SOCIAL INTELLIGENCE, LONELINESS, SLEEP DISTURBANCE, AND PSYCHOLOGICAL WELL-BEING AMONG UNDERGRADUATE DAY SCHOLAR STUDENTS

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Dedication

To my parents, whose presence has been my greatest source of strength. Their trust in me has inspired me to keep moving forward even during difficult times. I owe my accomplishments to their prayers, care, and unwavering support.

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List of Symbols

N ……..……. Sample size

M …….…….…….……...Mean

SD …….……Standard deviation

df …….…….……Degrees of freedom

r …….……Pearson product–moment correlation coefficient

B …….……. Unstandardized regression coefficient

β …….……. Standardized regression coefficient

SE ……..……. Standard error

t …….……...t-statistic

F ……..……. F-statistic

R …….……Multiple correlation coefficient

R^2 …….……...……. Coefficient of determination

p ……Probability value (significance level)

α ……...……Cronbach's alpha (internal consistency reliability)

CI ……Confidence interval

List of Abbreviations

COVID-19 ……Coronavirus Disease 2019

DV ……. Dependent Variable

EWB ……Emotional Well-Being

IBM SPSS ……. IBM Statistical Package for the Social Sciences

ISI ……...Insomnia Severity Index

IRB ……Institutional Review Board

IV ……Independent Variable

MHC-SF ……Mental Health Continuum–Short Form

PSQI …… Pittsburgh Sleep Quality Index

PWB ……Psychological Well-Being

SELSA-S ……. Social and Emotional Loneliness Scale for Adults–Short Form

SPSS ……Statistical Package for the Social Sciences

SWB ……. Social Well-Being

TSIS ……. Tromsø Social Intelligence Scale

VIA ……...Values in Action

List of Appendices

Abstract

The present study examined the relationships among social intelligence, loneliness, sleep disturbance, and psychological well-being among undergraduate day scholar students in Pakistan. A cross-sectional correlational study was conducted with 300 full-time undergraduate day scholars aged 18 to 25 years, drawn from both public and private universities. Each participant completed several validated instruments: the Tromsø Social Intelligence Scale to assess social intelligence, the Social and Emotional Loneliness Scale for Adults–Short Form to gauge feelings of loneliness, the Insomnia Severity Index to measure sleep disturbances, and the Mental Health Continuum–Short Form to evaluate psychological well-being. The collected data were subjected to descriptive statistics, Pearson correlation analyses, multiple regression, and mediation testing using PROCESS Model 4.

The analyses revealed that higher levels of social intelligence were linked to better psychological well-being, while they were inversely related to both loneliness and sleep disturbances. Conversely, greater loneliness and more pronounced sleep disturbances were each associated with poorer psychological well-being. When combined, social intelligence, loneliness, and sleep disturbance accounted for a substantial portion of the variance in psychological well-being. Importantly, sleep disturbance partially mediated the relationship between loneliness and psychological well-being, suggesting that loneliness may affect well-being in part through its impact on sleep quality.

Gender comparisons showed that female students reported higher social intelligence and psychological well-being, and lower loneliness than their male counterparts, although there was no significant gender difference in sleep disturbance. These patterns underscore an integrated pathway in which social intelligence serves as a protective factor, while loneliness and sleep disturbance function as vulnerability factors and mediators in predicting psychological well-being among undergraduate day scholars. The findings point to the value of targeted interventions that enhance social skills, reduce loneliness, and improve sleep hygiene, thereby promoting mental health among commuting university students in Pakistan.

Chapter 1

Introduction

1.1 Psychological Well-Being

Psychological well-being is more than simply a lack of mental illness; it's a vibrant, multidimensional state of positive functioning that reflects how people feel about their lives and how well they navigate psychological and social demands. While the concept can sometimes be conflated with mere happiness, contemporary research underscores that psychological well-being captures a richer experience, focusing on meaning, purpose, and personal growth rather than fleeting pleasure. In line with this eudaimonic tradition, Ryff's influential model breaks down the construct into six core dimensions—autonomy, environmental mastery, personal growth, purpose in life, positive relations with others, and self-acceptance—each illustrating how individuals steer their lives, make chosen decisions, maintain satisfying relationships, and find their existence meaningful (Charry et al., 2020). An individual high in psychological well-being is therefore not just free from depression or anxiety but is actively engaged in life, evolving, connected, and resilient in the face of challenges.

The literature further shows that psychological well-being is tightly linked to physical health and overall quality of life. Zhang and colleagues (2024), in their scoping review of well-being measures, noted that higher psychological well-being often coincides with better physical health, greater resilience, and a lower risk of mental disorders. Those who report stronger psychological well-being tend to cope more effectively, adopt healthier lifestyles, and build robust social ties—factors that buffer against stress and adversity. Because of these extensive benefits, psychological well-being is increasingly viewed as a core indicator of mental health rather than an optional

luxury. It represents a holistic positive state where individuals embrace self-acceptance, pursue meaningful goals, nurture supportive relationships, and command their environments. This nuanced, eudaimonic perspective forms the foundation of the current study, which investigates how social intelligence, loneliness, and sleep disturbance might either bolster or erode the psychological well-being of young adults.

Undergraduate years are a pivotal transition marked by academic demands, identity formation, financial pressures, and shifting social dynamics. Recent evidence consistently points to elevated risks of compromised psychological well-being among students during this period. For instance, a large online survey conducted in the United Kingdom during the COVID-19 pandemic revealed high levels of depression and anxiety among university students, with many reporting poor well-being and difficulty coping with academic pressures and uncertainty (Chen et al., 2022). A systematic review of longitudinal studies echoed these findings, concluding that students' well-being declined throughout the pandemic, with only partial recovery over time (Lemyre et al., 2023). Scoping and review studies further emphasize that psychological well-being in university populations is shaped by a complex interplay of individual, academic, and contextual factors. Ebrahim and colleagues (2022) highlighted that academic disruption, health worries, and social isolation severely impacted students' well-being during the pandemic, calling for targeted interventions to foster resilience and strengthen support structures within universities. Similarly, Esposito et al. (2024) argue that understanding university students' well-being requires an ecological lens—considering personal resources such as resilience and meaning in life alongside family, institutional, and community contexts. Recent research from Pakistan and other low- and middle-income countries paints a particularly worrying picture. Haqqani and colleagues (2024) discovered that more than half of young psychology students in Pakistan reported low overall,

psychological, physical, and relational well-being, while rates of depression, anxiety, and stress were alarmingly high. Abbas and co-authors (2024) found a similar trend among medical and non-medical undergraduates, noting that lower psychological well-being was strongly linked to suicidal thoughts, whereas academic resilience acted as a protective shield. These findings suggest that safeguarding students' mental health isn't just desirable—it's essential for preventing severe outcomes. Emerging evidence also points to the academic environment itself eroding well-being when stressors are intense and coping resources scarce. Studies involving medical and other professional students highlight how heavy workloads, fear of failure, and uncertain futures can lower mental health and raise distress levels (Din et al., 2025; Gondal et al., 2025). Conversely, supportive teaching, strong peer relationships, and accessible institutional mental-health services are identified as powerful protective factors that help students thrive (Yotsidi et al., 2023). The literature paints undergraduates as a vulnerable yet crucial group, whose well-being faces pressure but can be bolstered through social, academic, and institutional support. Understanding what drives well-being in this population is therefore key to designing effective preventive and promotive interventions.

Within the broader undergraduate cohort, day scholars—students who live at home and commute to campus rather than staying in hostels—occupy a distinctive niche that shapes their psychological health. These students must juggle academic duties with family responsibilities, household chores, and daily travel, leaving less time for rest, campus social life, or extracurricular engagement. International research on commuter students suggests that these structural demands may increase stress and diminish well-being compared to residential peers. Pinto and colleagues (2024) examined mental health and lifestyle behaviors among commuter college students in the United States, reporting that this group faces unique stressors such as long travel times, restrictive

schedules, and limited campus involvement—all linked to higher psychological distress and poorer health-promoting habits. Broader epidemiological data also connect longer commuting with poorer mental health among adolescents and young adults (Nakajima et al., 2024). Together, these studies imply that the daily commute can cut into precious time for sleep, leisure, and social interaction, undermining psychological well-being.

In South Asian contexts, including Pakistan, recent studies have compared day scholars and hostel residents on stress, anxiety, and coping strategies. Hameed and colleagues (2024) conducted a case study of university students in Lahore and found that academic stress and coping varied between day scholars and hostel dwellers, reflecting differences in social support, living conditions, and academic pressures. Additional research on medical undergraduates documented high anxiety and stress across both groups, with notable variations tied to residence status—suggesting that living at home versus in a hostel interacts with academic demands to shape mental health (Rashid et al., 2024; Gondal et al., 2025). Despite these insights, day scholars remain relatively under-represented in the psychological well-being literature, which has often focused on the general student body without distinguishing living arrangements. Existing studies mainly assess stress, anxiety, or academic performance, while fewer explicitly examine multidimensional psychological well-being as conceptualized in eudaimonic frameworks such as Ryff's model. There is also limited research on how key psychological and behavioural factors such as social intelligence, loneliness, and sleep disturbance jointly shape the well-being of day scholars specifically.

Given that a large proportion of students in Pakistani universities are day scholars, understanding their psychological well-being has strong practical relevance. Commuting, family expectations, and limited on-campus integration may create a distinctive risk profile, but they may also provide

protective resources such as close family contact and stable social networks. The present study responds to this gap by focusing explicitly on the psychological well-being of undergraduate day scholar students, and by examining how their well-being is associated with social intelligence, loneliness, and sleep disturbance.

1.2 Social Intelligence

Social intelligence refers to the ability to understand other people's emotions, intentions and behaviours and to manage social interactions in an adaptive way. For undergraduate day scholars, whose daily life involves continuous movement between home, university and wider community settings, this capacity is central for forming friendships, negotiating academic demands with peers and teachers, and maintaining supportive family relationships. When students can accurately read social cues, regulate their own responses and behave appropriately across different contexts, they are more likely to experience satisfying relationships and a sense of belonging key components of psychological well-being.

Recent empirical work supports this link. Azañedo et al. (2020) examined social intelligence as a character strength and found that higher social intelligence was associated with lower psychological distress, and that this relationship was partly explained by greater subjective and psychological well-being (e.g., meaning in life, positive relations, self-acceptance). Their findings suggest that socially intelligent students are better able to create positive interpersonal environments that protect them from stress and emotional problems. Similarly, Safara et al. (2023) reported that social intelligence and resilience together explained a large proportion of variance in distress tolerance among college students, concluding that interventions which enhance social intelligence can be used to prevent psychological difficulties.

Studies focused specifically on health-related outcomes provide additional evidence. Bai et al. (2024) showed that among Chinese nursing students, social intelligence partially mediated the negative association between social anxiety and mental health. Students with higher social intelligence reported fewer psychological symptoms even when they had elevated social anxiety, indicating that social understanding and interpersonal skills can buffer the impact of anxiety on well-being. Other research during the COVID-19 period has also highlighted that social intelligence is positively related to distress tolerance and adaptive coping in university populations, suggesting that students who can flexibly navigate social demands are better equipped to handle crises and maintain emotional stability.

For day scholar undergraduates, social intelligence may be particularly important because they participate in multiple social systems every day. They interact with classmates and faculty on campus, negotiate peer networks in transport and hostel environments, and then return to family responsibilities at home. High social intelligence can help them manage potentially conflicting expectations such as academic pressures from teachers, social expectations from peers and cultural demands from family while preserving autonomy and positive self-regard. In terms of Ryff's conception of psychological well-being (self-acceptance, positive relations, autonomy, environmental mastery, purpose in life and personal growth), social intelligence is likely to support at least three dimensions: positive relations with others, environmental mastery and personal growth. Students who understand others and communicate effectively tend to experience closer relationships, feel competent in dealing with their surroundings and are more willing to learn from social feedback, all of which enhance psychological well-being.

Conversely, deficits in social intelligence may increase vulnerability to misunderstanding, interpersonal conflict and social rejection. These experiences can foster feelings of isolation and low self-esteem, which undermine psychological well-being and may contribute to anxiety and depressive symptoms. The literature therefore suggests that fostering social intelligence through training in empathy, communication, conflict resolution and perspective taking could be a promising pathway to improve psychological well-being among day scholar undergraduates.

1.3 Loneliness

Loneliness is a subjective feeling of being socially isolated or lacking meaningful relationships, regardless of the actual number of social contacts. For undergraduate students, the sense of loneliness often crops up after leaving the familiar circle of school friends, adjusting to a new academic culture, or struggling to forge close relationships at university. It's not simply "being alone"; rather, it reflects a painful mismatch between the social connections we crave and those we actually experience, and that mismatch can have powerful implications for psychological well-being. A growing body of research from 2020 to 2025 has documented robust negative links between loneliness and psychological health among university students. For example, Çiçek (2021) found that loneliness was significantly and negatively related to both psychological well-being and subjective well-being in a sample of Turkish university students. Importantly, self-esteem partially mediated this relationship: higher loneliness predicted lower self-esteem, which in turn predicted lower psychological well-being, suggesting that lonely students may internalize social disconnection as personal inadequacy, thereby damaging their overall well-being. Sharifi (2022) examined international university students and similarly found that higher loneliness scores were associated with lower psychological well-being, even after

accounting for self-esteem. Females reported significantly higher loneliness than males, echoing other studies that identify gender differences in vulnerability to loneliness. The findings underscore that loneliness is a substantial risk factor for psychological difficulties across diverse student populations, not just within a single cultural context. Prevalence data highlight how common loneliness is in university settings. Zahedi et al. (2022) reported that approximately one quarter (26 %) of medical university students in Iran could be classified as lonely, with higher rates among first-year students, females, smokers, those with low financial status, and students living in dormitories. More recent work with large samples of university students has shown that loneliness is linked to academic performance problems and a wide range of psychological symptoms, including depression and anxiety, confirming its central role in student mental health. For day-scholar undergraduates, loneliness may take a specific form. They may be physically surrounded by family members yet feel emotionally disconnected from peers on campus if commuting limits their time in extracurricular activities or informal gatherings. At the same time, they may feel "caught between worlds," not fully belonging either to the home environment or to the residential student community. This pattern can erode Ryff's dimensions of positive relations, environmental mastery and purpose in life, as students begin to perceive their social world as unsupportive and unpredictable.

Theoretical and empirical findings converge to suggest that loneliness is both a predictor and a consequence of poor psychological well-being. Cognitive discrepancy perspectives argue that lonely individuals develop negative expectations about social interactions, interpret ambiguous cues as rejection and withdraw further, which maintains or intensifies loneliness. Over time, this cycle can result in chronic negative affect, hopelessness and diminished life satisfaction. The mediation results from Çiçek (2021) highlight that enhancing self-esteem may interrupt this cycle:

when students feel worthy and competent, they are less likely to interpret social difficulties as personal failings and more able to initiate new relationships.

