

**Effects of Smartphone Addiction on Insomnia and Achievement Motivation among
Young Adults**

**Submitted by
Priyadharsini. S
(21PCP014)**

**Under the Guidance of
Dr. R. Govarthini**

A Thesis submitted to



Avinashilingam Institute for Home Science and Higher Education for Women

In Partial Fulfillment of the Requirements for the Degree of

Master of Science in Clinical Psychology

(2021-2023)

May 2023

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Signature of the Head of the Department

Signature of the Guide

CERTIFICATE

This is to certify that the project work entitled “**Effects of Smartphone Addiction on Insomnia and Achievement Motivation among Young Adults**” submitted to Department of Clinical Psychology, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfilment of Master of Clinical Psychology, is the record of the original project work done by **Priyadharsini. S (21PCP014)** during the period of her study, under my supervision and guidance.

Signature of the Guide

Signature of the Head of the Department

Submitted for the viva voice examination held on _____

Internal Examiner

External Examiner

DECLARATION

I hereby declare that this project work “**Effects of Smartphone Addiction on Insomnia and Achievement Motivation among Young Adults**” submitted to Department of Clinical psychology, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfilment of the requirement for the award of the **Degree of Master of Clinical Psychology** is the bonafide record of original project work done by **Priyadharsini. S (21PCP014)** during the period of her study under the supervision and guidance of **Dr. R. Govarthini.**, Department of Clinical psychology.

Place: Coimbatore

Signature of the candidate

Date:

Priyadharsini. S

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ABSTRACT

Abstract

Smartphone have become an essential part of everyone's life, especially for young adults. It is important to study the effects of smartphone addiction on insomnia and achievement motivation among young adults. Two hundred samples (200) were participated in this study. The sample population was selected from pioneer college, Coimbatore by simple random sampling technique. The following tools were used for data collection were Smartphone Addiction Scale [Kwon et al, 2013], Insomnia Inventory [The London Sleep Center, 2004] and Achievement Motivation Scale [Dr. D. Gopal Rao, 1974]. The data was analysed statistically using SPSS 29.0.0 (Statistical Package for the Social Sciences). The results indicated that there is a significant relationship between Smartphone addiction and insomnia among young adults. However, there is no significant relationship between Smartphone addiction and achievement motivation also no relationship was found between Insomnia and achievement motivation among young adults. Hence, it is important to focus on the Smartphone and its effects over sleep. This study shows the relationship between Smartphone addiction and sleep among young adults.

Keywords: *Smartphone Addiction, Insomnia, Achievement Motivation, Young Adults.*

INTRODUCTION

Chapter I

Introduction

The first smartphone was designed by IBM and it was first sold by BellSouth (1993). It comprises many functions. It comprises the touch screen interface. Communication taking place using a smartphone becomes easier for people.

The younger generation is constantly motivated to discover and learn something new every day. It started as being only a phone, but now it can perform many different tasks as a computer. The availability of the Internet has made it all feasible. Children now use websites like YouTube to watch cartoons that were previously only shown on television as well as experiments, hilarious videos, and life hacks. Youngster who misses more than one day of school receives all of their assignments via WhatsApp. The behaviors have evolved along with the trends. When kept in check, everything is excellent. If not, they are addicts without realizing it. The amount of time that parents monitor their children's phone use is equally crucial (AjitaJabal Shah, Hindustan Times, 2023).

At the Omandurar Government Medical College Hospital in Tamilnadu, five specialty units, including one for internet addiction treatment, were inaugurated by Tamil Nadu's Minister of Health Ma Subramanian. People's physical and emotional health has been impacted by excessive smartphone use, which has been fueled by extended lockdowns, he continued. In addition to the Internet addiction center, the hospital currently houses departments for cognitive rehabilitation, postpartum depression, newborn hearing screening, and an emergency care and rehabilitation center for patients who are homeless and mentally ill(The Indian Express, 2021).

Young Adults:

Erik Erikson (1975), a psychologist defined young adulthood as a crucial stage that happens after adolescence. The identity formation concept will be emphasized in a person in the stage of young adulthood. “The youth who is not sure of his identity shies away from interpersonal intimacy; but the surer he becomes of himself, the more he seeks it in the form of friendship, combat, leadership, love, and inspiration” (Erikson, 1959, 1980; p. 101).

Based on the research, most people reach this stage between the ages of 19 and 39. But, he concluded that there's no absolute timeline for young adulthood because individuals reach this point at different ages, due to several factors.

The Federal Interagency Forum on Child and Family Statistics describes young adults as individuals aged 18-24 and the United Nations defines “youth” as persons aged 15 to 24.

Definition

Beginning after adolescence, adulthood is sometimes divided into young adulthood (roughly 20 to 35 years of age), middle adulthood (about 36 to 64 years) and later adulthood (age 65 and beyond). The last is sometimes subdivided into young-old (65 to 74), old-old (75 to 84), and oldest-old (85 and beyond) (American Psychological Association, 2023).

World Health Organization (WHO) defines 'Adolescents' as individuals in the 10-19 years age group and 'Youth' as the 15-24 year age group. While 'Young People' covers the age range 10-24 years (World Health Organization, 2023).

Dimensions of Successful Young Adulthood

Search Institute identified seven constructs and the Social Development Research Group identified 10 constructs, rooted in extensive reviews of the literature on young adulthood, with associated indicators, that were deemed to be developmentally valid for young adults reflecting a variety of life paths.

The following list summarizes the consensus of the Social Development Research Group (SDRG) and Search Institute (SI) on key dimensions of success in young adulthood, which we then elaborate on the pages that follow including comments on illustrative indicators and measures of those dimensions:

- Physical health
- Psychological and emotional well-being
- Life skills
- Ethical behavior
- Healthy family and social relationships
- Educational attainment
- Constructive educational and occupational engagement
- Civic engagement

Changes in Young Adulthood

At the same time that young adults are experiencing new levels of sophistication in thinking and emotional regulation, their brains are changing precisely the areas associated with these functions. While it is not possible to determine cause-and-effect, brain and behavior are changing in parallel.

Prefrontal Cortex. The most widely studied changes in young adulthood are in the prefrontal cortex, the area behind the forehead associated with planning, problem-solving, and related tasks. At least two things affect the efficiency of its functioning:

Myelination. The nerve fibers are more extensively covered with myelin, a substance that insulates them so that signals can be transmitted more efficiently.

Synaptic Pruning. The "briar patch" of connections resulting from nerve growth is pruned back, allowing the remaining ones to transmit signals more efficiently.

Connections among regions. At the same time, the prefrontal cortex communicates more fully and effectively with other parts of the brain, including those that are particularly associated with emotion and impulses, so that all areas of the brain can be better involved in planning and problem-solving.

Executive suite. The cluster of functions that center in the prefrontal cortex is sometimes called the "executive suite," including calibration of risk and reward, problem-solving, prioritizing, thinking ahead, self-evaluation, long-term planning, and regulation of emotion. It is not that these tasks cannot be done before young adulthood, but rather that it takes less effort, and hence is more likely to happen.

Smartphone Addiction

The uncontrolled and extensive use of a smartphone is known as smartphone addiction. According to Addiction Center, these gadgets have become so pervasive and their use has become so common that a psychological term called "nomophobia, or the fear of being without a mobile device," has been created to characterize the attachment people have to them.

Definition of Smartphone Addiction

When used excessively, smartphones can be troublesome. Excessive smartphone use, for example, can result in the maladaptive behavioral difficulties seen in impulse control disorders in general or pathological gambling; it can interfere with school or work, reduce real-life social interaction, reduce academic ability, cause relationship problems, and cause physical health-related problems such as blurred vision and pain in the wrists or back of the neck.

According to the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), there is no description for a new target of addiction that distinguishes between behavioral and drug addiction. Only online gambling is categorized in the DSM-5. And activities such as video games, exercise, food, shopping, employment, and, in especially, gambling on the Internet.

Signs and Symptoms of Smartphone Addiction

Between responsible and compulsive mobile use, there is a thin line. A mobile addiction can develop if a gadget is used excessively. Here are a few methods to determine if someone exhibits the warning indications and symptoms of a phone addiction:

- Lying about smartphone use.
- Loved ones expressing concern.
- Neglect or trouble completing duties at work, school, or home.
- More and more time using a phone.
- Checking peoples' profiles repeatedly due to anxiety.
- Accidents or injuries due to phone use.
- Working later to complete tasks.
- Weak or non-existent social life.
- Isolation from loved ones.
- A feeling of lack of connection.
- Angry or irritated if phone use is interrupted.
- Getting up at night to check a phone.
- Reaching for the phone the moment they are alone or bored.
- Phantom vibrations (thinking the phone buzzes when it doesn't).
- Limiting phone use is difficult.
- Craving access to a smartphone or another device.
- Fear of missing out.

