘Advice and inspiration’. ‘Communication’ respondents used online platforms to reach out and have discussions. Answers falling under ‘Does not help’ categorically said that online social platforms do not help with school stress, some going so far as to call them harmful.

Figure 4 How Does Online Social Support Help You Deal with School Stress?



To sum up the results, analysis shows that a (weak, negative) relationship exists between School Burnout and Preference for Solitude, allowing us to accept H1. School Burnout can (to a very small extent) predict Preference for Solitude, allowing us to accept H2. Online Social Support does not moderate the relationship between School Burnout and Preference for Solitude, and thus we must reject H3. Emergent findings show that Online Social Support and School Burnout are weakly positively correlated, and Online Social Support is able to weakly predict School Burnout. Student reflections supplement these results.

Discussion

While the relationship between school burnout and preference for solitude does exist, it is weak and negative. As in, the more the level of burnout, the less students want to be alone. This agrees with the findings of Kim et. al. (2017) which reveal that higher social support is related to lower school burnout in students. Moreover, as seen in the supplementary qualitative findings, a large fraction of adolescents (33.3%) imply that solitude does not help with stress (Figure 3). The relationship is weak, however, likely due to low variability in scores for preference for solitude. Moreover, the large sample size (n=516) can cause even small effects to be statistically significant. From a psychological and socio-cultural standpoint, Indian cultural contexts and social norms affect how adolescents cope with burnout, deviating from Western norms. Even within India, cultural diversity affects coping (Sailaja et. al., 2002), which, given the geographical diversity of the sample, could contribute to explaining why the correlation is weak.A common stereotype suggests that adolescents withdraw and prefer to be alone when they are stressed or overwhelmed. However, this study found a weak negative correlation between school burnout and preference for solitude, indicating that higher burnout was actually associated with slightly less desire for solitude. In other words, participants did not turn to being alone when stressed. This challenges the assumption that adolescents cope through isolation and suggests that their social needs may increase—not decrease—during periods of strain. These findings underline the importance of questioning broad generalisations about adolescent

behaviour and relying instead on evidence-based understanding.

The weak but significant ability of school burnout to predict preference for solitude ties back to the results for the first hypothesis testing, in that the predictive ability of school burnout is likely weak because the correlation itself is weak. Moreover, weak predictive ability is again further justified by low variability in preference for solitude. School burnout only weakly predicting preference for solitude is also supported by the student reflections reported in the results section. Answers for the first question, 'How do you deal with stress?' scarcely talk about solitude, indicating that solitude-related behaviors, including both solitude seeking and support seeking behaviors, are not primary coping mechanisms among Indian adolescents.

Results show that online social support does not moderate the school burnout – preference for solitude relationship. This contradicts and thus rejects H3. This result is well-supported by the student reflections for the third question, 'How does online social support help you deal with school stress?', the analysis of which shows that the largest fraction (32.2%) of adolescents get online for entertainment and relaxation, and not direct social communication.

The second largest fraction (28.2%) of adolescents do not consider online social support to be an effective coping mechanism for school stress. With more than half the sample directly or indirectly not relying on online social support to cope with school burnout, online social support failing to moderate the relationship between school burnout and preference for solitude is understandable. Even existing literature on adolescent coping, such as the study on popular coping mechanisms used by adolescents conducted by Handayani et. al. (2024) does not significantly focus on online social support. Modecki et. al. (2021) further says that online social interaction only helps in moderation, and not when used as a primary coping mechanism. These studies support and explain the findings of the current study.

The emergent findings, which indicate a weak positive correlation between online social support and school burnout, and that online social support weakly predicts school burnout, implies that increased online social support and interaction contribute to school burnout, rather than acting as a protective factor. The supplementary qualitative analyses support this finding, with 28.2% (n≈92) of the respondents not finding online social support to be an effective coping mechanism for school stress. Among these reflections, several (n≈13, sourced directly from student reflections dataset) go so far as to deem online social interaction to be harmful and detrimental to coping.

A common stereotype is that teenagers are always online and prefer to spend most of their time on the internet. However, the findings from this study show a different pattern.

Students reported that being online often increased their stress rather than reducing it, and many described online activity as harmful or overwhelming. In addition, they did not report high levels of online interaction, suggesting that constant digital engagement is not as typical as assumed.

These results challenge the broad belief that adolescents naturally gravitate toward heavy online use and highlight the need to reassess such generalizations.

The supplementary qualitative findings and analyses serve to add to and expand upon the obtained results. The open ended questions explore popular coping mechanisms adolescents use to cope with school stress, and their views on using solitude and online social interaction to cope with school stress. This provides deeper insight into adolescent coping, and opens up avenues for future research in this field.

The present study hopes to add to the research body on adolescent burnout and coping, and challenge common myths and misconceptions about adolescent behavior, many of which are harmful (Qu, 2023). The study also hopes to inform future adolescent mental health intervention plans.

Conclusion

High school students facing school related stress and burnout have started to find a wide variety of ways to cope, most of which are healthy and encourage long term gains. They are turning to sports, music, hobbies, group activities, and community support to cope with school stress. Students are moving away from isolating themselves to survive stressful situations, and while the benefits of online community are appreciated, students are also learning that excessive online presence and screen time have a negative impact. This indicates a hopeful and positive trajectory, wherein the now-teenagers will grow up to be self-aware, well-adjusted, and empathetic adults who will not only survive, but thrive.

Limitations and directions for future research

While an attempt is made, the study fails to dive deep into the causes of the findings, to understand why students turn to community in times of stress and often fail to find true support on online social platforms. Further, the study does not focus on finding other factors that influence, or are influenced by, school related stress and burnout.

Future studies on this subject may take a qualitative angle and try to find answers to all the 'why' and 'how' questions this study leaves unaddressed. Some participants in the current study deemed online interaction to be harmful. Future qualitative research could look into why they think this way.

Quantitative or mixed research in this area may explore entirely new factors that affect the variables of this study individually or even in combinations with each other. This study may also inspire future action research, which can look into adolescent stress management in schools, as well as dig deeper into the pros and cons of popular coping mechanisms students rely on to deal with school stress.

While the present study shows that interaction with other people online is not as high as previously believed, the use of AI chatbots as a form of companionship has not been explored. Future studies may also look deeper into this aspect, and explore the possibility of conversing with AI gaining favor over online social interaction as a means of coping with stress.

Ethical considerations

The study received approval from the Institutional Review Board. Informed consent was obtained from school administrations and assent from students after an age-appropriate explanation of the study. No identifying information such as names or emails was collected, and responses were limited to one per participant. All materials were reviewed by the school administration, and the form began with mandatory informed consent. The questionnaire was checked for sensitive content, and the researcher's contact details were included for any questions. Data files are stored privately with restricted access to ensure confidentiality.

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