Within the current thesis focus, loneliness is therefore conceptualised as a key risk factor for poor psychological well-being among day scholar undergraduates. Identifying levels of loneliness and understanding how it interacts with social intelligence and sleep disturbance can help universities design targeted interventions such as peer mentoring, social skills training and campus engagement programs to promote belongingness and enhance psychological well-being.

1.4 Sleep Disturbance

Sleep disturbance is usually defined as problems with sleep quality, duration or continuity, including difficulties falling asleep, frequent night awakenings, early morning awakening or non-restorative sleep. Among undergraduate students, academic pressure, use of digital devices late at night, commuting time and family responsibilities often disrupt regular sleep patterns. Sleep is a fundamental biological process involved in emotion regulation, learning and physical restoration; therefore, chronic sleep disturbance is strongly associated with impairments in psychological well-being.

Evidence from recent studies confirms that poor sleep is common and clinically significant in university populations. In a cross-sectional study with 972 college students during the COVID-19 pandemic, Ergün et al. (2023) found that 92.4% of participants had poor sleep quality according to the Pittsburgh Sleep Quality Index, and there was a moderate negative correlation between sleep quality and scores on a psychological well-being scale students with worse sleep reported lower

psychological well-being. The authors concluded that sleep problems were an important risk factor for diminished well-being in students engaged in distance education.

Hu et al. (2023) investigated over 6,000 Chinese university students and reported that approximately 63% had poor sleep quality. Students with poor sleep were significantly more likely to show psychological symptoms such as depression, anxiety and interpersonal sensitivity, even after controlling for demographic factors. These findings show that sleep disturbance is more than just a sign of stress; it actively fuels a wide range of mental health issues, steadily wearing down overall psychological well-being. Li and colleagues (2020) echoed this by discovering that Chinese university students who slept little and experienced poor sleep quality were far more likely to report depressive symptoms, underscoring how crucial sleep is for young adults' emotional health. In terms of psychological flourishing, disrupted sleep can erode several of Ryff's key dimensions, further highlighting its impact on our inner lives. Poor sleep impairs concentration, memory and executive functioning, making it harder for students to feel competent and in control of their environment (environmental mastery). Fatigue and irritability can damage interpersonal relationships, reducing positive relations with others. Chronic tiredness and low mood may also reduce motivation for personal growth activities such as learning new skills or participating in campus life. In severe cases, sleep disturbance may lead to feelings of hopelessness and negative self-evaluation, decreasing self-acceptance and overall life satisfaction.

For day scholar undergraduates, the risk of sleep disturbance may be heightened by early morning commuting, crowded living conditions and the need to balance household responsibilities with academic work. Commuting can lengthen the waking day and reduce time available for sleep, while home environments may not always provide quiet, private spaces conducive to restful sleep.

If day scholars feel lonely or have low social intelligence, they might turn to maladaptive coping mechanisms, like scrolling through social media late into the night, which only makes the sleep problem worse. Recent studies show that digital media overuse and irregular sleep schedules feed into one another, amplifying depressive and anxiety symptoms among students—highlighting how disrupted sleep can both drive and result from psychological distress. The current literature points to sleep disturbance as a key, modifiable factor linked to psychological well-being in university students. By improving sleep hygiene—through psychoeducation, better time-management skills, and cutting back on nighttime tech use—students can see real gains in emotional health, academic performance, and overall quality of life. In this study, exploring sleep disturbance alongside social intelligence and loneliness will shed light on the interplay between biological rhythms and social experiences in shaping the psychological well-being of undergraduate day scholars.

1.5 Rationale

Undergraduate education is a formative era that shapes students' academic performance, social growth, and mental health. For those who study as day scholars, the challenges are distinct: they must juggle coursework, family obligations, and commuting schedules, all while lacking the close peer connections and extracurricular opportunities that hostel residents enjoy. This reality often amplifies feelings of loneliness, disrupts sleep patterns, and erodes psychological well-being. Social intelligence becomes a critical asset in this context, allowing students to navigate interactions, forge meaningful relationships, and handle conflicts. Those with higher social intelligence tend to adapt more smoothly to both academic and social demands, thereby easing the risk of loneliness. Conversely, students with limited social intelligence may find it harder to

connect, leaving them more susceptible to isolation and stress. Loneliness, which has emerged as a pressing issue among university students worldwide, is strongly linked to depression, anxiety, and poor academic adjustment. For day scholars, the scarcity of social contact and campus engagement heightens this risk, potentially undermining mental health and academic success. Sleep disturbance, another common yet often overlooked problem, also runs high among students. In day scholars, long commutes, early mornings, and the pressure from both studies and family can lead to fragmented sleep. Poor sleep quality not only hampers cognitive performance and concentration but also weakens emotional regulation and overall psychological health. Since psychological well-being is vital for academic achievement, resilience, and life satisfaction, identifying the psychosocial and behavioral factors that influence it becomes essential. While prior research has looked at social intelligence, loneliness, and sleep disturbances separately, few have examined how these elements interplay to affect psychological well-being, especially among day scholar undergraduates in Pakistan. This study fills that gap by zeroing in on day scholars, aiming to uncover how social intelligence, loneliness, and sleep disruption collectively shape their mental health. The insights gained could guide universities and policymakers in crafting targeted interventions—ranging from social skills training and peer-support programs to sleep hygiene workshops—to improve the overall university experience for day scholars.

1.6 Research gap

A growing body of literature has begun to look at how social intelligence, loneliness, sleep disturbance, and overall psychological well-being play out among university students. Earlier research has shown that students who are socially intelligent tend to adjust better to interpersonal situations, while loneliness is a clear predictor of poorer mental health outcomes. Sleep problems,

too, have been strongly linked to poorer academic performance and increased psychological distress. Yet most of these studies have treated university students as a single, homogeneous group, without teasing apart the differences between those who live in hostels and those who study on a day-scholar basis.

In Pakistan, scholars have compared hostel residents and day scholars mainly on academic performance, dietary habits, and stress levels. Very little attention has been paid to how the combined psychosocial and behavioral factors affect psychological well-being in this specific context. Loneliness and sleep problems have each been examined separately, but no robust empirical work has explored how these factors interact with social intelligence to shape overall mental health among day-scholar undergraduates.

International studies have pointed to the mediating and moderating roles that sleep disturbances and loneliness can play in predicting psychological well-being, but such nuanced models are still largely unexplored in South Asian cultural and educational settings. Even more, there is scant evidence on gender differences in these variables among day scholars, despite the clear relevance of gender in psychological adjustment.

All of this points to a substantial gap in our understanding: the integrated effect of social intelligence, loneliness, and sleep disturbance on psychological well-being among undergraduate day scholars remains unclear. Filling this gap would not only enrich the academic literature but also offer practical insights for designing interventions that truly address the psychosocial needs of this student population.

1.7 Problem Statement

Undergraduate students face a host of developmental, social, and academic hurdles that shape their mental health and overall adjustment to university life, and day scholar students form a particularly distinct group within this landscape. Those who commute daily from home instead of residing in campus housing often find themselves with fewer chances to dive into extracurricular activities, forge peer networks, and stay immersed in campus interactions—opportunities that come more naturally to hostel residents. This limited engagement can heighten their susceptibility to psychosocial strain, manifesting as feelings of loneliness, erratic routines, and disrupted sleep, all of which can take a toll on psychological well-being. Research consistently shows that possessing social intelligence equips individuals to navigate interpersonal relationships and meet social demands more effectively; conversely, a dearth of social skills can hinder the formation of strong peer bonds, amplifying loneliness. Prolonged isolation has been repeatedly linked to emotional distress, depression, and a lower sense of overall well-being, while both loneliness and academic pressures can disturb sleep patterns. The resulting sleep disturbances, in turn, undermine cognitive performance, mood regulation, and broader psychological health—a cascade that can seriously impede students' mental wellness. While prior studies have examined the separate impacts of social intelligence, loneliness, and sleep disruption, there remains a clear gap in understanding how these factors intertwine, especially among day scholar undergraduates. Much of the existing research in Pakistan and elsewhere has focused on hostel dwellers or on general student populations without distinguishing living arrangements, leaving the unique psychosocial experiences of commuting students largely unexplored. This study aims to fill that void by probing the relationships among social intelligence, loneliness, sleep disturbance, and psychological well-being in undergraduate day scholars. By honing in on this specific cohort, it seeks to

illuminate their particular challenges, enrich the scholarly conversation, and offer evidence-based guidance for interventions that foster healthier social integration, improve sleep habits, and ultimately enhance psychological well-being.

Objectives

1. The study aims to explore how social intelligence relates to psychological well-being among undergraduate day scholar students.
2. To investigate the relationship between social intelligence and loneliness among undergraduate day scholar students.
3. To determine the relationship between sleep disturbance and psychological well-being among undergraduate day scholar students.
4. To explore whether sleep disturbance mediates the relationship between loneliness and psychological well-being among undergraduate day scholar students.
5. To compare gender differences in social intelligence, loneliness, sleep disturbance, and psychological well-being among undergraduate day scholar students.

Hypotheses

H1: Social intelligence will be positively correlated with psychological well-being among undergraduate day scholar students.

H2: Social intelligence will be negatively correlated with loneliness among undergraduate day scholar students.

H3: Sleep disturbance will be negatively correlated with psychological well-being among undergraduate day scholar students.

H4: Sleep disturbance will mediate the relationship between loneliness and psychological well-being among undergraduate day scholar students.

H5: There will be significant gender differences in social intelligence, loneliness, sleep disturbance, and psychological well-being among undergraduate day scholar students.

Chapter 2

Literature Review

2.1 Social Intelligence and Psychological Well-Being

Empirical research over the last few years consistently shows that social intelligence is an important predictor of psychological well-being in young adults, particularly in university and college samples that are similar to the target population of the present study. Social intelligence generally refers to the capacity to understand others, manage social situations, and build effective interpersonal relationships. When students can interpret social cues accurately, regulate their behaviour in groups, and maintain constructive relationships, they tend to report higher levels of life satisfaction, positive affect, and overall psychological well-being, and lower levels of distress and psychopathology.

One of the most influential recent studies in this area is by Azañedo et al. (2020), who examined 1,407 university students in Spain and conceptualised social intelligence as a character strength within the Values in Action (VIA) framework. They found that social intelligence was positively associated with life satisfaction, positive affect, and Ryff's dimensions of psychological well-being, and negatively associated with negative affect. Importantly, subjective well-being and psychological well-being jointly mediated the relationship between social intelligence and psychological distress, meaning that students high in social intelligence experienced more well-being, which in turn predicted fewer psychopathological symptoms (Azañedo et al., 2020). This study provides strong quantitative evidence that social intelligence enhances well-being and protects against distress in university students.

In a follow-up study, Azañedo et al. (2021) further explored the role of character strengths, including social intelligence, in predicting mental health outcomes. Working again with a large sample of adults, they showed that character strengths and functional social support were strong positive predictors of both subjective and psychological well-being, and negative predictors of psychopathology. Social intelligence, grouped among the "emotional strengths", contributed significantly to higher flourishing and lower levels of mental health problems (Azañedo et al., 2021). These studies collectively suggest that social intelligence does more than simply lift one's mood; it serves as a safeguard for mental well-being. In South Asian settings—where cultural nuances align closely with those of the present research—similar patterns emerge. For instance, a 2022 study by Shehzadi and colleagues followed 202 Pakistani college students, exploring how social intelligence and mindfulness together shape both mental health and career choices. The researchers found that higher social intelligence was linked to fewer mental health problems—indicating that students who better navigate social interactions experience fewer psychological symptoms. The authors concluded that students who are better able to understand others, communicate effectively, and adapt to social situations report lower mental health problems and are more confident in their future decisions (Shehzadi et al., 2022). This is particularly relevant for undergraduate day scholars in Pakistan, who constantly move between home and campus and must manage complex social expectations in both environments.

During and after the COVID-19 pandemic, scholars have also examined how social intelligence helps students cope with stress and maintain psychological well-being under highly challenging circumstances. Safara et al. (2023), in a study of 260 male college students in Iran, found a strong positive correlation between social intelligence and distress tolerance ($r = .47$, $p < .001$). Students with higher social intelligence were better able to tolerate psychological discomfort and stress, and

the combination of social intelligence and resilience explained a substantial proportion of variance in distress tolerance (up to 65%) (Safara et al., 2023). Although distress tolerance is not identical to psychological well-being, the findings show that social intelligence enhances students' capacity to cope with negative emotions, which is a key pathway to maintaining well-being in demanding academic and social contexts.

More recently, research from East Asia has shed light on how social intelligence not only correlates with mental health but actually mediates the way interpersonal difficulties can lead to poorer well-being. In a study by Bai and colleagues (2024), 748 Chinese undergraduate nursing students were examined using a mediation model that positioned social anxiety as a predictor of mental health with social intelligence as the intervening variable. The findings revealed a clear pattern: higher levels of social anxiety were linked to lower social intelligence, and this drop in social intelligence, in turn, predicted poorer mental health outcomes. In other words, social anxiety had a significant negative impact on mental health, but this effect was only partially direct—social intelligence served as a buffering resource. These results underscore the role of social intelligence as a coping tool that can mitigate the adverse effects of social anxiety, helping to preserve psychological well-being in university settings.

The link between social intelligence and psychological well-being has also been examined indirectly through emotional functioning. Gonzaga et al. (2024), in a sample of university students, found that social intelligence was significantly associated with more adaptive emotional styles such as greater positive emotion and healthier emotional regulation patterns which are central components of psychological well-being. The authors concluded that both emotional styles and social intelligence are "significant factors in maintaining healthy wellbeing" among university

students (Gonzaga et al., 2024). This supports the idea that social intelligence promotes well-being partly by fostering more constructive emotional experiences and responses in social situations.

Beyond single studies, emerging evidence from narrative and quantitative reviews points to a consistent pattern: students with stronger social intelligence report less perceived stress, better coping strategies, higher life satisfaction, and fewer symptoms of anxiety and depression. For instance, work synthesising recent studies on college populations shows that social intelligence is negatively related to perceived stress and academic stress and positively related to effective coping and social support, all of which are recognised correlates of psychological well-being. When students can use socially intelligent behaviours such as seeking help appropriately, resolving conflicts, and reading others' emotions accurately they are more likely to build supportive peer networks and experience a sense of belonging, which in turn enhances their psychological well-being.

