

**COMPARATIVE ANALYSIS OF INTERNET ADDICTION, LONELINESS, AND
DEPRESSION BETWEEN INDIAN & INDIAN-INTERNATIONAL STUDENTS**

A Final Thesis Report

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Abstract

Many changes have occurred in our lives because of the advancement of technology and changes in lifestyle. Internet addiction refers to the inability to control the preoccupation with using the internet. Loneliness is described as an unpleasant emotion associated with the notion that one's social interactions, particularly their quality, are insufficient to meet one's social needs. Factors such as technology and moving to another country for higher education have brought gigantic changes in the lives of international students. The present study focuses on understanding if there is any difference in internet addiction, loneliness, and depression levels of Indian and Indian-international students. We also aimed to study the correlation between internet addiction and loneliness; depression and loneliness; depression and internet addiction. The mediating role of internet addiction was also analyzed between internet addiction and depression. To investigate the differences between the two groups, a t-test was computed, and a Pearson correlation was calculated to determine the relationship between loneliness and internet addiction. A significant difference was seen in the internet addiction and depression levels of Indian and Indian International students whereas, no difference was seen in the loneliness levels of the two groups. A positive correlation was found between loneliness and internet Addiction; loneliness and depression and internet addiction and depression.

Keywords: Indian students, Indian international students, internet addiction, loneliness

CERTIFICATE

This is to certify that the thesis entitled, “**Comparative Analysis of Internet Addiction, Loneliness and Depression between Indian and Indian-International Students**” is being submitted in partial fulfillment of requirements for the award of the degree of **Master of Arts in Psychology**, submitted in the **School of Humanities and Social Sciences, Thapar Institute of Engineering and Technology, Patiala** is a bonafide work carried out under the supervision of Dr. Ipshita Chowdhury, School of Liberal Arts and Sciences, Thapar Institute of Engineering and Technology, Patiala. No part of this thesis has been submitted for the award of any other degree.



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CANDIDATE'S DECLARATION

I hereby declare that the work presented in the thesis entitled “**Comparative Analysis of Internet Addiction, Loneliness and Depression between Indian and Indian-International Students**” in partial fulfillment of requirements for the award of the degree of **Master of Arts in Psychology**, submitted in the **School of Humanities and Social Sciences, Thapar Institute of Engineering and Technology, Patiala**, is an authentic record of my own work carried out under the supervision and guidance of Dr. Ipshita Chowdhury, School of Liberal Arts and Sciences, Thapar Institute of Engineering and Technology, Patiala.

I own the full responsibility for the information and results provided in my thesis work and have taken care in all respect to honor intellectual property rights. I have acknowledged the contribution of others for using them for academic purposes. I further declare that in case of any violation of intellectual property right or copyright, I as the candidate will be fully responsible for the same. My honourable supervisors, Head of Department, and the institute should not be held for full or partial violation of any intellectual property right or copyright if found at any stage of my degree.

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Chapter 1

Introduction

1.1 Internet Addiction

The present century has witnessed substantial changes in the lives of modern man and the biggest changes in the lifestyle of humans have occurred due to the advancement of technology, especially the accessibility of the Internet. It was in the 1960s that the internet was started as a way for government researchers to send and receive information, but it wasn't until 1993 that it was made accessible for public use. Globally the number of internet users has increased many folds till 2021 (present) since its public beginning in 1993. The Internet has made our lives easier and has turned the world into a global village. No information or knowledge is far from us because of one click of internet but on the other hand, it has posed a very serious problem of its own addiction, referred to as Internet Addiction.

The term Internet addiction is formed by the combination of two words internet and addiction. Addiction is a complex problem that makes someone unable to stop using something despite its harmful consequences and can cause mental or physical harm to themselves or to the people around them. The framework of addiction comprises of Cravings, loss of control, and negative consequences as the three C's. When a person is struggling with an addiction, they usually try to deny that anything is wrong. Addiction may make someone unable to control that activity or even loose interest in other healthy activities. People can become addicted to internet just the same way they become addicted to drugs, alcohol or sex. Internet Addiction means being unable to cut the time spent on internet and compulsive need to spend more time online. People spend long hours on the applications like Instagram, Facebook etc as a result the real connections between people are becoming lesser and are replaced by virtual connections.

Shaw & Black (2008), "Internet addiction is characterized by excessive or poorly controlled preoccupations, urges or behaviours regarding computer use and internet access that leads to impairment or distress." Internet addiction can lead to poor sleep or poor nutrition etc. People spend long hours of their day on internet on activities such as online gambling, social media, streaming video apps like Netflix, YouTube; adult or pornography sites, online auctions or share

markets, video gaming, online dating etc. People become so preoccupied with these activities that they forget their daily basic activities and even neglect their routine or office work leading to low productivity at work. They lose interest in other activities just to be online. Sometimes people become addicted to such an extent that they might end up losing their jobs because they can't control their online activities at work which ultimately harms work productivity. People might forget to pick up their kids from school or feed them because they were preoccupied with the internet. Internet addicts even lose their sleep because of thoughts of the urge to be online. Online pornography addiction is posing a serious problem, if caught at work they risk getting fired and if caught at home they risk getting divorced.

Dr. I Goldberg introduced the term "internet addiction" in 1995 for problematic and tempting internet use. In 1996, Young Kimberley was the first to write a full case report on inappropriate internet usage. Young provided the first set of "Internet Addiction" diagnostic criteria. Others defined problematic Internet use as a behavioral addiction without the use of intoxicants, and Young updated her definition by including the DSM-IV criteria for pathological gambling, an impulse control disorder that is often described as a behavioral addiction, in her Diagnostic Questionnaire. In addition, the term Nomophobia is used to describe a psychological state in which people are afraid of being cut off from their cell phones. The word NOMOPHOBIA was coined based on DSM-IV classifications, and it is defined as a "fear for a particular/specific thing,"(Bhattacharya et al. 2019).

Internet addiction can pose problems such as loss of sleep, loss of interest in other activities, anxiety, or even feeling of loneliness. People use internet as an escapism from reality. Internet addiction is also a serious problem for school or university students and severely affects their productivity.

Due to Covid-19 pandemic outbreak in 2020 , people got locked inside their homes. They got cut from the outside world, one to one interaction got replaced with zoom calls or video conferencing, and whole office work just turned online as a result of which internet dependency increased. Offices and schools got completely shifted to work from home. This ultimately leads to an increase in internet addiction levels. Even the schoolwork of children got completely online because of restrictions. Increased internet usage during lockdown has posed serious problems for the citizens because their of dependency on these services. Since personal human interactions decreased

because of the pandemic, eventually people found solace to their loneliness in the online world. When compared to pre-lockdown levels, utilization of Internet services has increased from 40% to 100%. Zoom, a video conferencing service, has seen a tenfold rise in usage, while Akamai, a content delivery provider, has seen a 30% increase in content utilization (Branscombe, 2020).

Behavioral symptoms of internet addiction include loss of interest in activities that were once enjoyed, spending most waking hours online, anger or anxiety if asked to inquire about the activities indulged online, and lying or concealing about internet use. Physical symptoms of internet addiction include tiredness, insomnia, digestive problems, no more paying attention to basic hygiene, weight gain or loss, etc. Psychological symptoms include poor concentration and memory impairment. Social symptoms include irritable mood, social isolation, and problems at work or school. The correct classification of Internet addiction has been a source of debate. Internet addiction has been linked to addictive disorders, putting it in the same category as alcohol and drug misuse, according to some academics. Others have drawn a link between Internet addiction and obsessive-compulsive disorder or problems with impulse control. Compulsive computer use, pathological internet use, problematic internet use, online reliance, and even internetomania are some of the terms used to describe this phenomenon's many manifestations. The titles reflect a dispute between those who view the disease as involving any deviant or pathological computer use and those who only consider Internet use (Weinstein & Lejoyeux, 2010). Internet Addiction has been identified as a new clinical disorder because it causes work-related, relational, and other social problems. CBT has been proposed as the treatment of choice for Internet addiction, and CBT has been utilized as a part of treatment planning for addiction recovery in general (Young, 2011).

1.2 Loneliness

Loneliness has been defined as a “distressing feeling that accompanies the perception that one’s social needs are not being met by the quantity or especially the quality of one’s social relationships,” (Hawkley and Cacioppo 2010).

Loneliness is a cognitive realization of insufficiency in the association of connection with others and experiencing emotions of prolonged hollowness (Ageing, 2014; Ascher & Paquetteue, 2003).