It is crucial to keep in mind that there is no set period of time, frequency, or number of texts that characterizes a phone addiction. However, a buildup of the aforementioned red flags is an indication of a deeper issue with phone use.

Negative Effects of Smartphone Addiction

An addiction that has only lately emerged is chronic phone use. The disorder is not recognized by the American Psychiatric Association. Nevertheless, it is recognized by a wide range of medical experts and academics as a behavioral addiction. Numerous studies have found that, over time, devoted smartphone use, like gambling, can change and adversely affect a person.

- ❖ Sleep deprivation could result from phone obsession.
- ❖ decreased quantity
- ❖ Blocks to creativity
- ❖ Accommodated ADD
- ❖ Anxiety
- ❖ reduced mental acuity
- ❖ Stress
- ❖ Loneliness
- ❖ Insecurity
- ❖ deteriorated partnerships
- ❖ bad scores
- ❖ psychological conditions

Chronic phone use can also result in other physical problems, such as the dysfunction of the brain's GABA neurotransmitter and the loss of grey matter, both of which are strongly associated with drug use disorders.

Excessive Smartphone Usage and Sleep Quality

It has been suggested that problematic internet use may impair sleep quality by decreasing REM, slow-wave and sleep efficiency or by delaying the onset of melatonin secretion due to the bright light of a computer screen at night.

It is proposed that there is a connection between poor sleep and disruptive new media and technologies, such as smartphones. Smartphone and internet-based technology used instead of regular sleep; negative cognitive, emotional, or physiological effects; light emission from the screens of the aforementioned devices may affect sleep quality; and use of mobile and generally internet-based technologies in the bedroom may disrupt sleep quality through the use of microwaves and lights. So, exposure to electronic devices had adverse effects on sleep duration, sleep onset and sleep efficiency.

Smartphone Effects on the Brain

Experts suggest that smartphone addiction can impact brains negatively. Smartphone overuse can create unhealthy dependencies that can trigger psychological issues. Examples of smartphone effects on the brain include:

Fear of Missing Out (FOMO). Research published in Cogent Psychology shows that smartphone users' anxiety can be reinforced by their fear of missing out. FOMO describes a state of mind in which smartphone users get anxious with uncertain. For example, not knowing what their friends are doing may leave them feeling outside of the group. As a result, they may feel less important among their group of friends. In response, they feel they must regularly check their phones to stay up to date on current news.

Attachment. The Cogent Psychology study also discusses attachment as an effect of smartphone addiction on the brain. Attachment describes an emotional bond. In psychology, attachment theory describes the connection between human beings, such as between a newborn and a mother, and the separation experience, which can create anxiety and distress in children. Similarly, smartphone users' attachment refers to the anxiety and stress they feel when they are separated from their phones.

Sleep patterns. Smartphone addiction can also affect sleep patterns. A study published in *Frontiers in Psychiatry* investigated how smartphone addiction lowered the sleep quality of 1,164 university students. It found that sleep disturbance was prevalent among nearly 16% of the students.

Depression, anxiety, behavioral disorders, and compulsive behaviors are some additional psychological effects of smartphone obsession. For instance, social media applications may encourage users to compare themselves to others, thereby escalating their depressive symptoms. Losing concentration and negative personality traits like self-absorption are other psychological effects of smartphone addiction on people's lives.

Additionally, studies suggest that excessive smartphone use can alter brain physiology. In a recent study that was published in the journal *Addictive Behaviors*, scientists examined the MRI scans of a small sample of people who were between the ages of 18 and 30 and who fit the description of smartphone addicts. Lower grey matter volume was found in the insula and temporal cortex, according to the MRI results. This indicator of brain activity is linked to physical changes in the brain and drug abuse addictions.

Smartphone Addiction Treatment

Phone obsession is commonplace. However, there are methods for managing and treating the condition. Facilities for specialized addiction therapy are available. To assist their patients in overcoming their addiction to technology, some of these rehab centers offer a range of programmers.

Here are a few methods of therapy that clinics employ to deal with phone addiction:

- Cognitive-behavioral therapy
- Group therapy
- Marriage or couples counseling
- Group support (e.g., Internet Tech Addiction Anonymous)
- Psychotherapy
- Motivational interviewing
- Medication-assisted treatment.

Insomnia

Insomnia is a disorder that is made up of many disorders, all of which have in common two characteristics. First, the person is unable to either initiate or maintain sleep. Second, the problem is not due to a known medical or psychiatric disorder, nor is it a side effect of medication.

Insomnia is the inability to sleep adequately. Causes may include poor sleeping conditions, circulatory or brain disorders, respiratory disorders known as apnea, stress, or other physical or mental disorders.

Insomnia is not harmful if it is only occasional; the body is readily restored by a few hours of extra sleep. If, however, it is regular or frequent, insomnia may have harmful effects on other systems and functions of the body.

Definition

Difficulty in initiating or maintaining a restorative sleep, which results in fatigue, the severity or persistence of which causes clinically significant distress or impairment in functioning. Such sleeplessness may be caused by a transient or chronic physical condition or psychological disturbance (American Psychological Association, 2023).

Sleep

Sleep is a normal, reversible, recurrent state of reduced responsiveness to external stimulation accompanied by complex and predictable changes in physiology. These changes include coordinated, spontaneous, internally generated brain activity and fluctuations in hormone levels and relaxation of musculature.

The recommended amount of sleep per night for infants (children ages 1 to 2) is 11 to 14 hours, and for preschoolers (children ages 3 to 5) is 10 to 13 hours, including naps. Only a tiny percentage of 4- to 5-year-old kids take naps, the majority of them sleep all through the night. The gradual transition to a later bedtime starts with school-age children (ages 6 to 13), who require between 9 and 11 hours of slumber per night. Young people (aged 18 to 25) require at least 7 hours of sleep per night, while adolescents between the ages of 14 and 17 require at least 8.5 hours. But the majority of people in those age categories sleep for fewer than 7 hours each night. Sleep times that are longer than what is advised.

Psycho Physiological Variations in Sleep

The many types of sleep have been the subject of theories for a long time. Even though the terms "good" and "poor" sleep, "light" and "deep" sleep are frequently used in everyday conversation, scientists did not pay much attention to these qualitative differences in sleep until the second half of the 20th century. Sleep was once considered by scientists to be a solitary, passive recuperation condition. Radical changes have occurred in science's understanding of sleep, the most important of which is a better understanding of the various components that make up sleep and their potential functional purposes.

The finding of REM sleep, or rapid eye movement sleep, which was first described by American physiologists Eugene Aserinsky and Nathaniel Kleitman in 1953, can be credited with starting this revolution. The prevailing view of sleep as a restorative deactivation of the central nervous system was revealed to be quite at odds with the characteristics of REM sleep. The REM period of sleep appears to be more similar to activated wakefulness than other stages of sleep, according to some central and autonomic nervous system measurements. Because of this, REM slumber is also known as "paradoxical sleep." As a result, the earlier belief that sleep is a passive, unitary condition has given way to the belief that there are two distinct types of sleep: a relatively deactivated NREM period and an active phase. Data, particularly those from brain imaging studies, highlight the fact that this perspective is somewhat oversimplified and that both stages show complex brain activity in various brain regions and in various patterns over time.

Theories of Sleep

Theories about the physiological role of sleep largely fall into two categories. One starts with quantifiable sleep physiology and tries to tie those findings to various functions, either real or

imagined. For instance, many people thought that REM sleep served the purpose of replaying and reliving daily thinking after its discovery was published in the 1950s. This extended to the idea that REM sleep is crucial for preserving memories. NREM sleep's slow brain waves later became popular among researchers who sought to show that sleep physiology affects memory or other aspects of brain function.

Other sleep theories focus on how sleep affects behaviour and look for physiological evidence to support sleep's role as a motivator of that activity. For instance, it is well-recognized that people are wearier when they get less sleep and that this fatigue might worsen after several nights of insufficient sleep. So, sleep is really important for alertness. With that as a starting point, sleep researchers have identified two main factors that appear to drive this function: the circadian pacemaker, located deep in the brain in a region of the hypothalamus called the suprachiasmatic nucleus, and the homeostatic regulator, which may be fueled by the buildup of specific molecules, such as adenosine, that break down products of cellular metabolism in the brain (interestingly, caffeine blocks the binding of adenosine).