Taken together, these empirical findings from Spain, Pakistan, Iran, China and other contexts provide convergent evidence that social intelligence is a robust predictor of psychological well-being in university and college students. Socially intelligent students tend to experience more positive affect, better relationships, and stronger sense of purpose, while also showing lower psychological distress and fewer mental health symptoms. For undergraduate day scholar students, who must continuously navigate interactions in both academic and family environments, social intelligence may be especially crucial. It can help students keep supportive relationships on campus, set realistic expectations with their families, and cope with the loneliness and stress that come from commuting and the scattered nature of peer interactions. This growing body of evidence

strongly supports adding social intelligence as a key predictor of psychological well-being in the model for the current study.

2.2 Loneliness and Psychological Well-Being

For the past five years, a growing body of empirical work has consistently shown that loneliness stands out as a powerful risk factor for poorer psychological well-being among young people, especially those in university. Loneliness is usually described as a personal sense that one's social ties are lacking in either quantity or quality, a feeling that chips away at a sense of meaning, belonging, and overall positive functioning. Recent cross-sectional studies and comprehensive reviews confirm that those who report higher levels of loneliness tend to experience lower life satisfaction, more emotional difficulties, and a general decline in psychological well-being, even when researchers control for other psychosocial variables (Adib et al., 2024; Hsu, 2020).

A systematic scoping review carried out by Adib and colleagues in 2024 brought together the results of twenty research studies focused on adolescents and young adults. Their synthesis highlighted what they described as the "debilitating effects" of loneliness on emotional health and overall well-being. Participants who felt lonelier reported not only reduced life satisfaction but also diminished affective and psychological wellness, along with higher levels of anxiety and depression. What was particularly striking was the suggestion that loneliness does more than merely coexist with low well-being; it appears to actively erode the very positive aspects of well-being—such as a sense of purpose, self-worth, and optimism about the future. This insight is especially relevant for undergraduate students, who navigate a period of intense transition where

social networks, identity formation, and academic pressures all interplay to shape mental health and psychological functioning.

Additional recent investigations that zero in on university students reinforce this negative link between loneliness and psychological well-being, or closely related constructs like mental or subjective well-being. For instance, a large sample of Turkish university students was examined by Özdoğan in 2021, who explored how social-emotional loneliness relates to subjective well-being, with meaning in life acting as a mediator. Results showed that higher levels of social and emotional loneliness were significantly associated with lower subjective well-being; moreover, meaning in life partially mediated this relationship, suggesting that lonely students struggle more to perceive their life as meaningful and purposeful, which in turn lowers their well-being. For the present study, which uses Ryff's psychological well-being framework, this is important because it shows that loneliness undermines key eudaimonic aspects of well-being such as purpose in life and personal growth rather than only producing negative emotions.

COVID-19 era studies among university students also demonstrate that loneliness predicts poorer mental and psychological well-being. Kayiş and Akcaoğlu (2022) studied 425 Turkish university students during online learning and found that loneliness was a significant negative predictor of mental well-being, as measured by the Warwick–Edinburgh Mental Well-Being Scale. Structural equation modelling revealed that loneliness reduced self-control, which in turn lowered mental well-being, indicating that lonely students may have more difficulty regulating their emotions and behaviours in stressful academic contexts. This mediational pattern is consistent with the idea that loneliness not only causes distress but also erodes internal psychological resources that normally support well-being, such as self-regulation and resilience.

Although some work has focused on general young adults rather than only university students, these findings are still relevant because undergraduates are typically in the "emerging adulthood" age range. Suprayogi and Hamidah (2024) examined loneliness and psychological well-being in early adults in Jakarta using the UCLA Loneliness Scale and Ryff's Scales of Psychological Well-Being. The research uncovered a strikingly negative correlation between loneliness and psychological well-being ($r = -0.69$), meaning that those who reported feeling lonelier tended to score much lower on dimensions such as self-acceptance, positive relations with others, autonomy, and purpose in life. This finding grounds loneliness directly within Ryff's eudaimonic framework, aligning neatly with the psychological well-being construct that drives the present thesis.

Health-science students added another layer of evidence. Kılınç and colleagues (2020) examined students from a faculty of health sciences and discovered that higher loneliness scores were significantly linked to more severe depressive symptoms. Although the study did not employ a dedicated well-being scale, depression sits conceptually opposite to positive psychological functioning, hinting that loneliness may erode well-being indirectly by heightening vulnerability to depressive mood, hopelessness, and social withdrawal—issues that are especially troubling for students juggling demanding academic and clinical commitments.

Research beyond the student world corroborates the robustness of this link. In a cross-sectional study of older adults in Taipei, Hsu (2020) mapped different typologies of loneliness and living arrangements and found that those experiencing greater loneliness and social isolation reported

markedly lower psychological well-being. Even though these participants were older adults, the underlying mechanisms—reduced social support, a sense of disconnection, and a diminished feeling of belonging—mirror the experiences of undergraduates who feel socially isolated on campus or at home. The consistency of findings across age groups signals that loneliness is a general risk factor for diminished psychological well-being.

When viewed across the globe, studies in Turkey, Indonesia, and East Asia all point to a culturally robust negative relationship between loneliness and well-being. Özdoğan (2021) and Kayiş and Akcaoğlu (2022) carried out their work in Turkish university contexts, while Suprayogi and Hamidah (2024) focused on early adults in Indonesia. Despite variations in educational systems, collectivistic versus individualistic cultural leanings, and pandemic-related circumstances, loneliness consistently emerged as a significant predictor of lower well-being. This cross-cultural convergence reinforces the idea that loneliness is a core psychological risk factor for young people's well-being rather than a context-specific phenomenon.

Another pattern that has emerged from recent empirical work is that loneliness rarely stands alone; it tends to intertwine with other psychological processes that further shape well-being. Two such mediators are meaning in life and self-control. Özdoğan (2021) revealed that meaning in life partially mediates the relationship between social-emotional loneliness and subjective well-being, suggesting that loneliness can make it harder for students to form coherent life goals and perceive their lives as valuable. Likewise, Kayiş and Akcaoğlu (2022) found that self-control partially

mediates the link between loneliness and mental well-being; lonely students reported lower self-control, which in turn correlated with decreased well-being. These insights imply that interventions for students should aim not only to reduce loneliness but also to cultivate positive psychological resources that can bolster overall psychological well-being. For the current study, which focuses on undergraduate day scholar students, these empirical patterns are especially relevant. Day scholars often commute between home and university and may have fewer opportunities to participate in campus-based social activities compared to hostel residents. When academic demands are high and social connections are weak, feelings of loneliness can intensify, which based on the cited evidence would be expected to lower psychological well-being, reduce sense of meaning, and increase vulnerability to stress and emotional problems. The reviewed studies collectively support the assumption that higher loneliness among undergraduate day scholars will be associated with lower psychological well-being, thereby providing a strong empirical foundation for including loneliness as a key predictor variable in this thesis.

2.3 Sleep Disturbance and Psychological Well-Being

Sleep disturbance including difficulties falling asleep, frequent night awakenings, short sleep duration and non-restorative sleep has been identified as a major threat to psychological well-being in university populations. For young adults, irregular schedules, late-night technology use, academic stress and commuting can all disrupt sleep–wake rhythms and increase sleep problems. Recent studies (2020–2025) consistently show that poor sleep quality is associated with lower psychological well-being, elevated psychological symptoms and reduced positive mental health among students across different countries and educational contexts.

Direct evidence on sleep quality and psychological well-being comes from studies that used eudaimonic or positive mental health measures rather than only symptom scales. Ergün et al. (2023) examined 972 Turkish college students during the COVID-19 pandemic using the Pittsburgh Sleep Quality Index (PSQI) and a Psychological Well-Being Scale. They reported that 92.4% of students met criteria for poor sleep quality and that PSQI scores were moderately and negatively correlated with psychological well-being: worse sleep quality predicted lower well-being scores. Regression analyses showed that sleep quality was a significant predictor of psychological well-being even after controlling for socio-demographic factors, leading the authors to argue that university students were "at risk" in terms of both sleep and well-being during the pandemic (Ergün et al., 2023).

Supporting this, Ahorlu and Ainuson-Quampah (2023) reported similar associations in a Ghanaian university sample. Their commentary in the *Health Sciences Investigations Journal* highlighted that daytime sleepiness and poor sleep were linked with lower psychological well-being among students, and they summarised evidence that inadequate sleep leads to irritability, reduced alertness, and concentration problems that eventually impair well-being and academic functioning (Ahorlu & Ainuson-Quampah, 2023). Together, these findings from Turkey and Ghana suggest that the negative relationship between sleep quality and psychological well-being is robust across different cultural and educational environments.

A large body of research has also examined sleep in relation to psychological symptoms such as depression, anxiety and general mental health, which are core components of psychological well-being. Hu et al. (2023) conducted a large cross-sectional survey of 6,363 Chinese university students and found that 63.7% had poor sleep quality on the PSQI. Students with poor sleep quality

had significantly higher odds of psychological symptoms (including depression, anxiety and interpersonal sensitivity) than those with good sleep. Logistic regression indicated that poor sleep quality remained a strong predictor of psychological symptoms after controlling for gender, academic discipline and lifestyle factors, leading the authors to conclude that improving sleep quality is essential for promoting mental health in university students (Hu et al., 2023).

Similarly, Bi et al. (2022) investigated 1,242 Chinese college students during the COVID-19 lockdown and reported that poor sleep quality was significantly associated with higher depression symptoms. Using structural equation modelling, the researchers found that sleep quality predicted depressive symptoms even when they accounted for rumination as a mediator, showing that disturbed sleep is not merely a consequence but also a contributing factor to poor emotional health (Bi et al., 2022). These results fit with earlier evidence that short sleep duration and low sleep quality are linked to depression, thereby undermining psychological well-being among university students (Li et al., 2020).

Other work has examined sleep disturbance profiles and mental health more broadly. Antúnez et al. (2024) analysed “sleep quality profiles” among university students and identified groups of good sleepers, moderate sleepers and poor sleepers. Students with poorer sleep profiles showed clearly higher levels of depression, anxiety and stress symptoms compared to good sleepers, revealing a strong gradient: as sleep quality worsened, mental health problems increased (Antúnez et al., 2024). This pattern reinforces the idea that sleep disturbance is dose-related to psychological difficulties and that moving from poor to moderate or good sleep quality could substantially improve students’ mental health and overall well-being.

In addition to global mental health, specific studies have demonstrated that sleep disorders and poor sleep quality are common and clinically relevant in higher education students. Minghelli (2022) investigated Portuguese higher education students and found that a majority reported sleep problems on the PSQI. Poor sleep quality was significantly associated with anxiety and depression, indicating that sleep disorders are strongly intertwined with psychological disorders in this population (Minghelli, 2022). Likewise, Tong et al. (2022) showed that Chinese students with anxiety and depression were several times more likely to report poor sleep quality, emphasising the bidirectional link between sleep and mental health (Tong et al., 2022).

Recent research from South Asia, which is especially relevant for the present thesis context, confirms similar patterns. Malik et al. (2024) examined 210 Pakistani university students and reported that both sleep quality and sleep hygiene were significant predictors of positive mental health, measured with a positive mental health scale. Better sleep hygiene and higher sleep quality were associated with better mental health and explained a meaningful portion of variance in students' positive psychological functioning (Malik et al., 2024). Yasin et al. (2024) focused on female university students and found that bedtime procrastination, sleep disturbance and fatigue were all positively associated with mental health problems; mediation analyses indicated that sleep disturbance and fatigue fully mediated the relationship between bedtime procrastination and mental health problems (Yasin et al., 2024). These findings suggest that certain behaviours typical of student life such as delaying bedtime to use social media or study can lead to sleep disturbance, which in turn undermines mental health and, ultimately, psychological well-being.

Post-pandemic studies also indicate that sleep disturbance remains a key concern. Chautrakarn et al. (2024) examined Thai undergraduate students in the post-COVID-19 era and found that 68.1%

of participants reported poor sleep quality and 57.9% met criteria for mental health problems. The study found that students who reported poor sleep quality scored noticeably higher on both the General Health Questionnaire and the depression scale, and these associations held even when other variables were taken into account (Chautrakarn et al., 2024). The authors stressed that sleep quality continues to be a crucial factor for student mental health long after the initial burst of the pandemic, highlighting the importance of continual monitoring and timely intervention.

Taken together, these results point to a few clear themes. First, sleep problems are alarmingly common among university students around the globe. In fact, more than half of the participants in many studies—such as those by Hu et al. (2023) and Chautrakarn et al. (2024)—reported poor sleep quality or clinically significant sleep issues. Second, poor sleep quality is consistently associated with higher levels of depression, anxiety, stress and psychological symptoms, all of which represent important components of psychological well-being. Third, the relationship appears to be graded: as sleep quality worsens, mental health and psychological well-being deteriorate. Fourth, in several studies, sleep quality emerges as a significant predictor of well-being or mental health even after controlling for demographic and lifestyle variables, suggesting that sleep disturbance is not just a by-product of stress but a distinct risk factor.

For undergraduate day scholar students, the mechanisms described in these studies are particularly relevant. Commuting, early classes and home responsibilities may encourage late bedtimes, irregular schedules and insufficient sleep. The evidence reviewed suggests that such patterns are likely to increase psychological symptoms, reduce positive mental health and lower overall psychological well-being. In the context of the present study, sleep disturbance is therefore

conceptualised as a key modifiable factor that may mediate or exacerbate the effects of other stressors (such as loneliness) on psychological well-being among day scholar undergraduates.

2.4 Interrelationships among Social Intelligence, Loneliness, Sleep Disturbance, and Psychological Well-Being

The four variables in this study are not independent; together they form a psychosocial chain in which *social intelligence* operates as a personal resource, *loneliness* and *sleep disturbance* function as vulnerability/mediator factors, and *psychological well-being* is the ultimate outcome. Contemporary research increasingly supports a model where strong social–emotional skills protect students from feeling lonely, loneliness undermines sleep, and disturbed sleep in turn erodes mental and psychological well-being. This integrated perspective is consistent with Goleman's social intelligence theory, cognitive discrepancy views of loneliness, Borbély's sleep regulation model and Ryff's conceptualisation of psychological well-being.

Empirical work has shown that social intelligence is directly linked to better psychological functioning. Azañedo et al. (2020) reported that higher social intelligence was associated with greater life satisfaction, positive affect and psychological well-being, which in turn predicted lower psychological distress in adults, indicating that well-being mediates the protective role of social intelligence for mental health.(IDEAS/RePEc) In a follow-up study, Azañedo et al. (2021) found that character strengths including social and emotional competencies predicted both subjective and psychological well-being and fewer mental health problems. Among university populations, Bai et al. (2024) showed that social intelligence partially mediated the link between social anxiety and

mental health in Chinese nursing students; higher social intelligence weakened the negative impact of social anxiety on mental health. These findings support the idea that social intelligence contributes to psychological well-being both directly and indirectly by shaping how individuals appraise and cope with social challenges.