According to Britannica, "Loneliness is a distressing experience that occurs when a person's social relationships are perceived by that person to be less in quantity and especially in quality than desired." Human beings are innately social beings and have the need to connect to fellow humans, the absence of which can lead to the feeling of loneliness. Humans generally feel lonely from time to time when they move to another city or they do not have someone to sit by their side during lunch or someone to accompany them but when this occasional feeling becomes chronic it can be problematic and a mark of concern. Loneliness is a noun that expresses both an event and a feeling or emotion. As a result, it's similar to a lot of other emotions in the way it's used. As a result, loneliness can be a very distinct and limited experience (Rubinstein, 1986). Despite being surrounded by a number of people, one may feel isolated. Many a times loneliness is confused with being alone but they both are entirely two different terms. Loneliness is a purely subjective, individual experience. Loneliness makes one pay attention to social needs. One may feel lonely when they are unable to connect with others humans on a deeper and more intimate level. When emotions of loneliness and uncomfortable social isolation last for a long time, it's called chronic loneliness. It's marked by persistent feelings of isolation, separation, or division from others, as well as an inability to connect on a deeper level. It's also linked to deep-seated sentiments of inadequacy, low self-esteem, and self-loathing. Negative feelings about oneself or the feeling of not being enough can make someone feel lonely. If someone has no to very less close friends, they can start having a feeling of loneliness because they might feel they don't have someone who truly gets them. If one is going through loneliness, they might start feeling burnout and exhausted when they have to engage socially. Continuous feelings of chronic illness can further lead to health or other related problems such as depression, sleep problems, etc. The term is often confused with solitude but solitude is a wishful state of being alone whereas loneliness means sadness from being alone which produces a feeling of bleakness or desolation. Loneliness is one of the important factors of psychological health. The lack of social ties can negatively affect an individual's health.

The need to belong refers to the belief that humans have a basic need to be welcomed into interpersonal relationships and to be a part of social groups. Because belonging is a must, humans must create and sustain a minimum number of long-term relationships. The need to belong or belongingness refers to the psychological need to affiliate with and be accepted by members of a group. One of the most powerful, ubiquitous, and important human motivations is the need to develop and maintain a minimum number of social ties. Emotion, cognition, and behavior are all

influenced by it. It defines self-esteem as an internal indicator of one's likelihood of having positive interactions (Baumeister, 2012).

1.3 International Students

International students are those who study in foreign countries for higher education. Students across the globe go to countries like Germany, the United States, Canada, the United Kingdom, Australia, etc., for better education. Many universities in some countries promote international students by paying for the most talented students to come and study on their campuses. This kind of investment yields them more benefits in the following decades. Undoubtedly, students move to another country for better education and better employment opportunities but this experience can be really exhausting and challenging for them. Many changes take place in their lives when they move from one nation to another for the purpose of education. Other than education, students also have to worry about their living in new places and how to manage their expenses. Students also feel homesick. Academic expectations in another country can be different and it might be challenging for students to adjust to the new academic system. When moving to another country, they find many cultural changes which further poses a challenge in front of students once again. They have to adjust to a completely different culture that has new expectations for them. Students across the globe go to countries like Germany, the United States, Canada, the United Kingdom, Australia, etc., for better education. Many universities in some countries promote international students by paying for the most talented students to come and study on their campuses. This kind of investment yields them more benefits in the following decades. Depressive symptoms were found to be present in 47.7% of overseas students. Age, marital status, satisfaction with living conditions, problems with studies, food, homesickness, finances, housing, and health were all found to be significant predictors of depression (Jamilah, et al. 2021). International students have to deal with challenges like social isolation, social isolation, and cultural adjustment. Communication problems caused by the professors, classmates, or staff members can also lead to academic challenges. When they participate in various group activities, they must deal with social isolation. They must tackle the various ways of thinking and acting in the new country from a cultural standpoint. To overcome these obstacles, students have relied on resources primarily supplied by the university. The universities must be prepared to better adjust these students and their needs (Neumann, 2015).

Currently, the trend of moving to foreign nations for better education and employment opportunities is progressing very rapidly among the Indian youth. As per the report in the Times of India, 71k students went abroad in 2021 by April, after a drop of 55% in 2020. According to the Bureau of Immigration's data, Andhra Pradesh sends the highest number of students abroad for higher education. Canada, Germany, Australia, the United States, and Italy are the top five countries where Indian students choose to go abroad according to data collected by study portals. Even from Punjab thousands of students go to foreign nations like Australia, Canada, the United States, and England go for higher education every year. After moving to foreign countries, drastic changes take place in the lives of the students from basic lifestyle changes to psychological demands happening due to emotional demands. The changes in the lives of international students are enormous and can further make them prone to being addicted to internet or make them feel lonely. In this study, we aim to study and differentiate the internet addiction levels of students living in India and those who have moved to foreign nations for higher education (International Students).

The aim of the present study is to study internet addiction and loneliness in students.

The study has three objectives: to study differences in internet addiction levels of Indian students overseas in comparison to Indian students studying in India; to study differences in loneliness levels of Indian students overseas in comparison to Indian students studying in India and to study the correlation in Internet addiction and loneliness.

1.4 Depression

Depression is a common and serious mood disorder. It is also known as major depressive disorder or clinical depression. Those suffering from depression experience persistent feelings of sadness, and hopelessness and lose interest in activities that were once enjoyable. Depression also leads to physical symptoms such as chronic pain or digestive issues. To be diagnosed with depression, symptoms must be present for at least two weeks. In layman's language, depression is often confused with sadness which is a normal human emotion that everyone experiences at some point in his or her life which can be experienced during different points like the death of a loved one, divorce, or any such event. A person suffering from depression feels sad or hopeless everything

and the ability to experience joy or pleasure is lost. It's important to note that stress is not a mental health issue. It usually has a clear catalyst, such as a move, divorce, or illness. As life events alter, stress usually dissipates. However, if stress is not relieved over an extended length of time, it can develop mental health issues such as anxiety and depression. Depression is a medically recognized mental health problem that requires treatment. While stress is often linked to life events, depression can strike even when things appear to be going well — and it can continue for years. The earliest age at which symptoms of early-onset childhood depression seem to appear is three. Anhedonia is defined as a decline in play enjoyment in young children. Pre-pubescent children, rather than the conventional symptoms of depression, were thought to have hidden symptoms such as stomach problems or acting out. Studies that validated depression in pre-pubescent children disputed this assumption, revealing that young children experience more of the fundamental signs of depression that adolescents and adults have, such as sad or irritable mood, sleep, and food disorders. (Brain & Behavior research foundation, 2007). According to the American psychiatric association, several factors can play a role in depression such as biochemistry which means certain chemicals in the brain may contribute to depression; genetics which means depression can run in families; personality which means that people with low self-esteem, who are easily stressed, or who are gloomy in general appear to be more likely to suffer from depression and environmental factors which means some people may be more susceptible to depression if they are constantly exposed to violence, neglect, abuse, or poverty. According to Smith & Blackwood (2018) Affective illnesses can strike at any age, but it's becoming obvious that people with recurrent and severe mood disorders generally have their first episode of sickness when they're very young. At this age, the clinical presentation of depression might be atypical, and it's typically worsened by personality issues and substance abuse. A large number of young persons with recurrent depression will develop bipolar disorder, which has serious implications for future pharmacological therapy options. According to Gandhi & Kishore (2020) in India, an estimated 57 million people (18% of the global estimate) suffer from depression.

The aim of the present study is to study internet addiction, depression, and loneliness in students of Indian origin.

The study has six objectives: to study differences in internet addiction levels of Indian students overseas in comparison to Indian students studying in India; to study differences in loneliness

levels of Indian students overseas in comparison to Indian students studying in India; to study differences in depression levels of both the groups of students and to study the correlation between internet addiction and loneliness; internet addiction and depression; and depression and internet addiction

Chapter 2

Review of Literature

2.1 Internet addiction

Young was the first one to propose the notion. Internet addiction was defined as “an individual’s inability to control their Internet use, which in turn leads to feelings of distress and functional impairment of daily activities.”

Young (1996), conducted research to define compulsive internet usage, outlined the evolution of the subject's online addiction, and discuss the consequences of such addicted behaviour on internet users. The author interviewed a 43-yr old homemaker is part of a wider research project looking into internet addiction. This case suggested that certain risk. According to this case study, various risk factors may be linked to the development of Internet addiction. Firstly, the type of online application used by the user may be linked to the development of internet abuse. The subject in this example grew addicted to chat rooms, which is consistent with previous research that has revealed that customers prefer highly engaging programmes available on the Internet. Second, when utilising the internet, this subject reported a feeling of excitement similar to the "high" experienced by those who become hooked to video games or gambling. This means that the level of excitement felt by an online user when using the Internet may be linked to Internet addiction.

Young (1996), conducted a study to look into whether or whether there is such a thing as Internet addiction, as well as the extent to which it might cause problems. The criteria for pathological gambling as outlined by the DSM-IV were adopted for this investigation (APA, 1994). This criterion was used to categorise case studies of 396 dependent Internet users (Dependents) and a control group of 100 non-dependent Internet users (Non-Dependents). Qualitative research revealed that the two groups have considerable behavioural and functional usage differences. The clinical and social ramifications of pathological Internet use were examined. Individuals met a set of diagnostic criteria that included evidence of impulse control problems that were similar to pathological gambling symptoms. Dependents claimed that their failure to moderate and manage their use of the Internet caused them to have moderate to severe problems in their daily lives. in the majority of situations. Their failed efforts to manage their usage could be likened to alcoholics

who are unable to control or stop their excessive drinking despite interpersonal or vocational challenges, or compulsive gamblers who are unable to stop wagering despite enormous financial deficits.