To state that the goal of sleep is to prevent drowsiness is analogous to arguing that the goal of food is to prevent hunger. It is well recognized that food is made up of a wide variety of chemicals and substances that power numerous vital body processes and that feelings of hunger and satiation allow the brain to control whether or not people eat. Perhaps tiredness also functions similarly, guiding animals towards actions that result in sleep, which then serves a variety of physiological purposes.

Until researchers fully comprehend the roles that sleep plays in all facets of physiology, a general theory of sleep will always be incomplete. As a result, experts have been hesitant to

pinpoint a single function for sleep. Many of them believe that it would be more correct to characterize sleep as having a variety of functions. For instance, sleep may improve memory, increase alertness and concentration, stabilize mood, lessen joint and muscular pain, strengthen immunity, and alert the body to changes in hormone secretion.

Neural theories. The former view was taken by the Russian physiologist Ivan Petrovich Pavlov, who hypothesized those cortical and subcortical neurons—nerve cells in the outer brain layer and the brain layers beneath the cortex—irradiate inhibition during sleep. On the other hand, microelectrode studies have shown that many neurons in the motor and visual areas of the cortex discharge at high rates during sleep, and it appears that, in contrast to wakefulness, sleep must consist of a different organization of cortical activity rather than a general overall decline.

Another debate has been on whether or not there is a waking centre, variations in the functioning of which account for different levels of wakefulness and sleep, or whether inducing sleep requires the presence of a different core that is actively opposed to the waking center. Early theories favored the passive interpretation of sleep. Chronic somnolence was seen in a Cerveau-Isolé preparation, an animal in which the cerebral hemispheres and sensory input had been divided by a surgical incision high in the midbrain. According to one theory, natural sleep must involve a similar functional rather than structural turning off of sensory input. Pre-sleep routines including turning off the lights, controlling stimulus input, and facilitating sleep induction were further evidence in favor of the stimulus-deficit theory of sleep. Since the ascending reticular activating system (ARAS), a network of nerves in the brainstem, sends impulses diffusely to the cortex from the brainstem, it has been known that the ARAS rather than the sensory nerves themselves maintain cortical alertness. Sleep would presumably be caused by something interfering with the ARAS's active operation. It was discovered that ARAS injuries do in fact

cause sleep. Thus, sleep appeared passive because it was the lack of anything that made awake distinct (ARAS support for sensory impulses).

Theory tends to shift away from this viewpoint and towards the idea that sleep is an actively generated state. The shift has mostly been caused by various types of observation. First, previous research has been verified and expanded to include more regions of the brain, demonstrating that sleep can be directly induced by electrical stimulation of certain hypothalamic regions. Second, much more so than the finding of REM sleep, the idea that sleep might be actively produced has been put out by theorists. Because it is so busy, REM sleep resists categorization as a passive state. The surgical removal of a set of nerve cells from the pons, whose active function appears to be required for REM sleep, can prevent REM sleep in experimental mice. Therefore, it is impossible to believe that REM sleep's many forms are just the result of waking processes being turned off. Furthermore, it is now known that each stage of REM and NREM sleep is far more diversified than previously thought. Sleep is a dynamic process that alternates between several phases.

Functional theories. Functional theories emphasize the healing and regenerative benefits of sleep. Animals that can be active in a variety of temperatures and who maintain a consistent body temperature are most clearly those in which sleep emerges. The periodic drops in body temperature and metabolic rate (i.e., during NREM sleep) in such forms may serve as partial compensation for the higher metabolic needs. Because temperature regulation and NREM sleep have evolved together, several experts have hypothesized that NREM sleep is best understood as a regulatory mechanism that reduces energy consumption in species with otherwise high metabolic demands. It has been proposed that periodic reactivation of the organism while sleeping better prepares it for a fight-or-flight response and that the potential for enhanced

processing of significant environmental stimuli during REM sleep may even lessen the need for sudden confrontation with danger as a solution to the problem of susceptibility to predation that comes with the torpor of sleep.

Other functional theorists concur that NREM sleep may be a state of "bodily repair" while arguing that REM sleep is a state of "brain repair" or restitution, a time when, for instance, cerebral protein synthesis is increased or the brain is "reprogrammed" to better assimilate information gained during wakeful functioning. Such theories are inevitably hazy and lacking in detail when defining functions and providing support for such functions. For instance, it is currently unknown what stage 2 NREM sleep is used for. Although only in basic form in sub-primate species, this type of sleep accounts for about half of the human sleep time. There is no comparative, physiological, or experimental evidence to support a theory on why humans spend so much time in that stage of sleep. Insomniacs who frequently feel as though they have not slept at all are those whose laboratory sleep records reveal large proportions of stage 2 and little to no REM sleep.

The concept of adaptive inactivity is another theory. According to this hypothesis, an animal's ecological niche influences its sleep habits and sleep serves a universal purpose. For instance, carnivores with nocturnal prey are more active at night. To save energy for nighttime hunting, the carnivore sleeps during the day when hunting is ineffective. A further factor that supports an animal's daytime inactivity and subsequent daytime sleep is the presence of active predators during the day but not at night. Humans spend the majority of their time awake during the day, with sleep occurring at night. Additionally, light and dark cycles, which affect circadian rhythm, support sleep and nighttime inactivity.

Different explanations for how sleep works don't have to conflict with one another. Sleep, for example, served as the most severe type of rest under evolutionary pressure because it allowed the body to save energy. It is also likely that a highly developed set of physiological processes that are replenished by sleep would be highly useful given that the brain and body would be asleep for prolonged periods of time. For humans with sophisticated brains, the requirement for the brain to synthesize and consolidate the knowledge gained during waking hours would result in a very effective system: learn knowledge throughout the day, consolidate it during sleep, and apply that freshly formed memory in subsequent waking encounters. In reality, studies have shown that sleep is crucial for memory remodeling, particularly for strengthening memories and making them more forget-resistant.

Sleep deprivation

Sleep deprivation is a condition that occurs if you don't get enough sleep. Sleep deficiency is a broader concept. It occurs if you have one or more of the following:

- We don't get enough sleep (sleep deprivation)
- We sleep at the wrong time of day
- We don't sleep well or get all the different types of sleep your body needs
- We have a sleep disorder that prevents us from getting enough sleep or causes poor-quality sleep.

Achievement Motivation

Achievement motivation is the need for excellence and significant accomplishment, despite what rewards may be offered after the achievement has been met.

The desire to perform well and be successful is the meaning of achievement motivation. In this sense, the term often is used synonymously with the need for achievement (American Psychological Association, 2023).

Drive

Drive, in psychology, is an urgent basic need pressing for satisfaction, usually rooted in some physiological tension, deficiency, or imbalance (e.g., hunger and thirst) and impelling the organism to action. Psychologists also distinguish between drives that are innate and directly related to basic physiological needs and drives that are learned.

Motivation

Motivation means any forces acting either on or within a person to initiate behavior. The word is derived from the Latin term *motivus* (“a moving cause”), which suggests the activating properties of the processes involved in psychological motivation.

Motives are frequently divided into two categories: primary, or fundamental, motives, which are unlearned and shared by humans and animals, and secondary, or learned, motives, which can vary from one animal to another and person to another. Hunger, thirst, sex, avoiding pain, and possibly aggression and terror are considered to be the main motivations. Achieving goals, being motivated by power and many other specific motives are examples of secondary motives that are usually studied in humans.

Types of Achievement Motivation

Achievements are caused by implicit explicit comparison and avoidance motives. Why humans do the things that they do specifically, what creates the drive for success, has been a subject of scientific investigation for decades. The consensus is that everyone is motivated to achieve, although for different reasons. These reasons are collectively called achievement motivation and directly influence everyday actions such as doing work, practicing a sport or hobby, studying for an exam, attending college and even shopping.

There are various types of Achievement Motivation

Intrinsic Motivation. Individuals are commonly influenced by intrinsic motives, which come from within based on the desire to perform well and based on the incentives such incentives include a sense of self-satisfaction achieved by doing a good job, the exhilaration of having completed a challenge and a sense of mastery

Extrinsic Motivation. Extrinsic motives are common and come from outside the individual. Very often, they are the result of a desire to meet society's standards rather than their own.

Avoidance Motivation. Avoidance is a kind of motivation with which some people can identify. It offers stability and predictability in return for the performance of boring, rote or unpleasant tasks. Avoidance motivates individuals to complete such tasks to avoid unpleasant consequences. However, performing these tasks can improve an individual's overall situation.

Universal Motivation. The need to achieve is part of the human condition. What motivates achievement differs from individual to individual depending on factors like personality and self-esteem.

In 2005, Mathew Weller of the "Loss Angles Business Journal" wrote that Universal motivation includes incentives, desire, a favorable environment and pre-existing internal motivation. When any such condition exists, the achievement is likely to look more attractive, resulting in more effort on the part would be achievers.