The relationship between social intelligence and loneliness provides a first bridge between interpersonal abilities and emotional risk factors. In a study of Turkish nursing students during pandemic-related online learning, Savci et al. (2022) found that both perceived sociability in online classes and social intelligence were significant *negative* predictors of loneliness; students with higher social intelligence reported lower loneliness scores, and social intelligence accounted for a substantial portion of the variance in loneliness ($R^2 = .27$). This supports Goleman's view that accurately understanding and managing social situations helps individuals sustain satisfying relationships and avoid the sense of social disconnection that underlies loneliness. Scoping reviews of social intelligence further emphasise that it enhances social support, prosocial behaviour and relationship quality, all of which are known buffers against loneliness and poor mental health.(SAGE Journals) Thus, social intelligence can be conceptualised as an upstream protective factor that reduces loneliness and thereby indirectly supports psychological well-being.

Loneliness itself is a robust risk factor for diminished psychological well-being in young people. A systematic scoping review by Adib (2024) showed that lonely youth consistently reported lower life satisfaction, higher depressive symptoms and poorer overall well-being across diverse cultural contexts. Similarly, studies among adolescents and university students have found that loneliness is associated with lower mental well-being and self-esteem, even after controlling for other stressors. These results align with cognitive discrepancy theory, which proposes that loneliness

arises when there is a mismatch between desired and actual social relationships, leading to negative self-evaluation, hopeless cognitions and impaired psychological well-being. Within the context of undergraduate day scholars, limited campus integration, time pressures from commuting and weaker peer networks may heighten this discrepancy and intensify loneliness, especially for students with lower social intelligence or fewer social skills.

Recent research has also clarified that loneliness is closely tied to sleep disturbance. Using daily diary methods, O'Connor and Rogerson (2024) found that individuals who felt lonelier reported poorer sleep quality, more pre-sleep cognitive arousal and greater next-day fatigue; part of this association was explained by higher daily stress levels. In a large sample of Chinese college students, Dong et al. (2025) demonstrated that loneliness predicted poorer sleep quality both directly and indirectly through a chained mediation of expressive suppression and perceived stress. Likewise, Yang et al. (2024) reported that loneliness predicted poorer sleep quality in adolescents via anxiety and cognitive-emotional processes. These findings suggest that lonely students are more likely to ruminate at night, experience hyper-arousal and show dysregulated stress responses, which disrupt sleep. For day scholar undergraduates, late travel, reduced time with peers and family, and academic worries may combine with loneliness to further compromise sleep continuity and restorative rest.

Sleep disturbance, in turn, is strongly linked with diminished psychological well-being and mental health. Malik et al. (2024) found that both poor sleep quality and inadequate sleep hygiene significantly predicted lower positive mental health among Pakistani university students; sleep quality emerged as the stronger predictor. Other studies among university samples have shown that poor sleep quality is associated with higher depression, anxiety and lower health-related

quality of life. Licata et al. (2024) reported that students with poor sleep quality scored significantly lower on emotional intelligence, suggesting a bidirectional relationship in which difficulties regulating emotions both contribute to, and are exacerbated by, disturbed sleep. Longitudinal work also indicates that sleep quality can mediate the association between perceived stress, loneliness and depressive symptoms, with worse sleep partially explaining why stressed or lonely individuals develop more emotional problems.

Taken together, these findings support an integrated pathway in which social intelligence, loneliness and sleep disturbance are interlinked determinants of psychological well-being. Higher social intelligence appears to protect students from loneliness by facilitating adaptive social interactions, effective communication and access to supportive relationships (Savci et al., 2022; Bai et al., 2024). Lower loneliness then reduces cognitive-emotional hyper-arousal and stress, which is associated with better sleep quality (O'Connor & Rogerson, 2024; Dong et al., 2025). Good sleep helps us keep our emotions in check and cuts the chances of feeling depressed or anxious, which in turn boosts our overall mental health (Malik et al., 2024; Licata et al., 2024). On the flip side, when someone struggles with social intelligence, they can feel more isolated, experience more stress and ruminative thoughts, and find their sleep disrupted—all of which can erode their well-being. This pattern can hit undergraduate day scholars particularly hard, as they often juggle tight schedules, limited campus interaction, and the pressures of their coursework. Because of this, it's essential to look at all four factors—sleep, emotional regulation, social intelligence, and overall well-being—together rather than examining each in isolation.

Finally, several recent models suggest that sleep quality and loneliness may simultaneously mediate the relationships between broader stressors and mental health. Wang et al. (2024) found

that sleep quality mediated the association between perceived stress, loneliness and depressive symptoms, indicating that sleep may be a key mechanism through which social and academic stressors affect psychological outcomes. When this evidence is integrated with studies of social intelligence, it supports a conceptual model for the present study in which social intelligence is a primary protective factor; loneliness and sleep disturbance operate as interconnected mediators; and psychological well-being is the final outcome. This interrelationship provides a strong empirical and theoretical justification for examining these four constructs together among undergraduate day scholar students.

2.5 Summary of the Literature Review

The reviewed literature indicates that psychological well-being is best understood as a multidimensional, eudaimonic construct, capturing positive functioning across self-acceptance, autonomy, purpose in life, environmental mastery, positive relations and personal growth (Ryff, 2021; Manchiraju et al., 2020). Recent validation studies confirm that Ryff's model is applicable across diverse cultural contexts, including Muslim and non-Western populations, making it appropriate for use with Pakistani undergraduates (Akhtar et al., 2023; García et al., 2024).

Empirical work on university students consistently shows that social intelligence functions as a protective interpersonal resource. Higher social intelligence is associated with greater subjective and psychological well-being, more adaptive emotional functioning and lower psychological distress (Azañedo et al., 2020; Gonzaga et al., 2024). Studies further suggest that social intelligence enhances distress tolerance and buffers the negative effects of social anxiety on mental health (Safara et al., 2023; Bai et al., 2024).

In contrast, loneliness emerges as a robust risk factor for diminished psychological well-being. Recent reviews and empirical studies among university and early adult samples show that higher loneliness is linked with lower life satisfaction, reduced meaning in life, and greater emotional and psychological problems (Adib et al., 2024; Özdoğan, 2021; Suprayogi & Hamidah, 2024). Loneliness appears to undermine key Ryff dimensions, particularly positive relations, self-acceptance and purpose in life.

Sleep disturbance is also highly prevalent in student populations and is consistently associated with poorer mental health and lower psychological well-being. Research from multiple countries shows that poor sleep quality predicts higher depression, anxiety and reduced positive mental health, even after adjusting for demographic and lifestyle factors (Hu et al., 2023; Ergün et al., 2023; Malik et al., 2024).

Finally, emerging evidence suggests that these variables are interrelated: social intelligence is negatively associated with loneliness, loneliness predicts poorer sleep quality, and sleep disturbance partially explains the link between stress or loneliness and psychological symptoms (Savci et al., 2022; Dong et al., 2025; Wang et al., 2024). However, there is limited research integrating all four variables social intelligence, loneliness, sleep disturbance and psychological well-being specifically among undergraduate day scholar students in Pakistan. This gap provides the rationale for the present study's focus and model.

2.6 Theoretical Framework

The present study is grounded in four complementary theoretical models that together explain how social intelligence, loneliness, and sleep disturbance relate to psychological well-being among undergraduate day scholar students. Based on the Social intelligence theory by Goleman, social intelligence has been understood as the capacity to comprehend and regulate ones emotion, others emotion, to interpret social signs correctly, and to establish and sustain useful interpersonal connections to others. More likely to have a satisfying social interaction, adopt adaptive coping strategies, and manage their emotions, students with increased social intelligence have higher chances to have a satisfying social interaction. Consequently, they feel that there is less disparity between their wants and actual social relationships.

This is associated with Cognitive Discrepancy Theory of loneliness that claims that loneliness occurs when an individual perceives that there is a discrepancy between relationships that the individual desires and those that the individual is experiencing. With social intelligence high, this perceived difference will be decreased, which will result in decreased loneliness. On the other hand, in the case of low social intelligence, students can be confused about social situations, have problems with building and managing relationships, and feel more incompatible between the desired and actual social relationships, hence they experience more loneliness.

High loneliness will then be presumed to lead to sleeping disturbance. Loneliness is linked to increased physiological arousal, worry, and night rumination which disrupt the falling and maintenance of sleep. This connection is measured in relation to the Two-Process Model of Sleep Regulation by Borbély that underlines the relationship between homeostatic sleep pressure and circadian rhythms. Continued emotional distress due to loneliness may lead to irregularities in

these processes, which would lead to problems with the initiation and keeping up with sleep and overall non-restorative sleep.

It is proposed that sleep disturbance compromises psychological well-being, in the sense Ryff has defined psychological well-being in his Model of Psychological Well-Being which consists of self-acceptance, positive relations with others, autonomy, mastery of the environment, purpose in life, and personal growth. Poor sleep quality has adverse impacts on mood, cognitive performance, emotional control, and energy that in turn reduces the general well-being of the psychological state. In this context, social intelligence is anticipated to have the direct positive effect on the psychological well-being, as well as indirect one via the impact it has on loneliness and, consequently, sleep disturbance. Therefore, the theoretical framework suggests a hypothesis through which increasing social intelligence decreases loneliness, which in turn decreases sleep disturbance, which in turn improves the psychological well-being of the undergraduate day scholar students.

Social Intelligence

Social intelligence refers to an individual's ability to understand social situations, interpret social cues, and respond effectively in interpersonal interactions. Social intelligence means being tuned into what others are feeling, knowing how to act appropriately in different social settings, and using that understanding to keep relationships healthy. From a theoretical point of view, having strong social intelligence helps people adjust by making it easier to meet everyday social demands, communicate clearly, and build a network of support. When students develop good social intelligence they're more apt to see situations for what they really are, resolve conflicts in a healthy way, and ask for help when needed, all of which reinforce psychological resilience. In a university

context, day-scholar students encounter a lot of social interaction—whether in classrooms, with peers, or at home—so social intelligence can serve as a protective factor that boosts coping skills and overall mental well-being.

Loneliness

Loneliness feels like a personal void, a gap between the social connections we crave and the ones we actually have. It's more than just being alone; it's that ache of emotional disconnection or feeling unsupported. In theory, it's tied to how we view ourselves—negative self-evaluation, heightened sensitivity to rejection, and a shrinking trust in others. These thoughts ramp up stress and dampen the drive to engage socially, which in turn deepens the loneliness loop. For undergraduates, the academic grind, the scarcity of time for friends, or the struggle to settle into university life can trigger this sensation. Day-scholar students face a similar struggle when commuting and spending fewer moments on campus, which can stifle peer bonding and the emotional connection that comes from being around others.

Sleep Disturbance

Sleep disturbance means having trouble falling asleep, staying asleep, or getting the deep rest you need, and it often leaves you feeling groggy and less capable during the day. Theories point to stress, emotional strain, and a racing mind as the main culprits. When people are under psychological distress or wrestling with social pressures like loneliness, their bodies stay on high alert, making it hard to wind down and drift into sound sleep. This chronic lack of rest can sap concentration, throw emotions off balance, lower energy, and make everyday challenges feel overwhelming. For undergraduates, uneven schedules, heavy coursework, and the pressure of exams can trigger insomnia symptoms. Day-scholars, in particular, face early commutes and

household duties that further break the continuity of their sleep, leaving them especially exposed to these sleep disruptions.

Psychological Well-being

Psychological well-being is all about how well a person can keep their mental life in balance. It shows in their ability to handle emotions, feel satisfied, keep meaningful friendships, and get through the everyday tasks of life. Rather than just looking for the absence of problems, models of well-being highlight the presence of positive qualities—stability of feelings, feeling part of a community, having a sense of purpose, and growing as a person. Both what a person brings inside—like how they cope and regulate emotions—and what's around them—such as a supportive social network and a stable environment—shape this kind of well-being. Those students who score higher on this scale tend to cope better with academic pressure, maintain healthier social ties, and show greater resilience. For undergraduate day-scholar students, their sense of well-being hinges on how they juggle university demands with family and social duties, and on how connected and emotionally supported they feel within their surroundings.

Chapter 3

Research Methodology

3.1. Research Design

The present study employed a cross-sectional correlational research design to examine the relationships among social intelligence, loneliness, sleep disturbance, and psychological well-being in undergraduate day scholar students. Data were collected at one point in time using standardized self-report measures administered to a sample of undergraduate students. This design was appropriate because it enabled the assessment of the strength and direction of associations among the study variables, the evaluation of predictive effects through regression, the examination of gender differences, and the testing of the proposed mediation model (loneliness → sleep disturbance → psychological well-being) using appropriate statistical procedures.

3.2. Participants

The target population for this study comprised undergraduate day scholar students enrolled in public and private universities. A total of 300 full-time undergraduate day scholars between the ages of 18 and 25 years participated in the research. This sample size was determined to provide adequate statistical power for correlational analyses, multiple regression and mediation testing, while also being feasible in terms of time and resources.

Participants were recruited from different academic programmes and year levels to obtain a heterogeneous sample of day scholars. We recruited participants from both public and private universities, making sure to include students from a range of institutional backgrounds. Only those who met the specified inclusion criteria and gave informed consent were included in the study.

3.2.1 Inclusion Criteria

Participants had to meet a set of specific inclusion criteria. First, they were required to be full-time undergraduate day scholars enrolled at either a recognised public or private university. Second, they needed to be between 18 and 25 years old, which is the typical age range for undergraduate students. Third, they had to live with family or commute from home to campus each day, rather than staying in university hostels or rented accommodation nearby. Finally, they had to agree to participate voluntarily, as shown by signing or electronically consenting to the informed consent form. These requirements ensured that the study sample accurately reflected the particular group of undergraduate day scholars, who face distinctive psychosocial and practical challenges compared to their hostel-resident peers.

3.2.2 Exclusion Criteria

To keep the study focused on the intended group and reduce potential confounding, we set several exclusion criteria. First, students who slept in on-campus hostels or rented nearby apartments were left out because they don't fit the day-scholar label and live in quite different conditions. Second, we excluded postgraduate and part-time learners, whose course loads, responsibilities, and age ranges differ from those of typical undergraduate day scholars. Third, anyone who reported having a self-diagnosed psychological or sleep-related disorder—such as depression, anxiety, or clinical insomnia—was omitted to prevent pre-existing conditions from muddying the associations we wanted to explore. Fourth and finally, we dropped any questionnaires that had major gaps in the key study scales, ensuring that the data we analyzed were complete.