Lin & Tsai (1999) conducted research with High schoolers in Taiwan on Internet addiction. They developed Internet addiction scale for Taiwan high schoolers. Addicts defined by 1SAT used more Internet applications and viewed the Internet to have greater negative effects on their lives than addicts diagnosed by Young (1996) and non-addicts. Addicts' use of the Internet had a negative impact on their daily routines, health, parental relationships, and academic accomplishment. The Internet, on the other hand, improved their teacher and peer relationships.

Lai et al. (2013) studied is it possible for internet use to have a beneficial or detrimental impact on interpersonal relationships?? They used the Information Usage Questionnaire (IUQ) to explore the extents of Internet usage and the customised Internet addiction Scale (IAS) was used to determine the extents of Internet addiction in individuals. Social acceptability, peer relationships, teacher-student relationships, and parent-child relationships were all studied using the interpersonal relationship scale (IRS). In terms of social engagement, video viewing, and information searching, Internet usage was determined to have a favourable impact on interpersonal relationships. It implied that increasing Internet use for social engagement, gaming, and information gathering could improve users' interpersonal relationships. Furthermore, Internet addiction has a severe impact on interpersonal relationships. The use of the Internet for social contact, pornographic website surfing, game playing, and video watching has all been linked to internet addiction. Information seeking, on the other hand, had no effect on Internet addiction. That is, being addicted to social contact, porn-website surfing, gaming, and viewing videos on the Internet resulted in a deterioration of interpersonal relationships.

A study was done by Demir & Kutlu (2016) to study the mediating role of internet addiction in relationship of two other variables loneliness and depression. A positive correlation was seen among the three variables, which meant a positive correlation between depression and loneliness. According to the findings, loneliness predicts online addiction positively and considerably, and internet addiction predicts sadness in the same way. The link between loneliness and depression can be explained to some extent by internet addiction.

2.2 International Students

An exploratory study was done to study Internet use among college students by Anderson (2001). A total of 1300 college students were polled in classrooms at eight different academic institutions to see how their internet use impacted their social and academic life. Average online time of Internet use per day for each activity. The average online time of Internet using students was found to be 100 minutes per day. The findings were compared with those from a recent survey of all internet users that reported average daily Internet use of 15 minutes per day. A comparison was done of time spent online between students of different academic majors. It was found hard science students spent more time online than the arts and sciences group or the liberal arts group. The effects of Internet use in five areas academic achievement, meeting new people, participating in extracurricular activities, sleep was assessed. Surprisingly, only one factor—sleep patterns—differentiated the high-use and low-use groups. Although respondents did not believe that their Internet use had a significant negative impact on all aspects of their lives, the high-use group did report more negative effects than the low-use group. Students who used the Internet excessively were substantially more likely than their peers to say that it had a negative impact on their academic work, meeting new people, and sleeping patterns. They were also more likely to report spending more than 3 hours online in a row twice in the previous week, getting less than 4 hours of sleep on multiple occasions due to online activity, looking for an alternative way to go online when they weren't at school, and using online activity to feel better when they were "down."

Anandi & Gududur (2018) conducted a cross-sectional study among 102 under-graduate medical students to determine the prevalence of technology addiction and reliance, as well as the factors that contribute to it, and health problems among those addicted. They found 60% of the subjects to be addicted to some technical devices. Feeling nervous/anxious was the most prevalent symptom mentioned by all participants in the study, followed by sadness or depression, reading difficulties, physical discomforts, breathing problems, thinking or memory problems, and speech and hearing problems. Participants who spent more than 7 hours each day using technology devices reported higher health symptoms. Feeling anxious/nervous was the most common symptom reported among addicted respondents, followed by depressed symptoms and bodily discomforts. Individuals with Internet Gaming Disorder have been reported to suffer from severe negative repercussions as a result of their gaming activities, such as exhaustion and loss of relationships.

2.3 Loneliness

According to a study conducted by Hartung & Renner, 2014, Individual differences in the need to belong have been discovered to modulate the link between loneliness and current health. Lonely pupils with a high desire to belong reported more sick days than kids with a low need to belong. The degree of the need to belong, on the other hand, had no influence on pupils who did not feel lonely. People with a strong desire to belong, on the other hand, appear to suffer from loneliness and become unwell more frequently, whereas people with a weak need to belong appear to cope better with loneliness and are comparatively healthy. The findings suggest that social isolation does not affect everyone in the same way; rather, the match between a person's social context and their needs appears to be critical for their functioning.

A study was done with the university students in Turkey by Girgin(2009) to evaluate the factors affecting loneliness and hopelessness. UCLA Scale of loneliness was used for data collection. It was found out that they enjoyed their time at university, but the limited number of friends and parental attitudes added to their sense of hopelessness. Furthermore, there was a substantial link between the degree of loneliness and the degree of hopelessness. at male participants suffered more frequently from loneliness and helplessness.

Another study on loneliness was done by Beutel et al. (2017) to study prevalence of loneliness in the general population, its determinants and relations to mental health. To evaluate loneliness, this study used a large and representative German adult population. A total of 10.5 percent of participants said they were lonely in some way (4.9 percent slight, 3.9 percent moderate and 1.7 percent severely distressed by loneliness). Loneliness decreased as people got older. Loneliness was more prevalent in women, those who did not have a partner, and those who were single and did not have children. Loneliness was linked to depression (OR = 1.91), generalised anxiety (OR = 1.21), and suicide ideation (OR = 1.35), even after controlling for demographic characteristics and other sources of distress. Lonely people smoked more and went to the doctor more regularly.

According to a study done by Weeks et al. (1980) it was found that state of loneliness and depression co-occur and both states are correlated. The findings showed that loneliness and depression are linked but distinct notions; none is a direct cause of the other, but both are likely to have common origins; and both are very stable over a 5-week period.

A study was done by Oyeniya et al. (2019) on international students in United States. A total of 95 international students from two universities in the United States were included in the study. In terms of college adjustment, the findings revealed a statistically significant difference between first-year graduate and undergraduate international students. Further investigation revealed substantial connections between the predictor factors - resilience, relational skills, and acculturative stress - and the criterion variable - adjustment to college - with the latter accounting for 55 percent of the variation.

Koyuncu et al. (2012), assessed internet addiction and loneliness in secondary and high school students. Cross-sectional analysis was done among secondary and high school students. 1157 students participated in the study. To assess internet addiction, Internet addiction scale was used and to evaluate loneliness University of California, Los Angeles Loneliness Scale was used. They found out internet addiction to be a major health problem in students of middle and high school. A positive correlation was also seen in loneliness and internet addiction.

Whereas, in another study done by Hasnain (2016) among students of Shkodra, they found a mild negative correlation in Internet Addiction and loneliness which meant students with internet addiction had significantly lower rates of loneliness. It's possible that people who spend more time online have the potential to form personal ties with other online users, even if these relationships are fragile, and therefore minimise their social loneliness.

Yao & Zhong (2014) conducted another study to investigate the causal priority in observed empirical correlations between Internet addiction and other psychological issues. In Hong Kong, a cross-lagged panel survey of 361 college students was undertaken. Excessive and unhealthy Internet use, according to the findings, increases feelings of loneliness over time. Although depression and Internet addiction had a moderate and positive bivariate connection at each time point, the relationship was not significant in cross-lagged analysis. This study also discovered that online social contacts with friends and family were ineffective in alleviating feelings of loneliness when compared to offline social interactions. Furthermore, while an increase in face-to-face interactions may assist to lower symptoms of Internet addiction, this benefit may be offset by an increase in online social interactions as a result of excessive Internet use. The study's findings demonstrated a concerning vicious cycle between loneliness and Internet addiction when taken as a whole.

Karapetsas (2015) conducted a study with Greek adolescents to examine the relationship between internet addiction and loneliness. Greek version of Internet Addiction test by Young was used to examine levels of internet addiction. On the other hand, a self-administered depression questionnaire The Children's Depression Inventory (CDI) was employed to investigate the link between loneliness and Internet addiction among young individuals. According to our findings, there is a strong link between loneliness and Internet addiction. At CDI, children who were determined to be addicted to the internet had highly statistically significant differences from children in the control group. According to the findings of a survey, pupils who are addicted to the Internet have much higher rates of loneliness. The fact that rates of internet addiction among adolescents are increasing exponentially, together with the greatest rates of loneliness among hooked pupils, necessitates research into the subject. According to their findings, there is a strong link between loneliness and Internet addiction. At CDI, children who were determined to be addicted to the internet had highly statistically significant differences from children in the control group.

Koo, Nyunt & Wang (2021) conducted a study with international students in United States to investigate the relation between Internet Addiction and several associated factors for which one hundred and fifty-seven international students completed five questionnaires. They found out that international students who had English as their second language were more addicted to internet than those who had English as their first language. This may be because they are socially isolated and maybe struggling academically because of English as their second language, so they turn to internet to get support from their family and friends in their host country or to find information about their native country or to get access to entertainment in their native language. Such dependence may cause overuse of internet which may ultimately lead to internet addiction.