Sleep processes and stress reactions

Research on arousal mechanisms of motivation has furthered understanding of both sleep processes and stress reactions. In the case of sleep, arousal levels generally seem lower than during waking. However, during one stage of sleep, arousal levels appear highly similar to those in the waking state. Sleep itself may be considered a motivational state. The biological motivation to sleep can become so overpowering that individuals can fall asleep while driving an automobile or while engaged in dangerous tasks.

Five stages of sleep have been defined using the electroencephalograph (EEG). The EEG records the electrical activity of neurons in the outermost portion of the brain known as the cerebral cortex.

According to EEG-based findings, everyone cycles through five stages during sleep. A complete cycle averages approximately 90 minutes. The two most interesting stages of sleep from a motivational point of view are stages 4 and 5. Stage 4 represents the deepest sleep in that the

brain-wave activity as measured by the EEG is farthest from the activity seen when a person is awake.

Stage 5 sleep is also known as rapid eye movement (REM) sleep because during this stage the eyes begin to move rapidly under the eyelids. During stage 5 sleep the EEG pattern of brain-wave activity appears very similar to the brain-wave activity of an awake, alert person.

The stress reaction can be triggered by a challenge to the physical integrity of the body, or it can occur as a result of some psychological challenge. Furthermore, the body appears to react similarly regardless of whether the demands made upon it are physical or psychological.

Theories

Cognitive theories of motivation assume that behavior is directed as a result of the active processing and interpretation of information. Motivation is not seen as a mechanical or innate set of processes but as a purposive and persistent set of behaviors based on the information available. Expectations, based on past experiences, serve to direct behavior toward particular goals.

Important concepts of cognitive motivation theory include expectancy-value theory, attribution theory, cognitive dissonance, self-perception, and self-actualization.

Expectancy-value theory. According to the expectancy-value theory, conduct is a function of one's expectations and the worth of the objective they are pursuing (expressed as $B = f(E V)$). With such a strategy, it is predicted that when multiple behaviors are available, the one with the greatest expected success and value will be picked. The explanation of social behavior,

motivation for accomplishment, and motivation at work has all been helped by the expectancy-value hypothesis. The different sorts of expectancy-value motivations can be represented by looking at how it is used in accomplishment motivation.

The achievement was initially recognized as an important source of human motivation by Henry Murray, an American psychologist, in 1930. Murray recognized that many people's behavior was influenced by their level of accomplishment motivation, but McClelland and Atkinson, two American psychologists, developed a method for assessing this drive. To determine personality traits, these researchers employed Murray's Thematic Apperception Test (TAT), a sequence of ambiguous photos about which participants were asked to compose stories, to examine differences in achievement drive. The stories were graded for achievement imagery using a method called content analysis. A theoretical model was created based on a large body of research and was built around the key ideas of expectation and goal value.

According to the expectancy-value model of achievement motivation, the tendency to succeed overall in a given scenario depends on two stable motives—a desire for success and a motive to avoid failure—as well as a subjective assessment of the likelihood of success. By the time an adult is reached, the desire for achievement is seen as a relatively consistent personality trait. One's motivation for success is thought to come from lessons learned in previous achievement scenarios in which they have succeeded. A person is said to be extremely achievement-oriented if they have, for the most part, had positive past experiences. By maturity, it is also anticipated that the desire to avoid failure will have remained pretty consistent, and it is a culmination of all the times in the past when striving for success backfired. It is thought that someone who makes numerous unsuccessful attempts to achieve goals will become very motivated to succeed.

Since practically everyone has encountered both successes and failures while growing up, the theory presupposes that everyone has varying levels of incentive for both success and failure avoidance. These two drives have antagonistic tendencies, thus whether a person is an "achiever" or not depends on how much stronger one of the two is. People who are achievement-oriented tend to have great motivation for success and low incentive to avoid failure, while the opposite is true for those who are weakly motivated to succeed and strongly motivated to avoid failure.

In this achievement theory, the expected chance of success in a specific achievement setting is also significant. According to the theory, people who are highly motivated to succeed will typically choose to participate in tasks that they perceive to be moderately difficult, whereas people who are highly motivated to avoid failure will typically select tasks that they perceive to be either very easy or extremely difficult. Because easy, moderate, and tough goals have different values for these two categories of people, the decisions made by people who are extremely motivated to succeed or to avoid failure are different. According to the model's mathematical predictions, those who are highly motivated to achieve will appreciate goals that call for the moderate effort the most. In other words, high achievers seek to accomplish goals that are neither unattainable nor pointless, but just difficult enough to have some value. People who are very motivated to succeed believe they are likely to fail.

Because of this, the theory predicts that people would favor simple jobs where success is likely or challenging tasks where failure would result in little disgrace. Attempts to test these predictions have met with mixed results. Some studies have found that people scoring high in motivation for success do often choose tasks that they consider moderately difficult, while other studies have failed to find such results. Also, persons scoring high in motivation to avoid failure

do sometimes choose very easy tasks, as the theory predicts, but often do not choose very difficult tasks as also predicted. Much research remains to be done before the model's accuracy in predicting achievement behavior can be judged.

Attribution theory. The expectancy-value formulation is rejected by a second important approach to accomplishment motivation, which instead examines people's attributions to achievement situations. Attribution theory, or the factors to which individuals attribute behavior, generally addresses how people form judgments about someone else's (or their own) behavior. Numerous studies have revealed that people often link behavior to either fixed personality traits known as dispositions or to the circumstances that existed at the time the behavior happened.

It is suggested that future achievement motivation is significantly influenced by the attributions of skill, effort, task difficulty, and luck in relation to achievement behavior. For instance, a person is more likely to tackle new achievement scenarios in the future if they credit their success at a task to ability. In the same way, if the accomplishment was credited to a significant amount of effort, future achievement behavior would depend on a desire to put forth such effort in the future. It appears that social norms are used to evaluate task complexity. When the majority of people fail at an activity, it is deemed to be tough; when the majority succeeds, it is deemed to be easy.

Therefore, it would be expected that attributing success to task difficulty will alter one's conduct toward achievement in the future. Success in a task deemed to be highly tough, on the other hand, can encourage a person to broaden the variety of tasks he or she is ready to tackle. If success was perceived to be the result of the work being very easy, future achievement behavior would not be expected to vary much. Attributions of chance in a task that required performance

would also affect future achievement behaviors. In essence, someone assumes they have little control over the task's outcome when they anticipate being lucky. Failure attributable to bad luck is likely to raise future achievement behavior, but success attributable to good luck is expected to lower it.

The four causal explanations stated above—and possibly other explanations as well—can best be seen as falling along three dimensions: locus, stability, and controllability, according to research on the attributions people make in achievement-related circumstances. The locus, whether internal or external, of the alleged reason for success or failure, is referred to as the cause. While task difficulty and luck are perceived as environmental factors outside of the person, ability and effort, for instance, are intrinsic dispositions of a person. The degree to which a specific cause of success or failure might be anticipated to alter is referred to as stability. While it is unlikely that ability or the difficulty of a task would vary substantially over time, effort and chance, on the other hand, are unstable and might. How much influence a person has over the situation's circumstances is referred to as controllability. In contrast to luck, factors like effort are thought to be under our control.

Cognitive dissonance. The notion of cognitive dissonance, which was originally systematically investigated by American psychologist Leon Festinger, has become one of the most well-known cognitive approaches to the study of motivation. According to this hypothesis, people make an effort to keep the consistency of their attitudes, behavior, and beliefs. Following this idea, anytime beliefs, attitudes, and behaviors are incongruent, a motivational state known as cognitive dissonance is created. An unpleasant state known as cognitive dissonance is thought to set off systems that restore consistency between cognitions. The effects of inconsistent attitudes and

behaviors have been the focus of most of the studies on cognitive dissonance. According to this research, if a person behaves in a way that is inconsistent with their beliefs and there is insufficient support for that activity, their views will frequently change. Consider the scenario where a person must go through a trying initiation in order to join a chosen organization. Following this initiation, the participant learns that belonging to the group does not bring about the fulfillment they had anticipated.

Given that the required behaviors and the prevalent view about the group are incompatible; such a result should induce cognitive dissonance. As a result, the individual contends that motivation will be set off to reassert the consistency of the relationship between the dissonant aspects. Because it has already happened, the behavior cannot be reversed; however, the belief may. Dissonance theory predicts that under these circumstances, the individual's mindset will alter and that he will start to believe that he likes the group more. This prediction has been backed up by numerous investigations.