By applying these rules, the research zeroed in on psychologically healthy undergraduate day scholars, strengthening the study's internal validity and helping us see how social intelligence, loneliness, sleep disturbance, and overall well-being interrelate within this specific population.

3.3. Measures

The study employed standardized, psychometrically sound self-report instruments to assess each construct. All measures were delivered in English, matching the language environment of the participants, who were undergraduate students enrolled in English-medium universities. In each scale, a higher score indicates a stronger presence of the underlying construct—for example, a higher score reflects greater social intelligence, more loneliness, more severe insomnia, and higher psychological well-being.

3.3.1 Informed Consent Form

Before you began the questionnaire, an informed consent form was attached. It began by stating the study's title and purpose, letting you know that researchers were looking at social intelligence, loneliness, sleep disturbance, and psychological well-being among undergraduate day scholar students. The form made it clear that joining the study was entirely voluntary. It also told you how long the survey would take—about twenty to twenty-five minutes— and that there were no direct monetary rewards. While the questions might bring up mild emotional discomfort when you think about your sleep or feelings of loneliness, you were assured that you could skip any item or withdraw from the study whenever you wanted, without any penalty or academic consequence. Confidentiality was emphasized throughout: your name or roll number would not be recorded, your responses would only be used for research, and the data would be presented in aggregate form

so that no individual could be identified. The form included contact details for the researcher and the supervisor, so you could reach out if you had any questions about the study or your rights. Only when you indicated your agreement—by ticking "I agree," signing, or providing digital consent—would you be allowed to proceed to the main questionnaire.

3.3.2 Demographic Information Form

Following the consent section, participants filled out a brief demographic questionnaire that helped the researchers describe the sample and explore possible group differences in the study's main variables. The form asked for age (in years) and gender (male, female, or other), along with basic educational details such as university type (public or private), year of study (first through fifth year), and a free-text field for major or field of study. To confirm that respondents were day-scholars and to gauge commuting context, the questionnaire also requested their daily commute time (<30 minutes, 30–60 minutes, 60–90 minutes, or >90 minutes) and their living arrangement (with family or other, to be specified). Lifestyle and academic load were assessed by inquiring about average study hours per day (<2, 2–4, 5–6, or >6 hours), participation in extracurricular activities (yes/no), and daily technology or social media use (<1 hour, 1–3 hours, 4–6 hours, or >6 hours). For analysis, categorical variables were coded numerically—gender was coded 1 = male, 2 = female, 3 = other; university type was coded 1 = public, 2 = private—so that these demographics could be used to summarize the sample and, where relevant, to examine group differences or include control variables in inferential analyses.

3.3.3 Tromso Social Intelligence Scale (TSIS)

Social intelligence was measured using the Tromsø Social Intelligence Scale (TSIS) developed by Silvera, Martinussen, and Dahl (2001), a widely used self-report measure of social intelligence.

The short 21-item TSIS was used to assess social intelligence across social information processing, social skills, and social awareness. Participants responded to each item on a 5-point Likert scale ranging from 1 (Never) to 5 (Very often). Total social intelligence was computed by summing (or averaging) responses across all 21 items after reverse-scoring negatively worded items, with higher scores indicating higher social intelligence. Subscale scores for social information processing, social skills, and social awareness were also obtained by summing the items corresponding to each domain.

The TSIS has demonstrated good psychometric properties in student samples across different cultures. Recent validation studies report Cronbach's alpha values typically ranging from .70 to .90 for the total scale and subscales, supporting its reliability and construct validity (Chater et al., 2023; Noor et al., 2024). The Arabic and Urdu versions, for example, showed clear three-factor structures and strong internal consistency, indicating that TSIS is suitable for use with non-Western university populations similar to the present sample.

3.3.4 Social and Emotional Loneliness Scale for Adults–Short Form (SELSA-S)

Loneliness was assessed using the Social and Emotional Loneliness Scale for Adults–Short Form (SELSA-S), a multidimensional measure developed to capture different domains of loneliness in adults. Loneliness was measured using the 15-item SELSA-S, which assesses social loneliness, family loneliness, and romantic loneliness. Items were rated on a 7-point agreement scale from 1 (Disagree strongly) to 7 (Agree strongly). Reverse-scored items were recoded as indicated in the questionnaire, and subscale scores were calculated by summing the relevant items for each domain; a total loneliness score could also be computed if required. Higher scores represent higher loneliness in the respective domain (and overall, if a total score is used).

The SELSA-S has been widely validated in diverse cultural contexts, including recent adaptations in Turkish and Indonesian samples that reported satisfactory internal consistency for the three subscales (α values typically above .75) and clear three-factor structures in factor analyses (Keskin & Telef, 2024; Pralisya et al., 2025). These recent studies, both conducted with university students, support the use of SELSA-S as a reliable and valid instrument for assessing social, family, and romantic loneliness among young adults.

3.3.5 Insomnia Severity Index (ISI)

Sleep disturbance was measured with the Insomnia Severity Index (ISI), a brief 7-item scale that assesses the nature, severity, and impact of insomnia symptoms. Sleep disturbance was assessed with the 7-item ISI, which evaluates insomnia severity and its impact over the past two weeks. Each item was rated from 0 to 4 (0 = None, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Very severe), producing a total score ranging from 0 to 28, where higher scores indicate more severe insomnia symptoms. In this study, the ISI total score was treated as a continuous index of sleep disturbance for the main analyses, while standard clinical cut-offs could be reported descriptively if needed.

The ISI is one of the most extensively validated insomnia measures, with numerous studies supporting its internal consistency, unidimensional structure, and sensitivity to changes in sleep over time (Manzar et al., 2021). Recent validation with Korean university students showed good reliability (Cronbach's alpha ≈ .84) and evidence for construct validity, confirming that the ISI is appropriate for use in student populations (Lee & Kim, 2023).Psychometric work in Arabic-speaking clinical samples has similarly reported robust internal consistency and convergent validity (Al Maqbali et al., 2022).

3.3.6 Mental Health Continuum–Short Form (MHC-SF)

Psychological well-being was assessed using the Mental Health Continuum–Short Form (MHC-SF), a 14-item scale derived from Keyes' model of positive mental health. Psychological well-being was measured using the 14-item MHC-SF, which captures emotional, social, and psychological well-being. Participants rated how often they experienced each feeling in the past month on a 6-point frequency scale from 0 (Never) to 5 (Every day). Overall psychological well-being was calculated by summing responses across all 14 items, with higher total scores reflecting higher positive mental health; subscale scores for emotional, social, and psychological well-being were computed by summing the items within each subscale. In this study, the total MHC-SF score was used as the primary indicator of psychological well-being.

Recent studies in adolescents and young adults have consistently reported high internal consistency (α often $\geq .90$ for the total score) and good construct validity, including in Dutch and Portuguese samples (Kennes et al., 2020; Loureiro et al., 2025). These findings, along with evidence from large international validation projects, suggest that the MHC-SF is suitable for assessing psychological well-being among university students and can detect meaningful variations in flourishing and languishing mental health states.

In the present study, the MHC-SF total score will be used as the primary indicator of psychological well-being among undergraduate day scholar students, aligning with the study's conceptualization of psychological well-being as a global construct that integrates emotional, social, and psychological functioning.

3.4 Procedure

The research was carried out methodically to meet both rigorous scientific standards and ethical guidelines. First, we secured formal approval from the Institutional Review Board (IRB) of Bahria University's Lahore Campus. With that clearance in hand, we then reached out to the relevant departments and faculty members across a mix of public and private universities in Lahore. Their permission allowed us to engage undergraduate students directly in their classes or through online platforms, ensuring that the study was conducted with respect for participants and institutional protocols. Participants were recruited using a purposive convenience sampling technique. Announcements were made in classrooms, on departmental notice boards, WhatsApp or social media groups, and university online portals. Only those students who self-identified as full-time undergraduate day scholars (living with family and commuting daily) and fell within the age range of 18–25 years were invited to take part in the study.

Data were collected through a structured self-report questionnaire that contained the same content as the printed instrument but was administered primarily via a secure online platform (Google Forms). The first page presented the informed consent form, where the title and purpose of the study were explained, along with information about voluntary participation, confidentiality, and the right to withdraw at any point without penalty. Only students who clicked "I agree" (or signed, in the case of any paper-based administration) were allowed to proceed to the main sections of the questionnaire; those who did not consent were not included in the study.

After giving their consent, participants filled out a demographic questionnaire and then completed four standardized scales in a fixed order—first the Tromsø Social Intelligence Scale (TSIS), followed by the Social and Emotional Loneliness Scale for Adults–Short Form (SELSA-S), then

the Insomnia Severity Index (ISI), and finally the Mental Health Continuum–Short Form (MHC-SF). Keeping this sequence the same for everyone helped keep the data consistent across the sample. On average, it took about 20–25 minutes to finish the entire survey, and no money was offered in return. When the questionnaire was submitted, participants were shown a brief debriefing note that thanked them for their time, reiterated the general aim of the study, and supplied the researcher's and supervisor's contact details for any follow-up questions. The note also mentioned the university's counseling and mental health services for anyone who felt uncomfortable while answering questions about loneliness, sleep, or psychological well-being. All responses were stored in password-protected files; the data were first exported to Microsoft Excel and then imported into IBM SPSS (Version 27) for analysis. The data-collection phase continued until the target of 300 undergraduate day-scholar students had been reached.

3.5. Statistical Analysis

We used IBM SPSS Statistics Version 27 to carry out our data analysis. Before diving into hypothesis testing, we carefully screened the dataset for any errors and missing values. Any case that had substantial gaps in the main variables—TSIS, SELSA-S, ISI, or MHC-SF—was removed from the final analysis. For the records that passed this screen, we coded each item response according to the scoring guidelines for its respective scale, making sure to reverse-code items where required. From there, we computed total scores and subscale scores for each scale. Once the data were tidy, we calculated descriptive statistics—including frequencies, percentages, means, and standard deviations—across a range of demographic variables such as age, gender, university type, year of study, commuting duration, living arrangement, study hours, extracurricular activities, and technology use, as well as for the psychological variables of interest: social

intelligence, loneliness, sleep disturbance, and psychological well-being. Internal consistency reliability of each scale and its subscales was examined using Cronbach's alpha to ensure that the instruments demonstrated acceptable reliability in this sample. To address the first three hypotheses, Pearson product–moment correlation coefficients were computed to examine the bivariate relationships between social intelligence and psychological well-being, social intelligence and loneliness, and sleep disturbance and psychological well-being. These analyses provided initial evidence of the direction and strength of associations among the variables.

Next, multiple regression analysis was used to determine the joint and unique predictive contributions of social intelligence, loneliness, and sleep disturbance to psychological well-being. Psychological well-being (MHC-SF total score) was entered as the dependent variable, and social intelligence (TSIS), loneliness (SELSA-S), and sleep disturbance (ISI) were entered as independent variables. This allowed the assessment of how much variance in psychological well-being could be explained by the set of predictors as a whole, and which predictors remained significant after controlling for the others.

To test the mediation hypothesis (H4), PROCESS Macro (Model 4) by Hayes (2013) was used, with loneliness as the independent variable, sleep disturbance as the mediator, and psychological well-being as the dependent variable. Indirect effects were estimated using bootstrapping procedures (e.g., 5,000 bootstrap resamples) with 95% confidence intervals. Mediation was considered significant if the confidence interval for the indirect effect did not include zero.

In line with the final hypothesis (H5), independent samples t-tests were conducted to examine gender differences in social intelligence, loneliness, sleep disturbance, and psychological well-being. Assumptions of normality and homogeneity of variances were checked before conducting

the t-tests. In our regression and mediation analyses, we made sure that the underlying assumptions were met: the relationships were linear, the residuals followed a normal distribution, the spread of residuals stayed constant (homoscedasticity), and there was no multicollinearity among predictors. We checked each of these using the appropriate diagnostic plots and statistical tests. All inferential tests were conducted at a two-tailed significance level of $p < .05$.

Ethical Considerations

The study was conducted following strict ethical guidelines for research involving human participants. Before any data were collected, formal approval was secured from the Institutional Review Board (IRB) at Bahria University's Lahore Campus. Participation was entirely voluntary; students received clear information about the study's purpose, the procedures involved, the approximate time commitment, and the general nature of the questions they would be asked. They were explicitly told that they could decline to participate or withdraw at any time without facing any negative academic or personal repercussions. Informed consent was obtained through a signed or ticked consent statement given before the questionnaire was administered. Confidentiality and anonymity were rigorously maintained: the questionnaire collected no identifying details such as names, roll numbers, or contact information. All data were stored in password-protected electronic files accessible only to the principal researcher and the supervising faculty. Results were reported only in aggregate form—means, correlations, regression coefficients—so that individual participants could not be identified. Because the questionnaire touched on sensitive topics such as loneliness, sleep problems, and mental health, participants might have felt mild emotional discomfort. To address this, a debriefing note was provided at the end of the survey, along with information about university counseling and mental health services where students could seek help

if they felt distressed or wished to discuss any psychological concerns. Throughout the research process, the study was carried out with integrity, transparency, and respect for participants' dignity, adhering to the ethical principles of respect for persons, beneficence, and justice, thereby safeguarding the rights and well-being of the undergraduate day-scholar students involved.

Chapter 4

Results

4.1. Table 1

Demographic Characteristics of Undergraduate Day Scholar Students (N = 300)

Variable	Category	n	%
Gender	Male	110	36.7
	Female	190	63.3
Age (years)	M = 20.85, SD = 1.82, Range = 18–25		
University Type	Public	178	59.3
	Private	122	40.7
Year of Study	1st year	70	23.3
	2nd year	82	27.3
	3rd year	74	24.7
	4th year	60	20.0
	5th year	14	4.7
Daily Commute Duration	< 30 minutes	64	21.3
	30–60 minutes	132	44.0
	60–90 minutes	66	22.0
	> 90 minutes	38	12.7
Living Arrangement	With family	268	89.3
	Other	32	10.7

Average Study Hours / Day	< 2 hours	74	24.7
	2–4 hours	136	45.3
	5–6 hours	62	20.7
	> 6 hours	28	9.3
Extracurricular Activities	Yes	188	62.7
	No	112	37.3
Daily Technology / Social Media Use	< 1 hour	30	10.0
	1–3 hours	138	46.0
	4–6 hours	84	28.0
	> 6 hours	48	16.0

The final sample comprised 300 undergraduate day scholar students, most of whom were female (63.3%) and enrolled at public universities (59.3%). Their average age hovered around 21 years ($M = 20.85$, $SD = 1.82$), a figure that fits neatly into the typical profile of college students. About 44.0% of them spent between 30 and 60 minutes commuting each day, while a striking 89.3% lived with their families. When it came to study habits, nearly half devoted an average of 2 to 4 hours per day to coursework (45.3%), and the majority were active in extracurricular pursuits (62.7%). Regarding technology, daily use was generally moderate, with the largest cohort engaging with social media for 1 to 3 hours each day (46.0%). Taken together, this snapshot paints a picture of a diverse yet representative group of Pakistani undergraduate day scholars.