An Australian study by Marginson et al. (2008) tried to investigate the factors which cause loneliness in international students. It was found that 88% of the students who participated in the study were addicted to internet and turned to personal or social networks. Among those who specified the causes of their loneliness, the main reason was the lack and absence of intimate persons and lack of a social fit. Difficulty in securing social networks was also referred by a small number of international students who participated in the study.

Sherry, Thomas & Chui (2010) examined the international students' experiences at The University of Toledo, where international students make up about 10% of the student body. To gain proper insight of experience of international students both open-ended and close ended questions were used in the survey. The survey was answered by 121 International students and it was found that international students, expressed the problem of language issues, problem in understanding new cultural norms, social support, financial problems and friendships and acquaintances. Many respondents said that The University of Toledo did not understand their culture. When it came to pinpointing specific areas where the University could enhance its response to international students' cultural requirements, several answers were blunt. Many respondents felt to be excluded from the local community.

A study was conducted by Oei & Notowidjojo (1991) to study depression and loneliness in overseas students in which sample was divided into four experimental groups which were: Australian students raised in Brisbane, Australian students raised outside Brisbane, overseas students with the residence of more than one year and overseas students with the residence of less than one year. Discriminate analysis revealed that international students were substantially more likely than Australian students to have moderate to severe clinical depression and loneliness.

2.4 Depression

Another study was conducted by Wang et al. (2021) to study the relationship between loneliness and depression among Chinese Junior High School Students. The researchers wanted to see if internet gaming disorder, social networking, and generalized pathological internet usage (GPIU) had any effect on the relationship between loneliness and depression. A structural equation model revealed that (a) loneliness had a significantly positive path coefficient to depression, (b) loneliness could not predict depression directly through GPIU, but (c) loneliness could predict depression through internet gaming disorder to GPIU, (d) loneliness could predict depression through social network use to GPIU, and (e) loneliness could not predict depression through internet gaming disorder to social network use to GPIU.

A study by Lee et al(2020) aimed to study the association between loneliness and depressive symptoms among adults aged 50 years and older; a 12 year population-based cohort study. The study found that a 1-point increase in loneliness score was associated with a 0.16 increase in

depressive symptom severity score. The population attributable fraction for depression related with loneliness was predicted to be 18 percent at one year and 11 percent at the final follow-up (wave eight), implying that 11–18 percent of occurrences of depression may be avoided if loneliness were eradicated. Although effect sizes were lower with prolonged follow-up, associations between loneliness and depressed symptoms maintained after 12 years.

A study was conducted by Rabadi et al. (2017) among university students in Jordan to study the relationship between depression and internet addiction. This study looked at the impact of Internet addiction and the link between it and the development of depression, stress, anxiety, and psychological symptoms among university students. The findings of the study reveal that the link between the two disorders is complex, and that Internet addiction can lead to the development of additional psychological problems. The study found that Internet addiction or depression increases the likelihood of both mental and addictive problems.

Chapter 3

Research Gap, Motivation for the Study, Objectives, Conceptual Framework, and Hypotheses

3.1 Research Gap

Although, there is a lot of research done on internet addiction, loneliness, and depression but very less studies have examined internet addiction specifically in international students. In Indian context, there is no such study available that tries to examine and compare the internet addiction, loneliness and depression levels of Indian International students (Indian students overseas) to the Indian students studying in their own country: India.

3.2 Motivation for the Study:

Every year thousands of Indian students move overseas to avail better educational and employment opportunities which places them into a completely new educational system and culture. India has a collectivistic culture as compared to the individualistic culture prevalent in most countries like Australia, The United States, Canada, New Zealand, Germany, etc. These sudden and big changes in the lives of students can have a huge impact on them and their behavior. Hence, stemmed the motivation for this study is to see if these changes play any role in making the students addicted internet or make them feel lonelier in comparison to those students studying in their native country: India. While moving to another country students have to face a number of challenges. This study examines if those challenges are big even to create high depression levels among Indian-international students in comparison to Indian students studying in India.

3.3 Objectives of the Study:

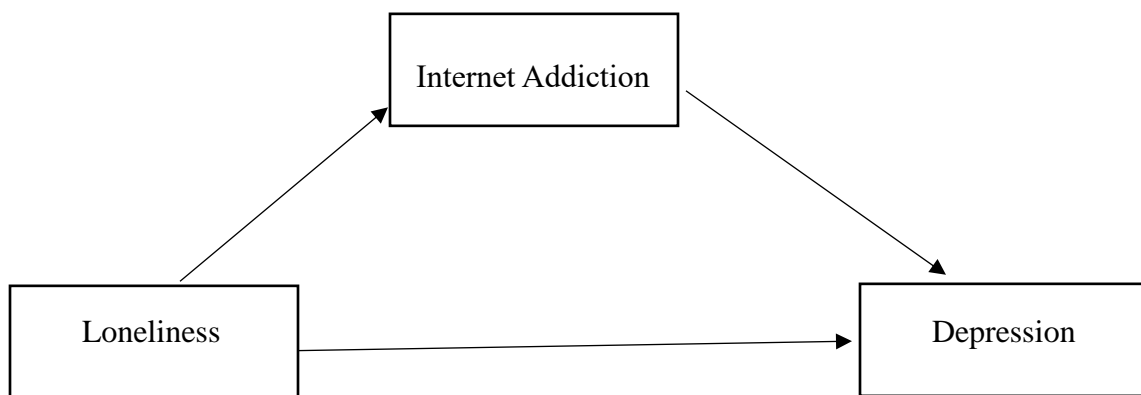
1. To study differences in internet addiction levels of Indian students overseas in comparison to Indian students studying in India.
2. To study differences in loneliness levels of Indian students overseas in comparison to Indian students studying in India.

3. To study the differences in depression levels of Indian students overseas in comparison to Indian students studying in India.
4. To study the correlation between Internet addiction and loneliness.
5. To study the correlation between depression and internet addiction
6. To study the correlation between loneliness and depression.
7. To study the mediating role of internet addiction between loneliness and depression.

3.4 Conceptual Framework

Loneliness is related to both internet addiction and depression. When the relationship between loneliness and depression is considered, internet addiction can have a mediator role in the relationship. Therefore, it is predicted that individuals who are lonely will be internet addicts with higher rates and thus experience even more depressive feelings. The purpose of this study is to examine the mediation role of internet addiction in the relationship between loneliness and depression.

Figure 1 shows the general proposed pathway between internet addiction, loneliness and depression.



3.5 Rationale and Hypotheses:

Technology has caused drastic changes in the lives of people, especially students. The trend of moving abroad to pursue higher education has impacted many aspects of the lives of international students. Hence, it is necessary to understand if they are more depressed or lonelier in comparison to Indian students studying in India. These psychological changes are huge enough to impact other areas of life. Therefore, it is important to study if there are any differences in internet addiction levels of both groups of students.

H1: Indian-international students will be more addicted to the internet in comparison to Indian students studying in India.

H2: Indian-international students will be lonelier in comparison to Indian students studying in India.

H3: Indian-international students will score higher on depression in comparison to Indian students studying in India.

H4: There will be a positive correlation between internet addiction and feelings of loneliness.

H5: There will be a positive correlation between depression and internet addiction.

H6: There will be a positive correlation between loneliness and depression.

H7: Internet addiction will act as a mediator between loneliness and depression.

Chapter 4

Methodology

4.1 Sample:

A total of 100 students comprising 50 Indian students overseas and 50 Indian students studying in India participated in the study. All the participants were in the age group of 18-25 years old. Participants were either students or working students. Those who weren't studying during the time of the survey were excluded from the study as the current study focuses on students. Also, those who weren't in the age group of 18-25 were also excluded so that uniformity could be ensured.

4.2 Sampling Technique

Convenient sampling and snowball sampling techniques were employed.

4.3 Design:

The design of the research was correlational and comparative. Correlational analysis was done to understand the correlation between levels of internet addiction and loneliness; loneliness and depression; internet addiction and depression. Loneliness was taken as the independent variable and internet addiction was taken as the dependent variable while studying the correlation between internet addiction and loneliness. While studying the correlation between loneliness and depression, loneliness was taken as an independent variable and depression was taken as the dependent variable. While studying the correlation between internet addiction and depression, internet addiction was taken as an independent variable, and depression was taken as the dependent variable. Mediation analysis was performed to study the mediation role of Internet addiction between loneliness and depression.

Comparative analysis was done to compare the internet addiction, loneliness, and depression levels of two groups of Indian students: Indian students studying in India and Indian students studying abroad (Indian International students).