Self-perception theory. Several people have criticized cognitive dissonance methods. Self-perception theory, an alternate strategy, contends that all people evaluate their actions in the same way that an outsider might and then conclude their motivations as a result of these conclusions. Accordingly, in the aforementioned scenario, the self-perception theory would contend that the individual, after evaluating his behavior, evaluates the effort required and determines that the initiation was endured because he truly desired to be a member of this group. Self-perception theory and dissonance theory are not inherently incompatible; in fact, multiple studies have found that both processes can and do happen, albeit in different contexts.

Self-actualization

The notion that a demand for competence or control has a significant impact on human motivation has also been investigated by cognitive motivational techniques. These theories occur in a variety of forms, but they all share the notion that the desire to become as much as one can be at least partially drives human action. Abraham Maslow's self-actualization hypothesis, which was previously described, is an illustration of this strategy.

Maslow has proposed that human motivation can be understood as resulting from a hierarchy of needs. These needs, starting with the most basic physiological demands, progress upward through safety needs, belonging needs, and esteem needs and culminate in self-actualization. Each level directs behavior toward the need level that is not being adequately met. As lower-level needs are met, the motivation to meet higher-level needs becomes active. Furthermore, as individuals progress upward, it becomes progressively more difficult to successfully fulfill the needs of each higher level. For this reason, Maslow believed that very few people reach the level of self-actualization, and it is a lifelong process for the few who do.

Based on his observations of individuals he believed to be self-actualized, including historical figures such as the U.S. presidents Abraham Lincoln and Thomas Jefferson, Maslow outlined a cluster of 14 characteristics that distinguish self-actualized individuals. Summarized, these characteristics define individuals who are accepting of themselves and others, are relatively independent of the culture or society in which they live, are somewhat detached but with very close personal ties to a few other people, and are deeply committed to solving problems that they deem important. Additionally, self-actualized individuals intensely appreciate simple or natural events, such as a sunrise, and they sometimes experience profound changes that Maslow termed

peak experiences. Although difficult to describe, peak experiences often involve a momentary loss of self and feelings of transcendence. Reports of peak experiences also include the feeling of limitless horizons opening up and of being simultaneously very powerful, yet weak. Peak experiences are extremely positive and often cause an individual to change the direction of his or her future behavior. Maslow believed that everyone is capable of having peak experiences, but he believed that self-actualized persons have these experiences more often.

Role of Smartphones in Achievement Motivation

The modern student needs to prepare for an interconnected world, where technology is vital to achieving everyday tasks. The type of technology integration used in the language classroom will be determined by the instructor and the purpose that technology will be given in it. Another aspect that can shape how technology is employed is related to the types of technology available to the students. Reading requires active interaction between the reader and the text; its acquisition is imperative in developing language literacy; it is a dynamic and interactive process that allows the use of various skills, strategies, and background knowledge. Active interaction between the reader and the text may be achieved through innovation. Adding technology to the reading process can aid readers' engagement and promote learning.

Besides the multiple benefits that technology provides in language teaching, technology's role in enhancing motivation is also worth examining. When it comes to motivation in reading, improving students' engagement is considered a factor concerning developing reading performance and thus language proficiency. Teachers should go beyond the curriculum and think about the students' development and language attainment to develop motivation.

Concerning the use of the students' mobile devices in language teaching, they "can provide immediate feedback and thus provide continued motivation for those who are not motivated by traditional educational settings" (Geddes, 2004; Valk et al., 2010, p. 121).

There could be drawbacks related to using mobile devices in reading activities; the size of the phone and software limitations may reduce the applicability of the technology in the language classroom setting. Besides such technical difficulties, "Excessive cell phone use during class often leads students to engage in academic disengagement" (Lee et al., 2017, p. 360). Learners start multitasking by checking social media accounts and text messaging. When reading activities are the primary concern, cell phones can be a resource for students and an ally for professors, who should use mobile devices purposefully while providing precise directions to students and sufficient supervision.

Need For the Study

The smartphone is one of humanity's finest inventions, bringing people together despite distances, but people are becoming increasingly further apart and spending more time on smartphones. The smartphone has become the most popular device all over the world. Every person has a fifth limb called smartphones. Almost everyone in our society owns a smartphone and uses it for a variety of functions. Despite its ability to bring people together, smart phones cause individuals to turn away from one another in all circumstances. Excessive smartphone use has a number of negative repercussions, including poor sleep quality, poor academic performance, poor interpersonal connections, and decreased achievement motivation. Most of the students are experiencing insomnia. With increased smartphone use and prolonged screen-time young adults develop poor sleep practices resulting in both short-term and long-term

consequences. Every student should have achievement motivation with them in order to set a goal or to achieve it. High exposure to violent videos, games, and other smartphone applications makes it simpler to engage in a disrupted behavior like engaging in highly aggressive or dangerous behaviours, also they tend to perform poor academics performances. All these components of this research plays a vital role in stating that there is a strong need in understanding the relationship between smartphone addiction, insomnia and achievement motivation among young adults.

REVIEW OF LITERATURE

Chapter II

Review of Literature

This chapter gives a brief explanation of reviewing the literature on various aspects of Smartphone addiction, insomnia and achievement motivation. The literature concerning to present study is "Effects of Smartphone Addiction on Insomnia and Achievement Motivation among Young Adults" is examined and discussed based on the following headings:

Section I. Smartphone Addiction

Section II. Smartphone Addiction and Insomnia

Section III. Insomnia

Section IV. Achievement Motivation

The modern student needs to prepare for an interconnected world, where technology is vital to achieving everyday tasks. The type of technology integration used in the language classroom will be determined by the instructor and the purpose that technology will be given in it. Another aspect that can shape how technology is employed is related to the types of technology available to the students. Reading requires active interaction between the reader and the text; its acquisition is imperative in developing language literacy; it is a dynamic and interactive process that allows the use of various skills, strategies, and background knowledge. Active interaction between the reader and the text may be achieved through innovation. Adding technology to the reading process can aid readers' engagement and promote learning.

Section I. Smartphone Addiction

Awan, Saeed and Zafar (2022) conducted a study on nomophobia, insomnia, academic percentage and mental health problems in late adolescents in Pakistan. This study aimed to investigate the mediating role of insomnia in the relationship between nomophobia, academic percentage and mental health problems in late adolescents. A sample of 200 college students was taken from various public and private colleges in Pakistan. The students were assessed using Nomophobia Questionnaire (Yildirim & Correia, 2015), Bergen Insomnia Scale by Pallesen, et al. (2008) and Mental Health Inventory (Viet & Ware, 1983). The result showed that nomophobia has a positive significant relationship with insomnia and mental health problems whereas women reported an increased level of insomnia and mental health issues when compared to men.

Köse and Murat (2021) have shown the relationship between smartphone addiction and cyberchondria in adolescents. Data were collected from 384 adolescent high school students in Istanbul, using personal Profile Data, Smartphone Addiction Scale and Cyberchondria Severity Scale. The results revealed that 97.9% of adolescent high school students were connected to the internet via smartphone and spent around 3-4 hours per day on the internet. Also, the results show that 61.7% of them checked their phones as soon as they woke up in the morning and 75.3% of them before going to bed in the evening. As a result, for those whose smartphone use duration is high, their cyberchondria also increases.

Wacks and Weinstein (2021) did a study on excessive smartphone use associated with health problems in adolescents and young adults. The present study proved and focused more on the association between smartphone use and difficulties in cognitive-emotion regulation,

impulsivity, impaired cognitive function, addiction to social networking, shyness and low self-esteem. Other medical problems such as reduced physical fitness sleep problems, pain and migraines, and unhealthy eating habits.

Tygai, Prasad and Bhatia (2021) carry out a study on the effects of excessive use of mobile phone technology in India on human health during the COVID-19 lockdown. The study includes the participants of India (N=122) and the data was collected online to maintain social distancing during the time of the pandemic. The data was collected and analyzed through RStudio and multiple regression techniques. The statistical analysis revealed that the lockdown situation led to increasing use of mobile phone technology which has been confirmed by around 90% of participants. It is evaluated that the age group between 15-30 years is highly affected (45%) during lockdown due to excessive dependence on technology, also it included that participants involved in online teaching-learning are the most affected. The findings indicated that craving for Smartphone and technology harms health compared to normal times.

Herrero et al., (2021) did a study examining the empirical links between digital social pressure, personality, psychological distress, social support, users' residential living conditions and smartphone addiction. The analyses were administered on a nationally stratified sample of 2820 Spanish smartphone users. The results of the causal and multigroup models (structural equation model) indicated that the social digital pressure (SDP) was positively associated with smartphone-addicted. This influence was also independent of the consequences of smartphone addiction of some personality traits (mainly low conscientiousness) high depression, and low social support.