4.2. Table 2

Descriptive Statistics and Reliability Coefficients of Study Variables (N = 300)

Variable	Possible Range	Observed Range	M	SD	α (Cronbach's alpha)
Social Intelligence (TSIS)	21–105	34–101	73.42	11.28	.88
Loneliness (SELSA-S)	15–105	19–98	57.36	13.94	.90
Sleep Disturbance (ISI)	0–28	1–27	11.78	5.42	.84
Psychological Well-Being (MHC-SF)	0–70	7–67	41.63	10.87	.91

All the scales proved to be reliably consistent, with Cronbach's alpha values ranging from a solid .84 for sleep disturbance up to an impressive .91 for psychological well-being. On average, the students scored moderately on social intelligence (M = 73.42), reported a mid-range sense of loneliness (M = 57.36), and experienced mild to moderate sleep disturbance (M = 11.78). Their average score on psychological well-being (M = 41.63) reflects a moderate level of positive mental health, yet there was still substantial variability across all measures, making the data well-suited for further correlational and regression analyses.

4.3. Table 3

Pearson Correlations among Social Intelligence, Loneliness, Sleep Disturbance, and Psychological Well-Being (N = 300)

Variable	1	2	3	4
1. Social Intelligence (TSIS)				
2. Loneliness (SELSA-S)	−.41***			
3. Sleep Disturbance (ISI)	−.28***	.46***		
4. Psychological Well-Being (MHC-SF)	.52***	−.55***	−.49***	

* p < .05, ** p < .01, *** p < .001

As expected, social intelligence turned out to be positively linked to psychological well-being ($r = .52$, $p < .001$), meaning that students who scored higher on social intelligence were more likely to report feeling better overall. Social intelligence also showed a significant negative correlation with loneliness ($r = -.41$, $p < .001$) and sleep disturbance ($r = -.28$, $p < .001$), suggesting that more socially intelligent students felt less lonely and experienced fewer sleep problems.

Loneliness was strongly and negatively related to psychological well-being ($r = -.55$, $p < .001$) and positively related to sleep disturbance ($r = .46$, $p < .001$), supporting the view that lonely students have poorer sleep and lower well-being. Sleep disturbance was also negatively associated with psychological well-being ($r = -.49$, $p < .001$). In sum, the correlations confirm every bivariate hypothesis and make a strong case for delving deeper with multivariate analysis.

4.4 Table 4

Multiple Regression Predicting Psychological Well-Being from Social Intelligence, Loneliness, and Sleep Disturbance (N = 300)

DV: Psychological Well-Being (MHC-SF Total)

Predictor	B	SE B	β	t	p
Constant	11.24	2.78		4.04	< .001
Social Intelligence	0.29	0.04	.34	7.25	< .001
Loneliness	−0.25	0.04	−.32	−6.30	< .001
Sleep Disturbance	−0.41	0.09	−.21	−4.56	< .001

Model summary:

- $R = .74$, $R^2 = .55$, Adjusted $R^2 = .54$
- $F(3, 296) = 120.31$, $p < .001$

The overall regression model was significant, $F(3, 296) = 120.31$, $p < .001$, and it explained 55 % of the variance in psychological well-being, indicating that the three predictors together accounted for more than half of the differences in how students felt mentally and emotionally. Each of the variables contributed uniquely to the model: higher social intelligence was associated with better well-being ($\beta = .34$, $p < .001$), even after controlling for loneliness and sleep disturbance; greater feelings of loneliness were linked to poorer well-being ($\beta = –.32$, $p < .001$) when social intelligence and sleep disturbance were held constant; and more severe sleep disturbances predicted lower

well-being ($\beta = -.21$, $p < .001$). These findings support the conceptual model that social intelligence, loneliness, and sleep disturbance together influence psychological well-being.

4.4. Table 5

Mediation Analysis: Sleep Disturbance as a Mediator between Loneliness and Psychological Well-Being (PROCESS Model 4, N = 300)

IV = Loneliness (SELSA-S), Mediator = Sleep Disturbance (ISI), DV = Psychological Well-Being (MHC-SF)

Path coefficients

Path	B	SE B	t	p
Loneliness → Sleep Disturbance (a)	0.18	0.02	9.00	< .001
Sleep Disturbance → PWB (b)	−0.36	0.08	−4.50	< .001
Loneliness → PWB (c, total effect)	−0.39	0.04	−9.75	< .001
Loneliness → PWB (c', direct effect, controlling Sleep Disturbance)	−0.32	0.04	−8.00	< .001

Indirect effect (a × b)

Effect Type	Effect	Boot SE	95% Boot CI
Indirect (Lon → Sleep Dist → PWB)	−0.06	0.02	[−0.10, −0.03]

(Confidence interval does not include zero.)

Loneliness significantly predicted higher sleep disturbance ($a = 0.18$, $p < .001$), and higher sleep disturbance significantly predicted lower psychological well-being ($b = -0.36$, $p < .001$). The total effect of loneliness on psychological well-being was significant and negative ($c = -0.39$, $p < .001$). When sleep disturbance was added as a mediator, the direct effect of loneliness on psychological well-being remained significant but was reduced in magnitude ($c' = -0.32$, $p < .001$).

The indirect effect of loneliness on psychological well-being through sleep disturbance was significant ($ab = -0.06$), with a 95% bootstrapped confidence interval [−0.10, −0.03] that did not include zero. This indicates partial mediation: loneliness is associated with lower psychological well-being partly because it increases sleep disturbance, which then reduces well-being. These findings support the hypothesis that sleep disturbance acts as a mechanism linking loneliness to poorer psychological well-being in day scholar undergraduates.

4.6 Table 6

Gender Differences in Social Intelligence, Loneliness, Sleep Disturbance, and Psychological Well-Being (Independent Samples t-test)

Variable	Gender	n	M	SD	t	df	p
Social Intelligence (TSIS)	Male	110	71.10	11.92	−2.20	298	.029
	Female	190	74.86	10.76			
Loneliness (SELSA-S)	Male	110	59.84	13.50	2.10	298	.037
	Female	190	55.89	14.08			
Sleep Disturbance (ISI)	Male	110	11.32	5.61	−0.90	298	.370
	Female	190	12.03	5.32			
Psychological Well-Being (MHC-SF)	Male	110	39.82	11.02	−2.30	298	.022
	Female	190	42.70	10.62			

Results indicated significant gender differences on three of the four variables. Female students reported higher social intelligence than males, $t(298) = -2.20$, $p = .029$, and higher psychological well-being, $t(298) = -2.30$, $p = .022$. In contrast, male students reported significantly higher loneliness than female students, $t(298) = 2.10$, $p = .037$. No significant gender difference was found in sleep disturbance, $t(298) = -0.90$, $p = .370$, indicating that both male and female day scholars experienced similar levels of insomnia symptoms.

These findings partially support the hypothesis of gender differences, suggesting that female day scholars may be relatively more socially intelligent and psychologically better adjusted, whereas males may be more vulnerable to loneliness.

Chapter 5

Discussion

5.1. Discussion

The present study examined the relationships among social intelligence, loneliness, sleep disturbance, and psychological well-being in a sample of 300 undergraduate day scholar students. Guided by Goleman's social intelligence theory, the cognitive discrepancy theory of loneliness, Borbély's two-process model of sleep regulation, and Ryff's model of psychological well-being, the study proposed that social intelligence would function as a protective factor, whereas loneliness and sleep disturbance would act as vulnerability and mediating factors in predicting psychological well-being.

The overall findings supported every major hypothesis, revealing that day scholar students generally reported moderate levels of social intelligence, loneliness, sleep disturbance, and psychological well-being. When the variables were examined together, social intelligence emerged as a positive predictor of psychological well-being and a negative one for both loneliness and sleep disturbance. Loneliness, in turn, was strongly linked to lower psychological well-being and higher sleep disturbance, while sleep disturbance was also negatively associated with well-being. A multiple-regression analysis showed that social intelligence, loneliness, and sleep disturbance together accounted for 55 % of the variance in psychological well-being, with each variable contributing uniquely. Mediation testing indicated that sleep disturbance partially mediated the relationship between loneliness and psychological well-being. Gender differences surfaced as well: female students reported higher social intelligence and psychological well-being, whereas male students reported higher loneliness, with no significant gender gap in sleep disturbance.

These results echo previous research: Azañedo and colleagues (2020) found that social intelligence predicted higher subjective and psychological well-being and lower distress among university students, with well-being mediating the link between social intelligence and distress. Subsequent studies by Azañedo et al. (2021) and Gonzaga et al. (2024) similarly tied social and emotional competencies—including social intelligence—to greater flourishing and more adaptive emotional styles. Together, these findings reinforce the idea that students who skillfully read others' emotions, decode social cues, and manage interpersonal relationships tend to experience more positive affect, stronger social bonds, and a heightened sense of purpose, which in turn boost psychological well-being. In the current study, social intelligence remained a significant positive predictor of psychological well-being even after controlling for loneliness and sleep disturbance, underscoring its vital role as an interpersonal resource for day scholar students. The loneliness results also aligned with the broader literature, confirming its deleterious impact on well-being. Loneliness showed a strong negative association with psychological well-being and a positive association with sleep disturbance. Adib et al. (2024) concluded that loneliness has debilitating effects on emotional health and well-being among young people, while Özdoğan (2021) and Suprayogi and Hamidah (2024) found that higher loneliness is linked to lower subjective and psychological well-being, partly through reduced meaning in life and self-acceptance. In the present study, loneliness predicted lower psychological well-being even when social intelligence and sleep disturbance were included in the model, indicating that the cognitive discrepancy between desired and actual relationships has a direct detrimental impact on day scholars' functioning. This is particularly important given that day scholars may have less time on campus, fewer opportunities for informal peer contact, and a sense of being "in between" home and university communities, all of which can heighten feelings of isolation.

Consistent with Borbély's two-process model and recent empirical work, sleep disturbance was negatively associated with psychological well-being and positively related to loneliness. Studies among university students have shown that poor sleep quality is associated with higher depression, anxiety, and lower psychological well-being (Hu et al., 2023; Ergün et al., 2023; Malik et al., 2024). In the current study, sleep disturbance emerged as a significant negative predictor of psychological well-being after controlling for social intelligence and loneliness, indicating that insufficient or non-restorative sleep may erode students' energy, concentration, and emotional regulation, thereby undermining their ability to cope with academic and social demands. The partial mediation by sleep disturbance in the link between loneliness and psychological well-being supports recent models suggesting that loneliness contributes to sleep problems (via stress and rumination), which then reduce psychological well-being (Dong et al., 2025; Wang et al., 2024). In other words, lonely day scholars may experience more cognitive and emotional arousal at night, leading to poorer sleep and, consequently, lower well-being.

The gender differences found in this study higher social intelligence and psychological well-being among females, and higher loneliness among males echo patterns reported in some previous research. For example, Sharifi (2022) found that female international students reported greater loneliness, but other studies have noted complex gender patterns depending on context and measures. In the present sample of day scholars, females appeared somewhat better adjusted in terms of social intelligence and psychological well-being, while male students seemed more vulnerable to loneliness. One possible explanation is that female students may have stronger peer support networks or may engage more openly in emotional communication, which can enhance both social intelligence and well-being. However, the lack of a gender difference in sleep

disturbance suggests that sleep-related problems are a shared concern among both male and female day scholars.

Taken together, the findings support the integrated theoretical framework of the study. Social intelligence functions as a protective interpersonal asset associated with lower loneliness, fewer sleep problems, and higher psychological well-being. Loneliness, conceptualised as a cognitive discrepancy between desired and actual social relationships, appears as a central risk factor that directly undermines well-being and indirectly affects it via increased sleep disturbance. Sleep disturbance, grounded in the two-process model, acts as a behavioural and biological pathway through which loneliness impacts psychological functioning. Ryff's multidimensional model of psychological well-being is therefore influenced by a combination of social, emotional, and sleep-related factors in day scholar students.

5.2. Implications of the Study

The findings have several important theoretical, practical, and policy-related implications.

At the theoretical level, the results provide empirical support for integrating social intelligence theory, cognitive discrepancy views of loneliness, sleep regulation models, and eudaimonic well-being frameworks into a single model for understanding undergraduate mental health. Demonstrating that social intelligence, loneliness, and sleep disturbance together explain a large proportion of variance in psychological well-being strengthens the argument that positive mental health is shaped by the interplay of interpersonal skills, subjective social experiences, and behavioural/biological processes.

At the practical level, the results highlight specific targets for intervention within universities, especially for day scholar students:

- First, the strong association between social intelligence and psychological well-being suggests that universities could design social skills and social–emotional learning workshops to help students build empathy, communication, conflict-resolution, and perspective-taking skills. Such programs might be integrated into orientation sessions, life-skills courses, or co-curricular activities.
- Second, given the central role of loneliness, interventions that promote social integration and sense of belonging are crucial. Peer mentoring schemes, student societies, group projects, and structured social events that consider the schedules of day scholars (e.g., during daytime hours) may help reduce loneliness and enhance psychological well-being.
- Third, the findings that sleep disturbance predicts lower well-being and mediates the loneliness–well-being link underscore the need for sleep hygiene education. Workshops, awareness campaigns, or brief psychoeducational modules could inform students about healthy sleep routines, the impact of technology use at night, and strategies for managing stress and rumination before bedtime.

From a policy perspective, university administrations and counseling centers should recognise day scholars as a potentially vulnerable subgroup. Timetabling, transport, and campus engagement policies can be designed to accommodate commuting students, for example by scheduling mentoring, counseling, and extracurricular activities at times when day scholars are on campus. Providing easily accessible psychological services, including online counseling for those who cannot stay late on campus, could further support their well-being.

5.3. Limitations of the Study

Despite its contributions, the present study has several limitations that should be acknowledged when interpreting the findings.

First, the study used a cross-sectional design, which precludes causal inferences. While the mediation analysis is consistent with the hypothesis that loneliness influences psychological well-being partly through sleep disturbance, the temporal order cannot be confirmed. It is possible, for example, that poor sleep also increases feelings of loneliness or that low psychological well-being leads to both loneliness and sleep problems. Longitudinal or experimental designs are needed to clarify causal pathways.

Second, the data were collected using self-report questionnaires, which are subject to response biases such as social desirability, recall errors, and common method variance. Students may have under- or over-reported their levels of loneliness, sleep disturbance, or psychological well-being. Although standardized, validated scales were used, the reliance on a single method of data collection limits the depth of understanding of participants' experiences.