4.4 Tools Used:

4.4.1 Internet Addiction Test by Young

The Internet addiction test by Young was used to test the internet addiction levels of students. The test was developed by Kimberley Young in 1996. The test contains 20 statements that are related to assess the internet addiction levels. It is a self-report type test. The responses are on the 5-point Likert scale from 0 to 5 with responses like not applicable, rarely, occasionally, frequently, often, and always. The participants are required to choose the option that best describes them. The choices are given as 0, 1, 2, 3, 4, and 5 in the same order. The responses are based on how the participant felt most of the time during the previous month. The statements were referred to offline situations unless specified otherwise. Subjects who earn a score of 80 or more are classified as "internet-addicted," while those who receive scores of 50 to 79 are classified as "having partial symptoms," and those who receive fewer than 50 points are classified as "not showing symptoms." IAT by Young has high face reliability. The first factor had a Cronbach internal reliability coefficient of .91, the second factor of .87, the third factor of .89, the fourth factor of .905, and the test as a whole had a Cronbach internal reliability coefficient of .905. The test had a Spearman-Brown value of .86 and a Guttman Split-Half value of .85. All of these coefficients were acceptable for each element and the test as a whole, indicating that the test exhibited internal reliability (Keser, et al., 2013).

4.4.2 UCLA Loneliness Scale

The UCLA Loneliness scale was developed by a psychologist named Daniel Russell in 1996. The test contains 20 items and is used to determine how often a person feels cut off from others. The test contains 4-point rating scale where 1= never; 2= rarely; 3= sometimes; and 4 = always. The participants are required to choose the option that best describes them. The test contains questions such as "How often do you feel alone?" and "How often do you feel close to others?" Item numbers 1, 5, 6, 9, 10, 15, 16, 19, and 20 are positively worded items and are reverse scored. Scores for each item are summed together and higher scores determine higher levels of loneliness. UCLA Loneliness Scale is a highly reliable test of loneliness, in terms of both test-retest reliability where $r = .73$ and internal consistency where coefficient alpha ranges from .89 to .94 (Russell, 1996).

4.4.3 Beck's Depression Inventory

The Beck Depression Inventory was developed by Aaron T. Beck in 1996. It is a 21-question multiple-choice self-report inventory that is one of the most extensively used psychometric tests for assessing depression severity. The BDI test involves a 21-item self-report utilizing a four-point scale ranging from 0 (no symptom) to 3 (extremely strong symptom). It takes about 5 to 10 minutes to finish the test. Each question contains four statements out of which the scorer has to select the one that best describes him. It contains statements such as "I do not feel sad"; "I feel sad the time and I can't snap out of it" etc. There is no time limit for the test. Scores for each item are summed together and higher scores determine higher levels of depression. The highest possible total for the whole test would be sixty-three. This would mean the subject circled number three on all twenty-one questions. Scores between 1-10 show normal ups and downs whereas scores above 40 mean extreme depression. It has a high week test-retest reliability of $r = 0.93$ (suggesting robustness against daily variations in the mood) and an internal consistency of $\alpha = .91$. (Jackson Koku, 2016)

4.5 Technology

Due to the inability to travel abroad to collect the sample of international students, the samples were collected online via google forms. SPSS was used for statistical analysis.

4.6 Procedure

The participants were sent the questionnaire through e-mail and other social networking sites. Some participants who could be reached personally filled the questionnaire in the presence of the administrator. Informed consent was taken from the participants, upon agreeing to which they participated in the study. They were informed that their data will be used only for research purposes and will be kept completely confidential. Participants were asked to provide their demographic information, followed by questions such as how much time was being spent online, and activities they were mostly indulged in while being online. Followed by these subjective questions, the participants responded to questions on the Internet Addiction scale, Loneliness scale, and Beck's Depression Inventory. The subjects were asked to select the option that most applies to them. The participants were instructed in the beginning that there are no right and wrong answers. No time limit was set for responding to the scales.

4.7 Analysis

The data analysis was done using Statistical Package for Social Science (SPSS-21.0) where descriptive statistics (mean and standard deviation), t-test, correlation and regression were computed.

Smart PLS was used to compute the mediation analysis to study the mediating role of internet addiction between loneliness and depression.

Chapter 5

Results

For the data analysis, the mean, standard deviation, correlation, regression, t-test, and mediation analysis were computed. The Independent variable used in the study was loneliness from which internet addiction was predicted. A comparative analysis was done to compare levels of internet addiction and loneliness in two groups of Indian students. Correlation, descriptive statistics, t-test, correlation, and regression were computed using SPSS 21.0.

5.1 Loneliness, Internet Addiction, and depression in Indian students and Indian international students.

Table 5.1: Descriptive statistics

Variable		N	M	SD
Loneliness	Indian Students	50	42.87	12.064
	Indian-international students	50	44.05	11.818
Internet Addiction	Indian students	50	43.17	17.230
	Indian-international Students	50	54.19	17.357
Depression	Indian Students	50	42.39	12.163
	Indian-international students	50	44.39	11.163

Table 1 shows the descriptive statistics for loneliness and Internet addiction in Indian students and Indian International students. The mean and standard deviation for loneliness of Indian students was found to be 42.87 and 12.064 respectively. The mean and standard deviation for loneliness of international students was found to be 44.05 and 11.818 respectively. The mean and standard deviation for internet addiction of Indian students was found to be 43.17 and 17.230 respectively. The mean and standard deviation for internet addiction of Indian international students was found to be 54.19 and 17.357 respectively. The standard deviation of loneliness of Indian students was found to be 12.064 which was a little higher than the standard deviation for Indian-international students. The mean value of both internet addiction and loneliness of Indian-international students was higher than Indian students. The mean and standard deviation for depression in Indian students was found to be 42.39 and 12.163 respectively. The mean and standard deviation for depression for Indian-international students was found to be 44.39 and 11.163 respectively.

5.2 Correlation

Table 5.2: Correlation between internet addiction, loneliness and depression

Variable	Internet Addiction	Loneliness	Depression
1. Internet Addiction			
2. Loneliness	.531**		
3. Depression	.654**	.556	

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at 0.05 level (2-tailed).

Table 2 shows the correlation between Internet Addiction and Loneliness; depression, and loneliness; and internet addiction and depression. Internet addiction was found to have a significant positive relationship with loneliness ($r=.531$, $p<0.01$). It means higher loneliness can lead to higher internet addiction. Depression was found to have a significant positive correlation with loneliness ($r=.556$, $p<0.01$). It means higher loneliness can lead to higher depression scores. Depression was also found to have a significant positive correlation with Internet addiction ($r=.654$, $p<0.01$). It means higher Internet addiction levels can lead to higher depression scores.

5.3 t-test

Table 5.3.1 *Difference in levels of internet addiction in Indian students and Indian International Students*

	N	df	t	Sig.
Internet Addiction	100	98	3.790	.00

Table 5.3.1 shows ($t = 3.790, p < .05$) which is significant. Hence, a significant difference was seen in internet addiction levels of Indian and Indian-international students.

This indicates the two groups of students that Indian students and Indian-international students have differences in their internet addiction levels. Indian-international students scored higher on internet addiction in comparison to Indian students.

Table 5.3.2 *Difference in loneliness levels in Indian students and international students (Indian International students)*

	N	df	t	Sig.
Loneliness	100	98	.848	.234

Table 5.3.2 shows ($t = .848, p > 0.05$) which is not significant. Hence, no significant difference was seen in loneliness levels of Indian students and Indian-international students.

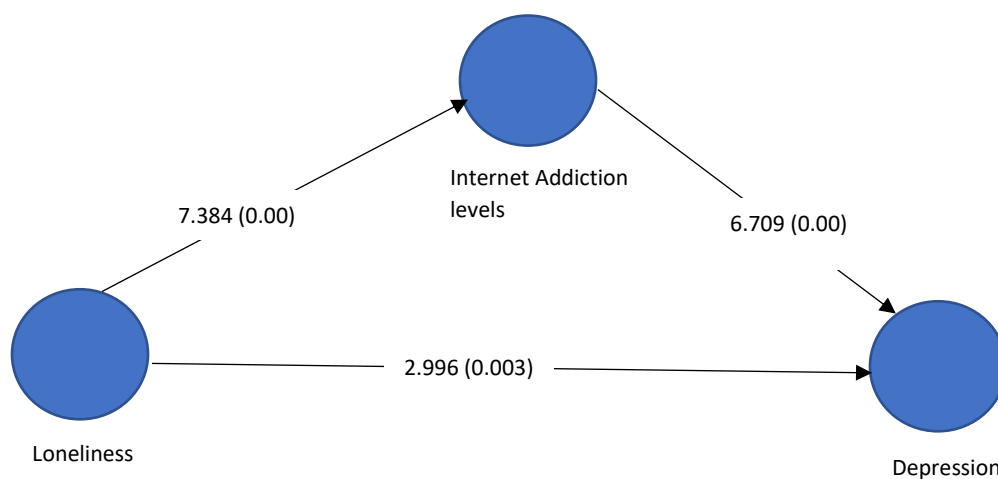
Table 5.3.3 shows the t-test computed to find out differences in depression levels of Indian and Indian-international students.