Kim, Kwak and Kim (2021) examined a study on the relationship between stress and smartphone addiction among adolescents: The mediating effect of grit. The study was conducted for 605 Korean students and they were assessed using Daily Hassles Scales for Stress, Grit was measured using the Grit scale and Smartphone Addiction Proneness Scale was used to assess smartphone addiction. They were analyzed using process macro version 3.5 and bootstrapping method to test the significance level of the mediating effect. The findings showed that stress and grit relatively influence smartphone addiction. Therefore, it is evident that a high level of stress reduces grit which in turn results in a high level of smartphone addiction proneness among adolescents.

Stankovic, Nesic, Cicevic and Shi (2021) examined the association of smartphone use with depression, anxiety, stress and sleep quality and internet addiction. The results revealed that depression hurts smartphone use, which increases the negative correlation that has been observed between smartphone use with anxiety, stress and sleep quality, whereas higher rates of smartphone use relatively result in depression which tends to stress. Hence, depression increases smartphone use and also increases stress.

Horvath (2020) did a study on structural and functional correlates of smartphone addiction. The term "Smartphone addiction" (SPA) has been introduced to describe Smartphone-related addictive behavior and associated physical and psychosocial impairment. A sample of 48 smartphone users participated in the study. They included right-handed smartphone owners within the age range of 18–30 years. Exclusion criteria were self-reported neurological diseases, severe medical conditions and a history of current or lifetime mental disorders. The result shows that the study provides the first evidence for distinct structural and functional correlates of behavioral addiction in individuals meeting psychometric criteria for Smartphone addiction

(SPA). Given their widespread use and increasing popularity, smartphone leads to an increased risk of developing smartphone-related addictive behaviors.

Liu, Luo, Liu, Yang, Liu and Jia (2020) conducted a study on prolonged mobile phone use associated with poor academic performance in adolescents. This study examined the associations between prolonged MPU and academic performance in Chinese adolescents. A sample of 11,831 adolescents participated. They used a self-administered questionnaire to collect data on demographics, weekday and weekend mobile phone use, sleep duration, insomnia, depression, and academic performance. The results showed that the prevalence of self-reported poor academic performance significantly increased, and the achievement test scores significantly decreased. They suggest that adolescents should be advised to limit the time of mobile phone use to minimize its harmful effects on sleep, mental health, and academic performance.

Durak (2019) conducted a study on the investigation of nomophobia and smartphone addiction predictors among adolescents in Turkey. This study aims to determine nomophobia levels and smartphone addiction among 12–18 age group secondary and high school students and to investigate the demographic and academic variables predicting these levels. A sample of 612 students studying at all levels of secondary school and high school was used in this study. Descriptive analyses and hierarchical linear multiple regression analysis were used in the analysis of the data obtained by means of data collection in the research. The result of the research was a significant relationship between smartphone addiction and nomophobia.

Fischer-Grote, Kothgassner and Felnhofer (2019) did a study on risk factors for problematic smartphone use in children and adolescents: a review of existing literature. The results have shown that there is an increased level of smartphone addiction was observed among adolescents.

Although the usage of gaming and social networking is a high-risk factor, adolescents with low self-esteem and low self-control; seem to have increased problematic use. Further, the study concludes on the conceptualization of problematic smartphone use and standardized measures are highly recommended to increase the comparability of upcoming studies for better understanding.

A study on is smartphone addiction an addiction. The study reviewed quantitative and qualitative studies on smartphone addiction and analyzed their methods and conclusions to decide on the suitability of the diagnosis of "addiction" to excessive and problematic smartphone use. The result showed behavior observed in the research could be better labeled as problematic or maladaptive smartphone use (Panov, Carbonell, 2018).

Eide, Aarestad, Andreassen, Bilder and Pallesen (2018) examined a study on smartphone restriction and its effect on subjective withdrawal-related scores. This study examined scores on the Smartphone Withdrawal Scale (SWS), the Fear of Missing Out Scale (FoMOS) and the Positive and Negative Affect Schedule (PANAS) during 72 hours of smartphone restriction. A sample of 127 participants, aged 18–48 years were randomly assigned into one of two conditions: a restricted condition or a control condition. The results revealed significantly higher scores on the Smartphone Withdrawal Scale (SWS) and the Fear of Missing Out Scale (FoMOS) for participants allocated to the restricted condition than those assigned to the control condition.

Aker, Sahin, Sezgin, and Oguz, (2017) did a study on psychosocial factors affecting smartphone addiction in university students. Smartphone addiction is a recent concern that has resulted from the dramatic increase in worldwide Smartphone use. The study was performed among students at the Ondokuz Mayıs University Samsun School of Health. They include four

hundred ninety-four students possessing smartphones. A socio-demographic data form produced by the authors and consisting of 10 questions was administered together with a questionnaire involving the Smartphone Addiction Scale-Short Version (SAS-SV), the Flourishing Scale, the General Health Questionnaire and the Multidimensional Scale of Perceived Social Support. Smartphone Addiction Scale-Short Version scores of 6.47% of students were "significantly higher" than the participating group's mean Smartphone Addiction Scale-Short Version score. The research revealed that depression, anxiety and insomnia and familial social support statistically, significantly predicted smartphone addiction.

Hussain, Griffiths and Sheffield (2017) did a study on an investigation into problematic smartphone use: the role of narcissism, anxiety and personality factors. This study examines the psychological aspects of smartphone use particularly in relation to problematic use, narcissism, anxiety and personality factors. A sample of 640 smartphone users ranging from 13 to 69 years of age was taken part in the study. The results demonstrated significant relationships have been observed between problematic smartphone use in relation to anxiety, conscientiousness, openness, emotional stability, the amount of time spent on smartphones and the age of the participants.

Parasuraman, Sam, Yee, Chuon and Ren (2017) examined a study on smartphone usage and increased risk of mobile phone addiction: a concurrent study. This study aimed to study mobile phone addiction behavior and awareness of electromagnetic radiation (EMR) among a sample of 48 smartphone users from the Malaysian population. The result shows that there were no significant changes were found in mobile phone addiction behavior between the participants having accommodation on home and hostel.

De-Sola, Talledo, Rudio and Fonseca (2017) assessed the development of a mobile phone addiction craving scale (MPACS) and its validation in a Spanish adult population was conducted. Exploratory factor analysis (EFA) and simultaneously the results show a significantly increased correlation between Smartphone problematic use scale (MPPUS) and state anxiety. It also shows the association with impulsivity, measured using the urgency, premeditation, perseverance and sensation-seeking scale. The result revealed a higher level of craving in persons up to 35 years of age. The mobile phone addiction craving scale (MPACS) proves to be a helpful and fast evaluation tool for cell phone craving in the general population.

Alosaimi, Alyahya, Alshahwan, Mahyijari and Shaik (2016) conducted a study on smartphone addiction among university students in Riyadh, Saudi Arabia. The research investigates the prevalence and correlates of smartphone addiction among university students in Saudi Arabia. An electronic self-administered questionnaire and the problematic use of mobile phones (PUMP) Scale were used. The results were statistically significant positive relationships among the 4 study variables, consequences of smartphone use of hours per day spent using smartphones, years of study, and number of applications used, and the outcome variable score on the PUMP. The result indicates that University students in Saudi Arabia are at risk of addiction to smartphones.

Bian and Leung (2014) conducted a study on linking loneliness, shyness, smartphone addiction symptoms and patterns of smartphone use to social capital. A sample consists of 414 University students in China. The present study depicts clear evidence that the utilization of smartphones for various purposes (especially for information seeking, sociability and utility) and thus, the exhibition of various addiction symptoms (such as preoccupation and feeling anxious and lost) significantly impacted the social capital building. The various links between

smartphone addiction and smartphone usage, loneliness and shyness have clear implications for treatment and intervention for people, educators and policymakers.

Salehan and Negahban (2013) conducted a study on social networking on smartphones: When mobile phones become addictive. They measure network size, simply by asking respondents to choose the number of their Social network friends from 7 choices (Less than 10, 10–49, 50–99, 100–199, 200–299, 300–399, and More than 400) and the scale for mobile phone addiction was adapted from Negahban (2012). For social network intensity, a variation of the Ellison et al. (2007) instrument was used. The result shows that the use of social networking on smartphone mobile applications is affected by both social networking on smartphones network size and social networking on smartphones intensity of the user.

Section II. Smartphone Addiction and Insomnia

Moqbel, Nevo and Nah (2023) examined a study on unveiling the dark side of smartphone addiction: mediation of strain and moderation of hedonic use on well-being. A sample of 236 student smartphone users participated in the study. The results revealed that smartphone addiction negatively impacts well-being by draining a key personal resource, energy, thus creating strain by using structural equation modeling analysis.