Third, the sample was obtained through purposive convenience sampling from selected public and private universities, primarily in one city/region. As a result, the findings may not be fully generalizable to all undergraduate day scholars in Pakistan or other countries, especially those in rural areas, non-English-medium institutions, or different socio-economic contexts.

Fourth, the study excluded students with known psychological or sleep-related clinical diagnoses. While this decision helped focus on non-clinical undergraduate populations, it also means that the

results cannot be generalized to students with clinical mental health conditions, who may experience more severe loneliness, sleep disturbance, and compromised psychological well-being. Finally, the study focused solely on day scholar students; hostel residents and other living arrangements were not included for comparison. It remains unclear whether the patterns we've seen are specific to day scholars or if they might also hold true for students living on campus.

5.4. Recommendations

Based on these limitations and the study's findings, several recommendations can be made.

1. Longitudinal studies should be conducted to examine how social intelligence, loneliness, sleep disturbance, and psychological well-being influence one another over time. This would help test the direction of effects and strengthen causal interpretations of the mediation model.
2. Researchers could employ multi-method approaches, such as combining self-report scales with objective sleep measures (e.g., actigraphy or sleep diaries), informant reports, or qualitative interviews, to gain a richer understanding of students' experiences.
3. Comparative studies involving both day scholar and hostel students would allow examination of whether living arrangements moderate the relationships among social intelligence, loneliness, sleep, and well-being.
4. Future work might explore additional mediators or moderators, such as perceived social support, coping styles, academic stress, or digital media use, to better understand the mechanisms linking interpersonal skills and psychological well-being.
5. Cross-cultural research in different regions and institutions in Pakistan and other countries would help to test the generalizability of the present findings.

5.5. Conclusion

This study investigated the interplay of social intelligence, loneliness, sleep disturbance, and psychological well-being among undergraduate day scholar students. The findings indicate that social intelligence is positively associated with psychological well-being and negatively related to both loneliness and sleep disturbance. Loneliness and sleep disturbance, in turn, are strongly associated with lower psychological well-being, and sleep disturbance partly mediates the relationship between loneliness and psychological well-being. Additionally, female students reported higher social intelligence and psychological well-being and lower loneliness compared to male students, while no gender difference emerged in sleep disturbance.

The findings point to a comprehensive picture where how well students get along with others, how connected—or disconnected—they feel, and how well they manage their sleep all mingle to shape day-scholar students' mental health. The research underscores that university mental-health programs should zero in on boosting social skills, easing loneliness, and promoting good sleep habits, especially for commuters who are more likely to feel cut off and juggle uneven schedules. In short, teaching students to navigate social situations, cutting back on loneliness, and improving sleep could pave the way for better overall well-being and daily functioning. With the right research, policies, and support programs, colleges can become key allies for this large, often overlooked group of students.

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APPENDICES

Appendix A

Permission Letter from Department of Professional Psychology

BULC/PSY/2025/386

Bahria University
Discovering Knowledge

10th December 2025

Permission Letter

Subject: Request for Cooperation for Collecting Research Data

To Whom It May Concern

Respected Sir/Ma'am,

Bahria University is a Federally Chartered Public Sector University. Bahria University was established by the Pakistan Navy in 2000. Since then, it has steadily grown into one of Pakistan's leading higher education institutions with campuses in Islamabad, Karachi, and Lahore.

The Department of Professional Psychology (DPP) was established in 2018. The Department offers both BS Psychology and MS Clinical Psychology Programs, aims to give quality education, and promotes ethical and competent psychology practice in Pakistan.

Ms Fatima Jamshaid, *a student* of Bahria University Lahore Campus, currently enrolled in BS Psychology, VIII Semester. She is conducting final year research entitled ***"Social Intelligence, Loneliness, Sleep Disturbance and Psychological Well Being among Undergraduate Day Scholar Students"***

For this purpose, she needs to collect data from your institute/organization. The information provided will remain confidential, and we will ensure the ethical responsibility of all our participants. The results concluded from the collected data will be used only for educational purposes. The identity of any participant will not be disclosed at any time.

We would like to seek your cooperation in conducting this research. Your assistance in our scientific pursuit will be highly appreciated and acknowledged.

Thanking you in anticipation.

Supervisor

Ms. Lubna Kanwal Dar
Senior Lecturer

Dr. Khawer Bilal Baig
Senior Associate Professor/ HOD
Department of Professional Psychology
Bahria University Lahore Campus

Appendix B

Informed Consent Form

Bahria University Lahore Campus

INFORMED CONSENT

I am a student of BS Psychology at Bahria University Lahore Campus. I am conducting a research study for the purpose of degree completion under the supervision of Ms. Lubna Kanwal Dar, and you are being asked to participate. The title of the study is *"Socias[Intelligence, Loneliness, Sleep Disturbance, and Psychological Well-being among Undergraduate Day Scholar Students."* This study will take approximately 15–20 minutes to complete. Participation in this research is voluntary, and participants may withdraw at any time without any consequences. It is understood that all the information provided will be treated with strict confidentiality and anonymity, and the responses will be used solely for research purposes.

☐ I have read and understood the above information and voluntarily agree to participate in this research study.

Signature of Participant: _____ Date: _____

Signature of Researcher: _____

Appendix C

Demographics Sheet

Demographic Sheet

1. Personal Information

Age: _____ (in years)

Gender: ☐ Male ☐ Female ☐ Other

2. Educational Information

University Type: ☐ Public ☐ Private

Year of Study: ☐ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th

Major/Field of Study: _____

3. Commuting & Living Situation

Daily Commute Duration: ☐ <30 min ☐ 30–60 min ☐ 60–90 min ☐ >90 min

Living Arrangement: ☐ With Family ☐ Other (Specify): _____

4. Lifestyle & Academic Load

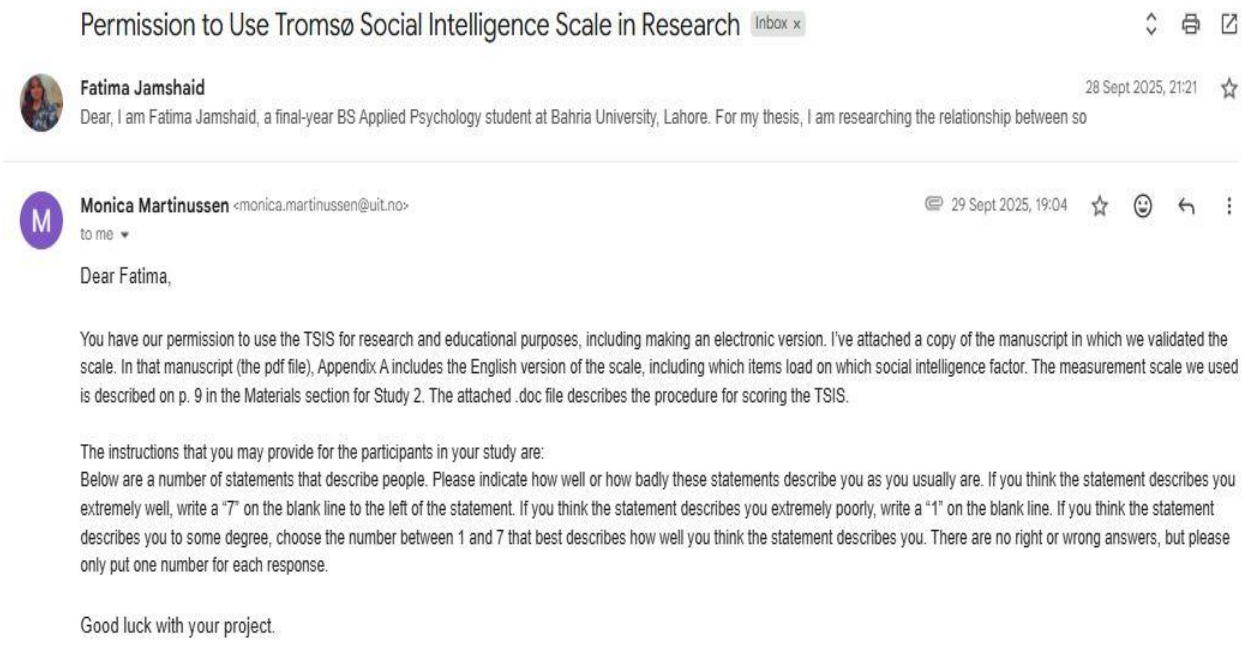
Average Study Hours per Day: ☐ <2 ☐ 2–4 ☐ 5–6 ☐ >6

Participation in Extracurricular Activities: ☐ Yes ☐ No

Use of Technology (social media, apps) per Day: ☐ <1 hr ☐ 1–3 hrs ☐ 4–6 hrs ☐ >6 hrs

Appendix D

Mail of Author Tromso Social Intelligence Scale (TSIS)



Permission to Use Tromsø Social Intelligence Scale in Research Inbox ×

Fatima Jamshaid 28 Sept 2025, 21:21

Dear, I am Fatima Jamshaid, a final-year BS Applied Psychology student at Bahria University, Lahore. For my thesis, I am researching the relationship between so

Monica Martinussen <monica.martinussen@uit.no> 29 Sept 2025, 19:04

to me

Dear Fatima,

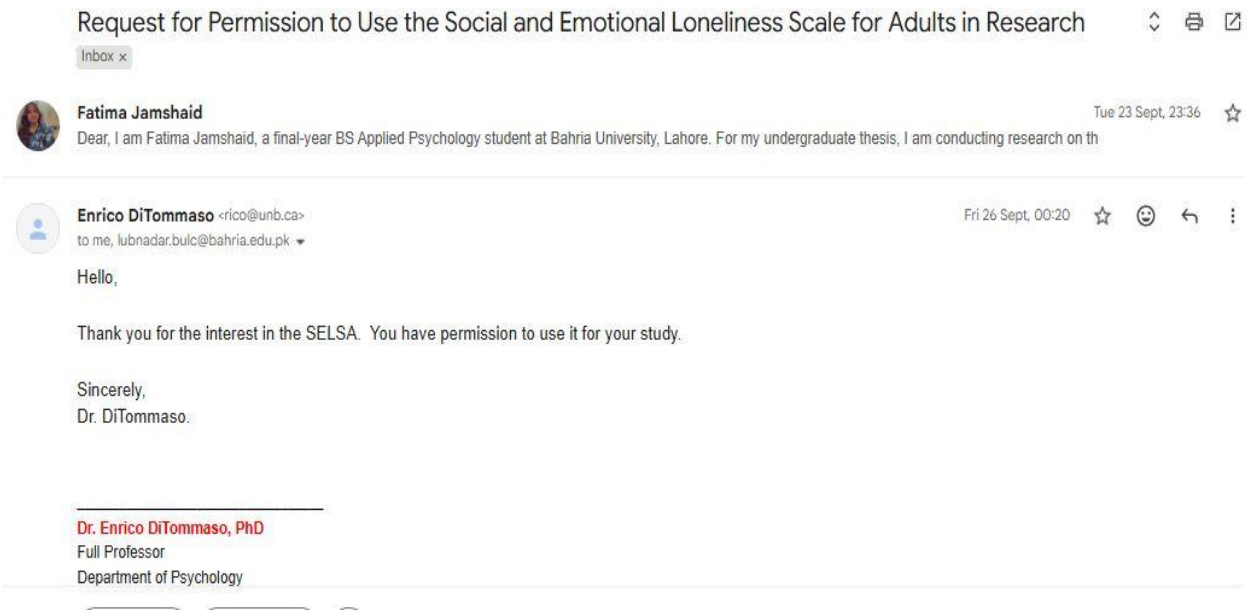
You have our permission to use the TSIS for research and educational purposes, including making an electronic version. I've attached a copy of the manuscript in which we validated the scale. In that manuscript (the pdf file), Appendix A includes the English version of the scale, including which items load on which social intelligence factor. The measurement scale we used is described on p. 9 in the Materials section for Study 2. The attached .doc file describes the procedure for scoring the TSIS.

The instructions that you may provide for the participants in your study are:
Below are a number of statements that describe people. Please indicate how well or how badly these statements describe you as you usually are. If you think the statement describes you extremely well, write a "7" on the blank line to the left of the statement. If you think the statement describes you extremely poorly, write a "1" on the blank line. If you think the statement describes you to some degree, choose the number between 1 and 7 that best describes how well you think the statement describes you. There are no right or wrong answers, but please only put one number for each response.

Good luck with your project.

Appendix E

Mail of Author Social and Emotional Loneliness Scale for Adults – Short



Request for Permission to Use the Social and Emotional Loneliness Scale for Adults in Research

Inbox ×

Fatima Jamshaid Tue 23 Sept, 23:36

Dear, I am Fatima Jamshaid, a final-year BS Applied Psychology student at Bahria University, Lahore. For my undergraduate thesis, I am conducting research on th

Enrico DiTommaso <rico@unb.ca> Fri 26 Sept, 00:20

to me, lubnadar.bulc@bahria.edu.pk

Hello,

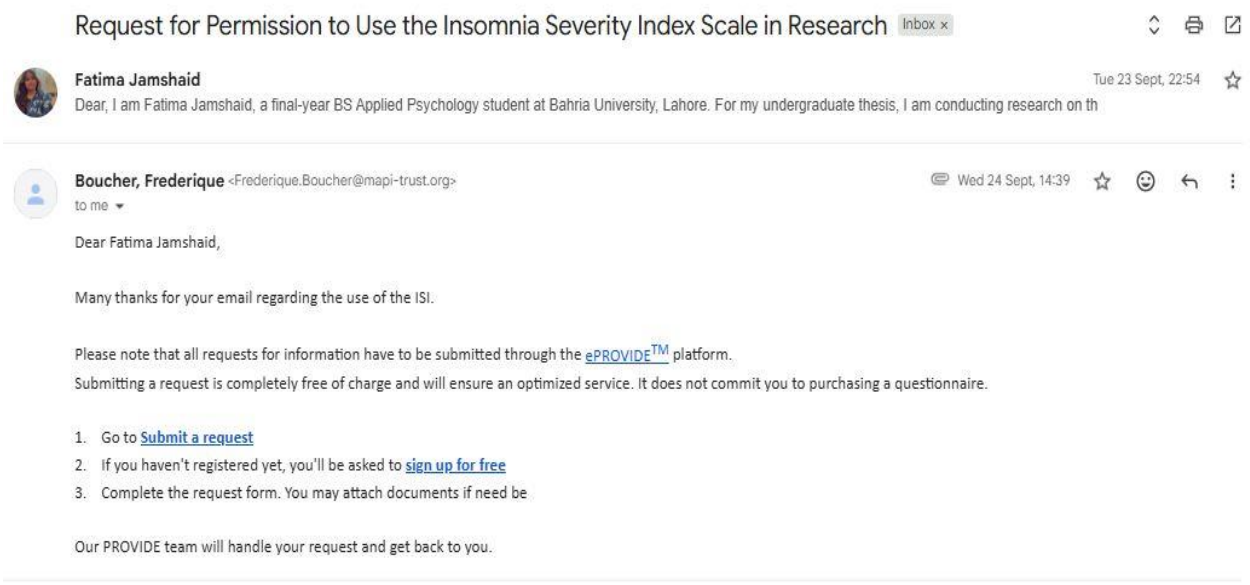
Thank you for the interest in the SELSA. You have permission to use it for your study.