	N	df	t	Sig.
Depression	100	98	3.117	.002

Table 5.4.3 shows ($t=3.117$, $p<.05$) which is significant. Hence, a significant difference was seen in the depression levels of Indian and Indian-international students.

5.4 Mediation Analysis

Figure 2: Path model showing results of Mediation analysis



The above figure shows the standardized regression weights and p values for each path.

Here, the mediation analysis has been performed wherein the mediating effect of Internet addiction has been observed. The direct as well as indirect path coefficients can be delineated from the figure.

Table 5.4.1- Path Coefficients

		Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Internet Addiction Levels	→ Depression	0.520	0.524	0.078	6.709	0.00
Loneliness	→ Depression	0.273	0.269	0.091	2.996	0.003
Loneliness	→ Internet Addiction Levels	0.539	0.540	0.073	7.384	0.000

Table No. 5.4.1 indicates the Path Coefficient Values between Loneliness (Independent Variable) Depression (Dependent Variable) and Internet addiction levels (mediating variable). It is directly clear from the table that there is significant direct relationship between internet addiction levels and depression; Loneliness and depression; and loneliness and internet addiction.

The T-statistics of pathway from Internet Addiction to Depression came out to be, ($t= 6.709$), which is significant. Therefore, there is direct effect of Internet Addiction on depression. Similarly, the T-statistics of pathway from loneliness to depression came out to be, ($t = 2.996, p > 0.05$), which is also significant. Therefore, there is a significant relationship between loneliness and depression. Further, the t-statistics from loneliness to internet addiction levels came out to be, ($t= 7.384, p < 0.05$), which is significant. Hence, there is also a significant relationship between loneliness and internet addiction levels.

Table 5.4.2 Specific Indirect Effect

			Original Sample	Sample Mean	Standard Deviation	T statistics	P Values
Loneliness	→ Internet Addiction Levels	→ Depression	0.281	0.283	0.059	4.774	0.000

Table No. 5.5.2 represents the Specific Indirect pathway. It is clear from the table that association among loneliness, internet addiction and depression came out to be significant (t = 4.774, p<0.25).

Table 5.4.3 Total Indirect Effect

			Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Internet Addiction Levels	→	Depression					
Loneliness	→	Depression	0.281	0.274	0.057	4.904	0.00
Loneliness	→	Internet Addiction Levels					

Table 5.4.3 represents the Total indirect effect. The total indirect effect came out to be significant (t= 4.904, p<0.25).

Table 5.4.4 Model Fit Summary

	Saturated Model	Estimated Model
SRMR	0.000	0.000
NFI	1.000	1.000

Table 8 represents the model fit Summary. Many researchers have indicated a need to develop a comprehensive understanding of the varied values obtained in Smart PLS. Nevertheless, the SRMR value indicated the proposed model to be a good fit.

CHAPTER 6

DISCUSSION

This study was undertaken with the aim to study internet addiction and levels of loneliness among students of Indian origin. Two groups of Indian students were studied: Indian students who were studying in India and Indian International students; students who opted to go abroad for their higher education.

6.1 Indian-international students will be more addicted to the internet in comparison to Indian students studying in India.

The first hypothesis stated that Indian International students will be more addicted to the internet as compared to those studying in their native country India. A t-test was computed to study the difference in the levels of internet addiction in both the groups of Indian students. The t-test computed was found to be significant that is significant difference was found in the internet addiction levels of Indian students and Indian international students. Hence, our first hypothesis was accepted. This might be because, when students move away from their home country, they have to face many challenges such as cultural adaptation. Our result is in coherence with some similar studies. A study was conducted by Li & Liu (2021) among international college students in the United States. They reported international students were more addicted to internet because of the potential influence of acculturative stress.

6.2 Indian-international students will be lonelier in comparison to Indian students studying in India.

The second hypothesis stated that Indian international students will be lonelier in comparison to Indian students studying in India. A t-test was computed to study the difference in the levels of loneliness in both the groups of Indian students. The t-test computed was found to be insignificant that is no significant difference was found in the loneliness levels of Indian students and Indian

international students. Hence, our second hypothesis was rejected. In the present century the Indian society is also becoming more individualistic in comparison to earlier. The students moving to western countries are also entering individualistic culture. Moreover, the internet has turned the world into a global village which has reduced the differences among different nations. Therefore, no significant difference was seen in the loneliness levels of Indian and Indian-international students.

6.3 Indian-international students will be higher on depression in comparison to Indian students.

The third hypothesis stated that Indian-international students will be higher on depression in comparison to Indian students studying in India. A t-test was computed to study the differences in depression levels of both the groups of Indian students. The t-test computed was found to be significant that is significant difference was found in the depression levels of Indian students and Indian international students. Indian-international students scored higher on depression in comparison to Indian students studying in India. Hence, our third hypothesis has been accepted. International students have to face many challenges while adjusting in different social situations of the other countries. A study was conducted by Jamilah et al. (2020) in Bangladesh to study depression and associated factors among international students. The depressive symptoms were prevalent among 47.7% international students. Age, marital status, happiness with living conditions, and problems with schoolwork, food, homesickness, finances, housing, and health were all linked to depression in students.

6.4 There will be a positive correlation between internet addiction and feeling of loneliness.

The fourth hypothesis stated that there will be a positive correlation between internet addiction and feelings of loneliness. Pearson correlation was calculated to study the relationship between internet addiction and loneliness. Internet addiction was found to have a significant positive relationship with loneliness ($r=.531$, $p<0.01$). It means higher loneliness can lead to higher internet addiction. Hence, our fourth hypothesis has been accepted. This result is corroborated by many studies. A study was done by Kiraly et al. (2021). They tried to predict problematic internet use from loneliness along with some other variables. The study consisted of a sample of 1750

adolescents within the age group 16 to 19, in whom development of problematic internet usage was studied over a period of 3 years. The participants were surveyed 3 times once in 2013, then 2014 and then 2015. Problematic internet usage was assessed using a five-item scale developed by Heino et al (2017), on which items were rated on a 7-point scale and loneliness was measured using an eight-item version of UCLA Loneliness scale Version 3 in which items were rated on a 4-point scale. This study adopted the theoretical perspective of Cognitive behavioral Model of Davis, 2001 which positioned the social environment as a key determinant of problematic Internet usage (PIU) and tried predicting PIU from loneliness and perceived parenting behaviors. A positive association was seen between PIU and loneliness. These relationships were found to generalise throughout the course of the study's three years, indicating that time-specific levels of loneliness, rather than student-specific loneliness trajectories, systematically predicted higher levels of PIU at the next time point. Lonely or lonely persons may be more prone to resort to the internet to compensate for their perceived isolation and find an alternate way of satisfying their requirements for relatedness and copings with the negative emotions connected with loneliness.

6.5 There will be a positive correlation between depression and internet addiction.

The fifth hypothesis stated that there will be a positive correlation between depression and internet addiction. Pearson correlation was calculated to study the relationship between depression and internet addiction. Depression was found to have a significant positive relationship with internet addiction ($r=.654, p<0.01$). It means higher internet addiction can lead to higher depression. Hence, our fifth hypothesis has been accepted. A study was conducted by Rabadi et al. (2017) among university students in Jordan to study the relationship between depression and internet addiction. This study looked at the impact of Internet addiction and the link between it and the development of depression, stress, anxiety, and psychological symptoms among university students. The findings of the study reveal that the link between the two disorders is complex, and that Internet addiction can lead to the development of additional psychological problems. The study found that Internet addiction or depression increases the likelihood of both mental and addictive problems.

6.6 There will be a positive correlation between loneliness and depression.

The sixth hypothesis stated that there will be a positive correlation between loneliness and depression. Pearson correlation was calculated to study the relationship between loneliness and depression. Depression was found to have a significant positive relationship with loneliness ($r=.556$, $p<0.01$). It means higher loneliness can lead to higher depression. Hence, our sixth hypothesis has been accepted. Matthews et al. (2016) carried out research to study the association between loneliness and depression. A strong correlation of 0.63 was reported between isolation and loneliness. Another study was conducted by Singh & Misra (2009) on old age people to study loneliness, depression and sociability. It was reported that there was a significant positive association between depression and loneliness, which was significant at the 0.01 level, indicating that depression levels rise in tandem with loneliness levels among senior men and women.

6.7 Internet addiction will act as a mediator between Loneliness and depression.

The seventh hypothesis stated that Internet addiction will act as a mediator variable between Loneliness and depression. Mediation analysis was performed to see if the internet acted as a mediator variable between both variables. It was found that the total effect of loneliness on depression was found to be significant and even the indirect effect of loneliness on depression through Internet addiction was also found to be significant. Hence, the relationship between internet addiction and loneliness is partially mediated by internet addiction. A study was done by Demir & Kutlu (2016) to study the mediating role of internet addiction in the relationship of two other variables loneliness and depression. A positive correlation was seen among the three variables, which meant a positive correlation between depression and loneliness. According to the findings, loneliness predicts online addiction positively and considerably, and internet addiction predicts sadness in the same way. The link between loneliness and depression can be explained to some extent by internet addiction.