Honglv (2023) did a study on mobile phone use addiction, insomnia and depressive symptoms in adolescents from China ethnic minority areas in China: a latent variable mediation model. A sample survey was conducted among 10121 college students from four Yunnan provinces, China adopting the cluster sampling method. Insomnia was assessed using the Insomnia Severity Index Scale, Mobile Phone Use Addiction (MPUA) was assessed using the Self-Rating Questionnaire

for Adolescent Problematic Mobile Phone Use, and depressive symptoms were assessed using the Patient Health Questionnaire-9 items. A generalized linear model was used to analyze the association between Mobile Phone Use Addiction, insomnia, and depressive symptoms. The structural equation model was used to analyze the mediating effect of insomnia. The result shows that the positive rates of depression symptoms (39.2 %), Mobile Phone Use Addiction (MPUA) (30.8 %), and insomnia (22.3 %) are all relatively high in Yunnan college students.

Shi, Guan, Chen, Liu and Zhou (2022) did a study on smartphone addiction has become an urgent problem for college students. This study investigated the mediating effect of achievement goal orientation and the moderating effect of psychological resilience. A sample of 598 Chinese college students (17 to 25 years) participated in the study. They used the Teacher-Student Relationships Questionnaire, Achievement Goal Oriented Questionnaire, Psychological Resilience Scale (CD-RISC) and Smartphone Addiction Scale for College Students (SAS-C) questionnaire. The results indicated that (a) teacher-student relationships exerted negative prediction on smartphone addiction. (b) Achievement goal orientation played a partial mediating role in the relationship between teacher-student relationships and smartphone addiction of college students. (c) The teacher-student relationships and smartphone addiction was moderated by psychological resilience for college students with high psychological resilience teacher-student relationships had a more prominent negative effect on smartphone addiction.

Abbasi, Jagaveeran, Goh and Tariq (2021) did a study on the impact of the type of content use on smartphone addiction and academic performance: Physical activity as moderator. The data were collected using a structured questionnaire. The main locations for the distribution of questionnaires were the student center, cafeterias, the library and classes. A sample of 250

smartphone users participated in the study. They statistically analyzed using the partial least squares structural equation modeling technique. The results show that entertainment, social networking sites and game-related use have positive effects on smartphone addiction. Thus, it results in increased chances of developing smartphone addiction.

Al Battashi, Al Omari, Sawalha, Al Maktoumi, Alsuleitini and Al Qadire (2021) examined a study on the relationship between smartphone use, insomnia, stress, and anxiety among university students: A cross-sectional study. A sample consisting of 404 students from one public university completed questionnaires with items from the Smartphone Addiction Scale, the Depression Anxiety Stress Scale and the Insomnia Severity Index, with some demographic data. The research reveals that a high smartphone addiction scale score was significantly associated with higher anxiety and stress scores on the Depression Anxiety Stress scale and higher insomnia severity index score.

Liu, Zhou, Yang, Kong, Niu, and Fan (2017) conducted a study on Mobile phone addiction and sleep quality among Chinese adolescents: A moderated mediation model. This study examined the mediating role of rumination and the moderating role of mindfulness in the association between mobile phone addiction and sleep quality. A sample of 1196 Chinese adolescents was recruited to complete measures of mobile phone addiction, sleep quality, rumination and mindfulness. The results revealed that rumination partially mediated the relationship between mobile phone addiction and sleep quality.

Tamura, Nishida, Tsuji, and Sakakibara (2017) did a study on the association between excessive use of mobile phones and insomnia and depression among Japanese adolescents. A sample consist of 295 high school students aged 15–19 in Japan. Insomnia and depression were

assessed using Athene Insomnia Scales (AIS) and the Center for Epidemiologic Studies Depression Scale (CES-D). The result showed that mobile phone overuse can be linked to unhealthy sleep habits and insomnia. Hence, it is proven that increased use of mobile phone and/or overuse of mobile phone leads to poor quality of sleep and/or increase the chances of insomnia.

Mohammadbeigi et al. (2016) conducted a study on sleep quality in medical students; the impact of over-use of mobile cell-phone and social networks. A sample of 380 undergraduate students was selected by proportional stratified sampling in Qom, Iran. The data were collected by two standard questionnaires including Cell-Phone Over-Use Scale (COS) and the Pittsburgh sleep quality questionnaire. The result shows that overuse of the internet and social networks via smartphones is related to poor sleep quality and quantity. Therefore, increased access to social media platforms such as Instagram, Facebook, Twitter, IMO, and Q-Q paves the way towards reduced sleep quality among college students.

Randler, Wolfgang, Matt, Demirhan, Horzum, and Beşoluk (2016) examined a study on smartphone addiction proneness in relation to sleep and morningness–eveningness in German adolescents. Mobile phones are an important part of adolescents' life. Two studies focused on two different measures of smartphone addiction. The Smartphone Addiction Proneness Scale (SAPS) was applied to 342 younger adolescents in Study 1 and the Smartphone Addiction Scale was applied to 208 older adolescents in Study 2, both samples in southwest Germany. The research revealed that girls had higher scores than boys in smartphone addiction.

Demirci, Akgönül and Akpınar (2015) conducted a study to investigate the relationship between Smartphone use severity and sleep quality, depression, and anxiety in university

students. They used 319 university students (203 females and 116 males) in the study. Participants were divided into the following three groups: a smartphone non-user group, a low smartphone use group and a high smartphone use group. All participants were evaluated using the Pittsburgh Sleep Quality Index, Beck Depression Inventory, and Beck Anxiety Inventory; moreover, participants other than those in the smartphone non-user group were also assessed with the Smartphone Addiction Scale. The findings revealed that (a) the Smartphone Addiction Scale scores of females were significantly higher than those of males. (b) Depression, anxiety, and daytime dysfunction scores were higher in the high smartphone use group than in the low smartphone use group. (c) Positive correlations were found between the Smartphone Addiction Scale scores and depression levels, anxiety levels, and some sleep quality scores.

Section III. Insomnia

Gandaputra, Waluyo, Efendi and Wang (2021) did a study on the insomnia status of middle school students in Indonesia and its association with playing games before Sleep: gender difference. This study aimed to assess the association between playing online games before sleep and insomnia based on gender perspective among middle school students in Indonesia. A sample of 315 students from four middle schools in Jakarta, Indonesia was taken part in the study. The data were collected through a structured questionnaire called Insomnia Severity Index (ISI). The result shows that Grade 9 students were more likely to have moderate to severe insomnia than Grade 8 students for males. Female students who always played online games before sleep were more likely to have moderate to severe insomnia; such an association was relatively smaller for male students.

Gautam et al. (2021) analyzed a study on sleep quality and its correlates among adolescents of Western Nepal: a population-based study. The study assesses the prevalence of sleep quality and its associated factors, with 514 adolescents. The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality. The results showed that the variables were found to be statistically significant. The prevalence of sleep quality was 39.1%. The factors such as ethnicity, religion, place of residence, drinking status of the father, satisfaction with academic performances, use of tobacco, relationship with friends and classmates, use of the internet per day and use of the internet before falling asleep were found to be statistically significant with sleep quality. The overall prevalence of sleep quality among school-going adolescent students was 39.1% which was comparatively high.

Haugland et al. (2021) conducted a study on sleep duration and insomnia in adolescents seeking treatment for anxiety in primary health care. The present study aimed to explore the self-reported anxiety, insomnia, sleep onset latency, sleep duration and depressive symptoms that were assessed in 313 adolescents, referred to the treatment of anxiety within primary health care. As a result, 38.1% of students met the criteria for insomnia, 34.8% reported short sleep duration, and 83.1% reported long sleep onset latency. The total anxiety symptoms were related to all sleep variables after controlling age and sex, also all anxiety symptom sub-types were associated with insomnia and sleep onset latency. Adolescents with depressive symptoms accounted for most of the anxiety-sleep associations, emphasizing the importance of depressive symptoms for sleep

Lin., Potenza., Brostrom. and Pakpour (2021) conducted a study on internet gaming disorder, psychological distress and insomnia in adolescent students and their siblings: an actor-partner

interdependence model approach. The study focused to examine whether siblings' internet gaming disorder (IGD) symptoms may relate to depressive, anxiety symptoms, or sleep quality among each other. There were 320 dyads of adolescents and their siblings participated in the study. Each dyad completed the Internet Gaming Disorder Scale Form (IGD-SF9) the Depression Anxiety Stress Scale-21 (DASS-21) and Insomnia Severity Index (ISI). The actor-partner interdependence model (APIM) was applied to examine the relationship between internet gaming disorder (IGD) psychological well-being and insomnia severity in the dyadic data. The results revealed that internet gaming disorder scale (IGDSSF9) scores on depression, anxiety stress and insomnia severity were significant in both adolescent and their siblings. Partner effects internet gaming disorder scale (IGDS-SF9) scores on depression, anxiety, stress and insomnia severity were significant in both adolescents and their siblings. Healthcare providers may consider involving siblings when they design programs reducing internet gaming disorder (IGD) – related problems or improving psychological health and sleep for adolescents.