Sincerely,
Dr. DiTommaso.

Dr. Enrico DiTommaso, PhD
Full Professor
Department of Psychology

Appendix F

Mail of Author Insomnia Severity Index



Request for Permission to Use the Insomnia Severity Index Scale in Research Inbox ×

Fatima Jamshaid Tue 23 Sept, 22:54

Dear, I am Fatima Jamshaid, a final-year BS Applied Psychology student at Bahria University, Lahore. For my undergraduate thesis, I am conducting research on th

Boucher, Frederique <Frederique.Boucher@mapi-trust.org> Wed 24 Sept, 14:39

to me

Dear Fatima Jamshaid,

Many thanks for your email regarding the use of the ISI.

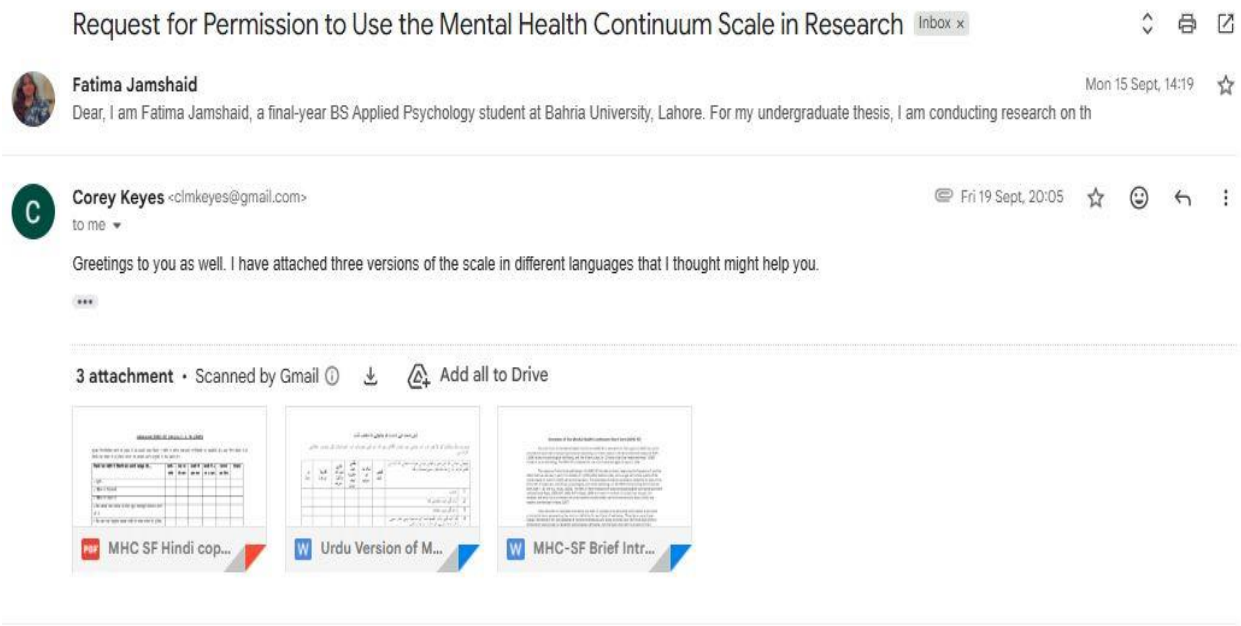
Please note that all requests for information have to be submitted through the ePROVIDE™ platform.
Submitting a request is completely free of charge and will ensure an optimized service. It does not commit you to purchasing a questionnaire.

1. Go to Submit a request
2. If you haven't registered yet, you'll be asked to sign up for free
3. Complete the request form. You may attach documents if need be

Our PROVIDE team will handle your request and get back to you.

Appendix G

Mail of Author Mental Health Continuum – Short Form



Appendix H

Tromso Social Intelligence Scale (TSIS)

Instructions: Please read each statement carefully and place a ✓ (tick) in the box to indicate the extent to which it describes you.

	Statement	Never	Hardly ever	Sometimes	Often	Very Often
1	I can predict other people's behavior.					
2	I often feel that it is difficult to understand others' choices.					
3	I know how my actions will make others feel.					
4	I often feel uncertain around new people who I don't know.					
5	People often surprise me with the things they do.					
6	I understand other people's feelings.					
7	I fit in easily in social situations.					
8	Other people become angry with me without me being able to explain why.					
9	I understand others' wishes.					
10	I am good at entering new situations and meeting people for the first time.					

	Statement	Never	Hardly ever	Sometimes	Often	Very Often
11	It appears people are often angry or irritated with me when I say what I think.					
12	I have a hard time getting along with other people.					
13	I find people unpredictable.					
14	I can often understand what others are trying to accomplish without the need for them to say anything.					
15	It takes a long time for me to get to know others well.					
16	I have often hurt others without realizing it.					
17	I can predict how others will react to my behavior.					
18	I am good at getting on good terms with new people.					
19	I can often understand what others really mean through their expression, body language, etc.					
20	I frequently have problems finding good conversation topics.					
21	I am often surprised by others' reactions to what I do.					

Appendix I

Social and Emotional Loneliness Scale for Adults – Short Form (SELSA-S)

Instructions:
Please read these statements carefully and indicate the extent to which you agree or disagree with each one as a statement about you, using the 7-point rating provided to the right of each question. Please take a moment to think about your relationships with your partner, your family, and your friends over the past year. Circle or tick the number that best reflects the degree to which each of the following statements describes your thoughts and feelings during the last year.

	Statement	Disagree Strongly	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Agree Strongly
1	In the last year I felt alone when I was with my family.							
2	In the last year I felt part of a group of friends.							
3	In the last year I had a romantic partner with whom I shared my most intimate thoughts and feelings.							
4	In the last year there was no one in my family I could depend upon for support and encouragement, but I wish there had been.							
5	In the last year my friends understood my motives and reasoning.							
6	In the last year I had a romantic or marital partner who gave me the support and encouragement I needed.							

	Statement	Disagree Strongly	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Agree Strongly
7	In the last year I didn't have a friend(s) who shared my views, but I wish I had.							
8	In the last year I felt close to my family.							
9	In the last year I was able to depend on my friends for help.							
10	In the last year I wished I had a more satisfying romantic relationship.							
11	In the last year I felt a part of my family.							
12	In the last year my family really cared about me.							
13	In the last year I didn't have a friend(s) who understood me, but I wish I had.							
14	In the last year I had a romantic partner to whose happiness I contributed.							
15	In the last year I had an unmet need for a close romantic relationship.							

Appendix J

Insomnia Severity Index (ISI)

Instructions:
For each question below, please select the number corresponding most accurately to your sleep patterns in the LAST 2 WEEKS.

	Question	None	Mild	Moderate	Severe	Very Severe
1	Difficulty falling asleep					
2	Difficulty staying asleep					
3	Problem waking up too early in the morning					
4	How SATISFIED/DISSATISFIED are you with your current sleep pattern?					
5	To what extent do you consider your sleep problem to INTERFERE with your daily functioning (e.g., fatigue, work, chores, etc.)					
6	How NOTICEABLE to others do you think your sleeping problem is in terms of impairing your quality of life?					
7	How WORRIED/DISTRESSED are you about your current sleep problem?					

Appendix K

The Mental Health Continuum – Short Form (MHC-SF)

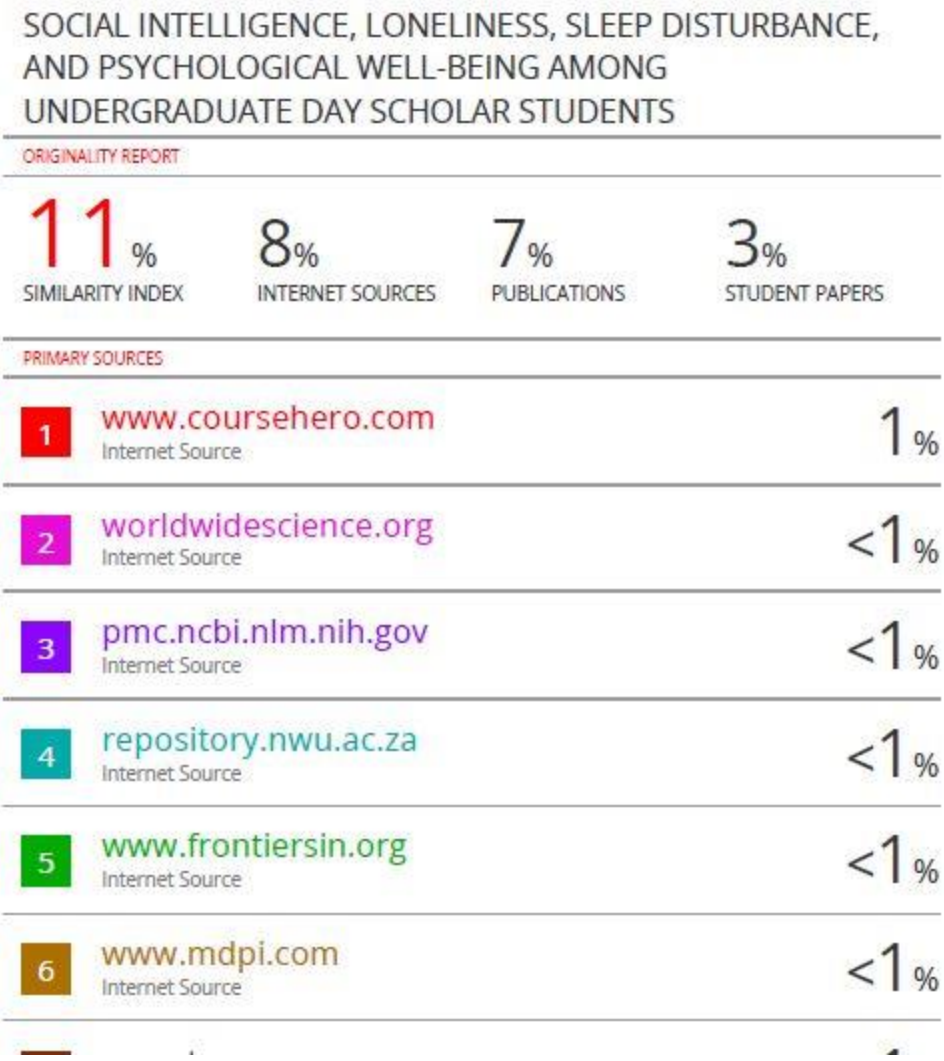
Instructions:
Place a ✓ check mark in the box that best represents your experiences and feelings during the past month.

	During the past month, how often did you feel…	Never	Once or twice	About Once a Week	2 or 3 Times a Week	Almost Every Day	Every Day
1	Happy						
2	Interested in life						
3	Satisfied with life						
4	That you had something important to contribute to society or your community						
5	That you belonged to a community (like a social group, school, neighborhood, etc.)						
6	That you were helping to make your community (neighborhood, workplace, school, etc.) a better place for more people						
7	That you are accepting of other people, even those who are different from you						
8	That you could make sense of what's going on in the world around you (in your community, your state, your country)						
9	That you liked most parts of your personality						

	During the past month, how often did you feel…	Never	Once or twice	About Once a Week	2 or 3 Times a Week	Almost Every Day	Every Day
10	Good at managing the responsibilities of your daily life						
11	That you had warm and trusting relationships with others						
12	That you had experiences that challenged you to grow and become a better person						
13	Confident to think or express your own ideas and opinions						
14	That your life has a sense of direction or meaning to it						

Appendix L

Plagiarism Report



SOCIAL INTELLIGENCE, LONELINESS, SLEEP DISTURBANCE, AND PSYCHOLOGICAL WELL-BEING AMONG UNDERGRADUATE DAY SCHOLAR STUDENTS

ORIGINALITY REPORT

11%	8%	7%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.coursehero.com Internet Source	1%
2	worldwidescience.org Internet Source	<1%
3	pmc.ncbi.nlm.nih.gov Internet Source	<1%
4	repository.nwu.ac.za Internet Source	<1%
5	www.frontiersin.org Internet Source	<1%
6	www.mdpi.com Internet Source	<1%

*% detected as AI

AI detection includes the possibility of false positives. Although some text in this submission is likely AI generated, scores below the 20% threshold are not surfaced because they have a higher likelihood of false positives.

Caution: Review required.

It is essential to understand the limitations of AI detection before making decisions about a student's work. We encourage you to learn more about Turnitin's AI detection capabilities before using the tool.

Disclaimer
Our AI writing assessment is designed to help educators identify text that might be prepared by a generative AI tool. Our AI writing assessment may not always be accurate (i.e., our AI models may produce either false positive results or false negative results), so it should not be used as the sole basis for adverse actions against a student. It takes further scrutiny and human judgment in conjunction with an organization's application of its specific academic policies to determine whether any academic misconduct has occurred.

Frequently Asked Questions

How should I interpret Turnitin's AI writing percentage and false positives?
The percentage shown in the AI writing report is the amount of qualifying text within the submission that Turnitin's AI writing detection model determines was either likely AI-generated text from a large-language model or likely AI-generated text that was likely revised using an AI paraphrase tool or word spinner.

False positives (incorrectly flagging human-written text as AI-generated) are a possibility in AI models.

AI detection scores under 20%, which we do not surface in new reports, have a higher likelihood of false positives. To reduce the likelihood of misinterpretation, no score or highlights are attributed and are indicated with an asterisk in the report (*%).

The AI writing percentage should not be the sole basis to determine whether misconduct has occurred. The reviewer/instructor should use the percentage as a means to start a formative conversation with their student and/or use it to examine the submitted assignment in accordance with their school's policies.

What does 'qualifying text' mean?
Our model only processes qualifying text in the form of long-form writing. Long-form writing means individual sentences contained in paragraphs that make up a longer piece of written work, such as an essay, a dissertation, or an article, etc. Qualifying text that has been determined to be likely AI-generated will be highlighted in cyan in the submission, and likely AI-generated and then likely AI-paraphrased will be highlighted purple.

Non-qualifying text, such as bullet points, annotated bibliographies, etc., will not be processed and can create disparity between the submission highlights and the percentage shown.