Chapter 7

Conclusion, Implications, Limitations, and Scope for Future Research

7.1 Conclusion

The present study examined the relationship between internet addiction and loneliness; loneliness and depression; and internet addiction and depression. Along with this, differences between internet addiction levels, loneliness and depression levels of Indian students and Indian international students were also examined. A significant difference was seen in the internet addiction and depression levels of Indian and Indian-international students whereas no such difference was observed in the levels of loneliness. On the other hand, loneliness was found to be the significant predictor of internet addiction, loneliness was seen predicting depression, and internet addiction was also observed as the predictor of depression. The mediating role of internet addiction was also seen between depression and loneliness.

7.2 Implications

This study has implications in the field of social psychology and clinical psychology, as loneliness is a strong predictor of Internet addiction and depression. Although, Internet addiction, loneliness, and depression have been studied extensively yet very few studies are available in the Indian context. Some foreign studies highlight addiction and loneliness in international students. The present study specifically highlights, the difference prevailing in Internet addiction, loneliness, and depression levels of two groups of Indian context students that are students studying in India, and Indian international students.

7.3 Limitations

The present study does have certain limitations. Firstly, the relatively small sample size may not allow the results to be generalized to the entire population. Secondly, data of international students was collected online so random sampling could not be employed and convenient and snowball sampling had to be employed which is a crude method with accompanying shortcomings. Thirdly, there must be many lifestyle differences prevalent in the lives of both the group of students but those could not be taken into consideration. Fourthly, many new changes must have occurred due to the breakdown of the coronavirus pandemic in 2020 which could not be taken into consideration.

7.4 Scope for future research

This study has significant scope for future research as it has not been studied extensively in the Indian context. The current study tried to examine the difference in Internet addiction, loneliness, and depression levels of Indian and Indian international students. Moreover, the study tried to understand the correlation between loneliness and Internet addiction; loneliness and depression; and depression and internet addiction which was found to be positive. Changes in lifestyle or adjustment can also be taken into consideration to understand Internet addiction and loneliness. further, Internet addiction and loneliness, and depression can also be studied in relation to other variables such as parental controls, academic achievement, personality, etc.

REFERENCES

1. Shaw, M., & Black, D. W. (2008). Internet addiction. *CNS drugs*, 22(5), 353-365.
2. Branscombe, M. (2020). The network impact of the global COVID-19 pandemic. *New Stack*.
3. Young, K. S. (2011). CBT-IA: The first treatment model for internet addiction. *Journal of Cognitive Psychotherapy*, 25(4), 304-312.
4. Bhattacharya, S., Bashar, M. A., Srivastava, A., & Singh, A. (2019). Nomophobia: No mobile phone phobia. *Journal of family medicine and primary care*, 8(4), 1297.
5. Baumeister, R. F. (2011). Need-to-belong theory. *Handbook of theories of social psychology*, 2, 121-140.
6. <https://www.mastersportal.com/articles/2252/top-5-destinations-for-indian-students-who-plan-to-study-abroad.html>
7. Young, K.S.: Internet addiction: the emergence of a new clinical disorder. *Cyber Psychology & Behavior* 1, 237–244 (1998).
8. Shaw, Martha, and Donald W. Black. "Internet addiction." *CNS drugs* 22.5 (2008): 353-365.
9. Weinstein, A., & Lejoyeux, M. (2010). Internet addiction or excessive internet use. *The American journal of drug and alcohol abuse*, 36(5), 277-283.
10. Young, K. S. (1996). Psychology of computer use: XL. Addictive use of the Internet: a case that breaks the stereotype. *Psychological reports*, 79(3), 899-902.
11. Young, K. S. (2004). Internet addiction: A new clinical phenomenon and its consequences. *American behavioral scientist*, 48(4), 402-415.
12. Lin, S. S., & Tsai, C. C. (1999). Internet Addiction among High Schoolers in Taiwan.
13. Lai, C. H., Lin, C. Y., Chen, C. H., Gwung, H. L., & Li, C. H. (2013). Can internet usage positively or negatively affect interpersonal relationship? *In Advances in Intelligent Systems and Applications*, 1, 373-382.
14. Anderson, K. J. (2001). Internet use among college students: An exploratory study. *Journal of American College Health*, 50(1), 21-26.
15. Anandi, B. S., & Gududur, A. (2018). Technology addiction and associated health problems among medical students in Kalaburagi District. *Nat J Comm Med*, 9(4), 294-9.

16. Jamilah, A., Haque, M. I., Muhammad, F., Harun, M. G. D., Chowdhury, A. A., Akramuzzaman, M., ... & Kabir, R. (2020). Depression and associated factors among international students in a private university of Bangladesh. *Global Psychiatry*.
17. Wu, H. P., Garza, E., & Guzman, N. (2015). International student's challenge and adjustment to college. *Education Research International*, 2015.
18. Rubinstein, Robert L., "Chapter 6. Loneliness". *Singular Paths: Old Men Living Alone*, New York Chichester, West Sussex: Columbia University Press, 1986, pp. 181-202.
19. Girgin, G. (2009). Evaluation of the factors affecting loneliness and hopelessness among university students in Turkey. *Social Behavior and Personality: an international journal*, 37(6), 811-817.
20. Beutel, M. E., Klein, E. M., Brähler, E., Reiner, I., Jünger, C., Michal, M., ... & Tibubos, A. N. (2017). Loneliness in the general population: prevalence, determinants and relations to mental health. *BMC psychiatry*, 17(1), 97.
21. Weeks, D. G., Michela, J. L., Peplau, L. A., & Bragg, M. E. (1980). Relation between loneliness and depression: a structural equation analysis. *Journal of personality and social psychology*, 39(6), 1238.
22. Oyeniyi, O., Smith, R. L., Watson, J. C., & Nelson, K. (2021). A Comparison of First-Year International Students' Adjustment to College at the Undergraduate and Graduate Level. *Journal of Comparative and International Higher Education*, 13(2), 112-131.
23. Koyuncu, T., Unsal, A., & Arslantas, D. (2014). Assessment of internet addiction and loneliness in secondary and high school students. *J Pak Med Assoc*, 64(9), 998-1002.
24. Hasmuja, E. (2016). Internet addiction and loneliness among students of University of Shkodra. *European Scientific Journal*, 12(29), 397-407.
25. Yao, M. Z., & Zhong, Z. J. (2014). Loneliness, social contacts and Internet addiction: A cross-lagged panel study. *Computers in Human Behavior*, 30, 164-170.
26. Koo, K., Nyunt, G., & Wang, B. (2021). Who spends too much time online?: Associated factors of Internet addiction among international college students in the United States. *Journal of International Students*, 11(1), 122-143.
27. Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and international students: An Australian study. *Journal of studies in international education*, 12(2), 148-180.

28. Demir, Y., & Kutlu, M. (2016). The Relationship between loneliness and depression: Mediation role of Internet addiction. *Educational Process: International Journal*, 5(2), 97-105.
29. Keser, H., Eşgi, N., Kocadağ, T., & Bulu, Ş. (2013). Validity and Reliability Study of the Internet Addiction Test. *Mevlana International Journal of Education*, 3(4).
30. Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of personality assessment*, 66(1), 20-40.
31. Tóth-Király, I., Morin, A. J., Hietajärvi, L., & Salmela-Aro, K. (2021). Longitudinal trajectories, social and individual antecedents, and outcomes of problematic Internet use among late adolescents. *Child Development*.
32. Bu, F., Steptoe, A., & Fancourt, D. (2020). Who is lonely in lockdown? Cross-cohort analyses of predictors of loneliness before and during the COVID-19 pandemic. *Public Health*, 186, 31-34.
33. Lee, S. L., Pearce, E., Ajnakina, O., Johnson, S., Lewis, G., Mann, F., ... & Lewis, G. (2021). The association between loneliness and depressive symptoms among adults aged 50 years and older: a 12-year population-based cohort study. *The Lancet Psychiatry*, 8(1), 48-57.
34. Wang, P., Wang, J., Yan, Y., Si, Y., Zhan, X., & Tian, Y. (2021). Relationship between loneliness and depression among Chinese junior high school students: the serial mediating roles of internet gaming disorder, social network use, and generalized pathological internet use. *Frontiers in Psychology*, 11, 4030.
35. Jamilah, A., Haque, M. I., Muhammad, F., Harun, M. G. D., Chowdhury, A. A., Akramuzzaman, M., ... & Kabir, R. (2020). Depression and associated factors among international students in a private university of Bangladesh. *Global Psychiatry*.
36. Singh, A., & Misra, N. (2009). Loneliness, depression and sociability in old age. *Industrial psychiatry journal*, 18(1), 51.
37. Matthews, T., Danese, A., Wertz, J., Odgers, C. L., Ambler, A., Moffitt, T. E., & Arseneault, L. (2016). Social isolation, loneliness and depression in young adulthood: a behavioural genetic analysis. *Social psychiatry and psychiatric epidemiology*, 51(3), 339-348.

APPENDICES

APPENDIX 1 Internet Addiction Scale

INTERNET ADDICTION TEST

Name _____

Male _____ Female _____

Age _____ Years Online _____ Do you use the Internet for work? _____ Yes _____ No

This questionnaire consists of 20 statements. After reading each statement carefully, based upon the 5-point Likert scale, please select the response (0, 1, 2, 3, 4 or 5) which best describes you. If two choices seem to apply equally well, circle the choice that best represents how you are most of the time during the past month. Be sure to read all the statements carefully before making your choice. The statements refer to offline situations or actions unless otherwise specified.

0 = Not Applicable

1 = Rarely

2 = Occasionally

3 = Frequently

4 = Often

5 = Always

1. ___How often do you find that you stay online longer than you intended?
2. ___How often do you neglect household chores to spend more time online?
3. ___How often do you prefer the excitement of the Internet to intimacy with your partner?
4. ___How often do you form new relationships with fellow online users?
5. ___How often do others in your life complain to you about the amount of time you spend online?
6. ___How often do your grades or school work suffer because of the amount of time you spend online?
7. ___How often do you check your email before something else that you need to do?
8. ___How often does your job performance or productivity suffer because of the Internet?
9. ___How often do you become defensive or secretive when anyone asks you what you do online?
10. ___How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?
11. ___How often do you find yourself anticipating when you will go online again?
12. ___How often do you fear that life without the Internet would be boring, empty, and joyless?
13. ___How often do you snap, yell, or act annoyed if someone bothers you while you are online?
14. ___How often do you lose sleep due to being online?
15. ___How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?
16. ___How often do you find yourself saying "just a few more minutes" when online?
17. ___How often do you try to cut down the amount of time you spend online and fail?
18. ___How often do you try to hide how long you've been online?
19. ___How often do you choose to spend more time online over going out with others?
20. ___How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online?

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SCORING

The IAT total score is the sum of the ratings given by the examinee for the 20 item responses. Each item is rated on a 5-point scale ranging from 0 to 5. The maximum score is 100 points. The higher the score is, the higher is the severity of your problem. Total scores that range from **0 to 30** points are considered to reflect a normal level of Internet usage; scores of **31 to 49** indicate the presence of a mild level of Internet addiction; **50 to 79** reflect the presence of a moderate level; and scores of **80 to 100** indicate a severe dependence upon the Internet.

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APPENDIX 2: Loneliness Scale

Scale:

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you.

C indicates "I often feel this way"

S indicates "I sometimes feel this way"

R indicates "I rarely feel this way"

N indicates "I never feel this way"

- | | | | | |
|---|---|---|---|---|
| 1. I am unhappy doing so many things alone | O | S | R | N |
| 2. I have nobody to talk to | O | S | R | N |
| 3. I cannot tolerate being so alone | O | S | R | N |
| 4. I lack companionship | O | S | R | N |
| 5. I feel as if nobody really understands me | O | S | R | N |
| 6. I find myself waiting for people to call or write | O | S | R | N |
| 7. There is no one I can turn to | O | S | R | N |
| 8. I am no longer close to anyone | O | S | R | N |
| 9. My interests and ideas are not shared by those around me | O | S | R | N |
| 10. I feel left out | O | S | R | N |
| 11. I feel completely alone | O | S | R | N |
| 12. I am unable to reach out and communicate with those around me | O | S | R | N |
| 13. My social relationships are superficial | O | S | R | N |
| 14. I feel starved for company | O | S | R | N |
| 15. No one really knows me well | O | S | R | N |
| 16. I feel isolated from others | O | S | R | N |
| 17. I am unhappy being so withdrawn | O | S | R | N |
| 18. It is difficult for me to make friends | O | S | R | N |
| 19. I feel shut out and excluded by others | O | S | R | N |
| 20. People are around me but not with me | O | S | R | N |

Scoring:

Make all O's =3, all S's =2, all R's =1, and all N's =0. Keep scoring continuous.

APPENDIX 3: Beck's Depression Inventory

Beck's Depression Inventory

This depression inventory can be self-scored. The scoring scale is at the end of the questionnaire.

1.
 - 0 I do not feel sad.
 - 1 I feel sad
 - 2 I am sad all the time and I can't snap out of it.
 - 3 I am so sad and unhappy that I can't stand it.
2.
 - 0 I am not particularly discouraged about the future.
 - 1 I feel discouraged about the future.
 - 2 I feel I have nothing to look forward to.
 - 3 I feel the future is hopeless and that things cannot improve.
3.
 - 0 I do not feel like a failure.
 - 1 I feel I have failed more than the average person.
 - 2 As I look back on my life, all I can see is a lot of failures.
 - 3 I feel I am a complete failure as a person.
4.
 - 0 I get as much satisfaction out of things as I used to.
 - 1 I don't enjoy things the way I used to.
 - 2 I don't get real satisfaction out of anything anymore.
 - 3 I am dissatisfied or bored with everything.
5.
 - 0 I don't feel particularly guilty
 - 1 I feel guilty a good part of the time.
 - 2 I feel quite guilty most of the time.
 - 3 I feel guilty all of the time.
6.
 - 0 I don't feel I am being punished.
 - 1 I feel I may be punished.
 - 2 I expect to be punished.
 - 3 I feel I am being punished.
7.
 - 0 I don't feel disappointed in myself.
 - 1 I am disappointed in myself.
 - 2 I am disgusted with myself.
 - 3 I hate myself.
8.
 - 0 I don't feel I am any worse than anybody else.
 - 1 I am critical of myself for my weaknesses or mistakes.
 - 2 I blame myself all the time for my faults.
 - 3 I blame myself for everything bad that happens.
9.
 - 0 I don't have any thoughts of killing myself.
 - 1 I have thoughts of killing myself, but I would not carry them out.
 - 2 I would like to kill myself.
 - 3 I would kill myself if I had the chance.
10.
 - 0 I don't cry any more than usual.
 - 1 I cry more now than I used to.
 - 2 I cry all the time now.
 - 3 I used to be able to cry, but now I can't cry even though I want to.

- 11.
- 0 I am no more irritated by things than I ever was.
 - 1 I am slightly more irritated now than usual.
 - 2 I am quite annoyed or irritated a good deal of the time.
 - 3 I feel irritated all the time.
- 12.
- 0 I have not lost interest in other people.
 - 1 I am less interested in other people than I used to be.
 - 2 I have lost most of my interest in other people.
 - 3 I have lost all of my interest in other people.
- 13.
- 0 I make decisions about as well as I ever could.
 - 1 I put off making decisions more than I used to.
 - 2 I have greater difficulty in making decisions more than I used to.
 - 3 I can't make decisions at all anymore.
- 14.
- 0 I don't feel that I look any worse than I used to.
 - 1 I am worried that I am looking old or unattractive.
 - 2 I feel there are permanent changes in my appearance that make me look unattractive
 - 3 I believe that I look ugly.
- 15.
- 0 I can work about as well as before.
 - 1 It takes an extra effort to get started at doing something.
 - 2 I have to push myself very hard to do anything.
 - 3 I can't do any work at all.
- 16.
- 0 I can sleep as well as usual.
 - 1 I don't sleep as well as I used to.
 - 2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
 - 3 I wake up several hours earlier than I used to and cannot get back to sleep.
- 17.
- 0 I don't get more tired than usual.
 - 1 I get tired more easily than I used to.
 - 2 I get tired from doing almost anything.
 - 3 I am too tired to do anything.
- 18.
- 0 My appetite is no worse than usual.
 - 1 My appetite is not as good as it used to be.
 - 2 My appetite is much worse now.
 - 3 I have no appetite at all anymore.
- 19.
- 0 I haven't lost much weight, if any, lately.
 - 1 I have lost more than five pounds.
 - 2 I have lost more than ten pounds.
 - 3 I have lost more than fifteen pounds.

- 20.
- 0 I am no more worried about my health than usual.
 - 1 I am worried about physical problems like aches, pains, upset stomach, or constipation.
 - 2 I am very worried about physical problems and it's hard to think of much else.
 - 3 I am so worried about my physical problems that I cannot think of anything else.
- 21.
- 0 I have not noticed any recent change in my interest in sex.
 - 1 I am less interested in sex than I used to be.
 - 2 I have almost no interest in sex.
 - 3 I have lost interest in sex completely.

INTERPRETING THE BECK DEPRESSION INVENTORY

Now that you have completed the questionnaire, add up the score for each of the twenty-one questions by counting the number to the right of each question you marked. The highest possible total for the whole test would be sixty-three. This would mean you circled number three on all twenty-one questions. Since the lowest possible score for each question is zero, the lowest possible score for the test would be zero. This would mean you circles zero on each question. You can evaluate your depression according to the Table below.

Total Score _____	Levels of Depression
1-10 _____	These ups and downs are considered normal
11-16 _____	Mild mood disturbance
17-20 _____	Borderline clinical depression
21-30 _____	Moderate depression
31-40 _____	Severe depression
over 40 _____	Extreme depression