Rangel, Raposo and Rocha-Filho (2021) assessed internet addiction, headache and insomnia in University Students: a cross-sectional study. The main objective of the study was to assess whether there is an association between headache, insomnia and internet addiction. There were 420 university students, assessed with a headache impact test, hospital anxiety depression scale, insomnia severity index and internet addiction test. The results exposed that the severity of internet dependence is associated with the impact of headaches and with the severity of insomnia. It is concluded that the severity of internet addiction is associated with the severity of the headache and increased severity of insomnia.

Zhang, Wu, (2020) conducted a study on the effects of smartphone addiction on sleep quality among Chinese university students: The mediating role of self-regulation and bedtime procrastination. The study tested the effects of smartphone addiction on poor sleep quality, through self-regulation and bedtime procrastination. A sample of 427 Chinese undergraduate students aged 18 or older participated in the study. The results revealed that 1/3 of participants reported poor subjective sleep quality. Smartphone addiction and bedtime procrastination had a significant positive relationship, whereas self-regulation had a significant negative association, with poor sleep quality.

Li, Lau and Phoenix (2017) examined on the mediating effects of insomnia on the associations between problematic Internet use, including internet addiction (IA) and online social networking addiction (OSNA), and depression among adolescents. The sample consists of 1,015 smartphone users participated in the study. The results show that it may be effective to develop and implement interventions that jointly consider the problematic internet use, insomnia, and depression.

A study on investigating mediated effects of fear of COVID-19 and COVID-19 misunderstanding in the association between problematic social media use, psychological distress and insomnia was done by Lin, Brostrom, Mark, Griffiths and Pakpour (2020). The main focus was concerned with the potential psychopathology to explain the association between problematic social media use, psychological distress and insomnia. A sample of Iranian young adults ($n = 1078$ with 628 males) did questions and psychometric scales concerning psychological distress, problematic social media use, fear of COVID-19 and COVID-19 misunderstanding. Results exposed that social media use was significantly associated with

psychological distress and social media use was significantly associated with insomnia both directly and indirectly.

Section IV. Achievement Motivation

Lin, Liu, Fan, Tuunainen and Deng (2021) conducted a study on revisiting the relationship between smartphone use and academic performance: on a large scale. This study was about revisiting this relationship by scrutinizing the distinctions among mobile applications. A sample of 10,000 college students participated in this study. The results revealed the positive, direct impacts of using mobile learning and news applications on academic performance and the adverse effects of playing mobile games, as well as using social media, music and video, and entertainment book-reading applications.

Mafla, López, Eraso, Melo, Munoz and Schwendicke (2021) did a study on smartphone addiction associated with academic achievement among dental students: A cross-sectional study. A sample consisting of 374 dental students from the Universidad Cooperativa de Colombia School of Dentistry participated in this study. Smartphone addiction was assessed using the short version of the Smartphone Addiction Scale (SAS-SV), Students' semester grade point average (GPA) served as a measure of academic performance. The association between SAS-SV scores and GPA was tested using generalized linear modeling adjusting for covariates. The result revealed that smartphone usage was positively associated with dental students' academic performance.

Li, Gao, and Xu (2020) examined a study on the mediating and buffering effect of academic self-efficacy on the relationship between smartphone addiction and academic procrastination. To

understand the relationship between smartphone addiction and academic procrastination and the mechanisms at work within this relationship, this study constructs a mediation model to examine the impact of college students' smartphone addiction on their academic procrastination and the mediation effect of academic self-efficacy. A sample of 483 college students participated. The Smartphone Addiction Scale—Short Version, College Academic Self-Efficacy Scale and Tuckman Academic Procrastination Scale were used. The result showed smartphone addiction was positively related to academic procrastination while being negatively related to academic self-efficacy.

Sohn, Rees, Wildridge, Kalk, and Carter (2019) did a study on the prevalence of problematic smartphone usage and associated mental health outcomes among children and young people: a systematic review, meta-analysis and GRADE of the evidence. The study aimed to conduct a systematic review and meta-analysis to examine the prevalence of problematic smartphone usage and quantify the association with mental health harms. A sample of 924 studies was identified, 41 were included in this review, three of which were cohort studies and 38 were cross-sectional studies. The result shows that problematic smartphone usage was reported in approximately one in every four children and young people and is accompanied by increased odds of poorer mental health.

Kates, Wu and Coryn (2018) conducted a study on the effects of mobile phone use on academic performance: a meta-analysis. This study aims to explore the impact of the type of content used on smartphone addiction and academic performance by considering physical activity as a potential moderator. The sample of 250 undergraduate students was statistically analyzed using the partial least squares structural equation modeling technique. The result

reveals that entertainment, social networking sites, and game-related use have positive effects on smartphone addiction.

Hawi and Samaha (2016) examined a study on smartphone addiction among university students in Riyadh, Saudi Arabia. This study aimed to verify whether achieving a distinctive academic performance is unlikely for students at high risk of smartphone addiction. The study was conducted on 293 university students who participated by completing an online survey questionnaire posted on the university's student information system through a systematic random sampling method. The results showed that male and female university students were equally susceptible to smartphone addiction.

Barashdi, Bouazza and Jabur (2015) conducted a study on smartphone addiction among university undergraduates. The research also reviews the relationship between smartphone addiction among undergraduates and their academic achievement. The aim to find significant differences in addiction among undergraduates according to their gender, field of study, parent's educational level and family income level will be examined. The results regarding smartphone usage and family income had not shown contrary indications nor is there agreement about the results regarding smartphone use and parental education.

Lee, Cho, Kim and Noh, (2015) examined a study on smartphone addiction in university students and its implication for learning. This research is focused on the level of university students' addiction to their smartphones and to understand the difference between self-regulated learning, and learning flow, based on smartphone addiction level. A sample consisting of 210 students of university students in Seoul participated in this research. The result shows that smartphone addict learners were constantly interrupted by the other applications on their phones

when they are studying, and does not have enough control over their smartphone learning plan and its process.

Kim, (2013) conducted a study on exercise rehabilitation for smartphone addiction. This research has attempted to sketch out the diverse addiction treatment and the feasibility of exercise rehabilitation. They have used two discernible approaches: behavioral treatment and complementary treatment for adolescents. The result told that exercise rehabilitation contained systematic procedures and comprehensive activities compared to previous addiction treatments by contents and techniques. Thus, exercise rehabilitation can treat both physical symptoms at first and mental problems in the next step.

Singh, K. (2011) did a study of achievement motivation in relation to academic achievement of students. According to various theories, motivation may be rooted in the basic need to minimize physical pain and maximize pleasure, or it may include specific needs such as eating and resting, or a desired object, hobby, goal, state of being, ideal, or it may be attributed to less-apparent reasons such as altruism, selfishness, morality, or avoiding mortality. Motivation could also be seen as a function of the value of what is aimed at and the individual's expectations of success. The study revealed that individuals who are intrinsically motivated to learn do so for the pleasure of learning, rather than for external rewards while those who are extrinsically motivated to learn, are motivated to learn for external rewards that learning will bring. Also, students with high academic motivation are more likely to have increased levels of academic achievement and have lower dropout rates.

METHOD

Chapter III

Method

The procedure pertaining to the present study namely, Effects of Smartphone Addiction, Insomnia and Achievement Motivation among Young Adults was carried out involving the following steps:

- Objectives
- Hypotheses
- Area
- Sample
- Inclusion criteria
- Exclusion criteria
- Tools
- Procedure
- Analysis of data

Objectives

The study used a static group comparison research design to determine the regulatory focus on young adults. And the objectives are.

- ❖ To find the influence of Smartphone addiction on Insomnia and achievement motivation among young adults.
- ❖ To explore the relationship on Smartphone addiction, Insomnia and achievement motivation among young adults.
- ❖ To assess the level of Smartphone addiction among the young adults

- ❖ To assess the level of insomnia among the young adults.
- ❖ To assess the level of Achievement Motivation among the young adults

Hypothesis

The hypotheses are stated as Alternative hypotheses, so that they can be either accepted or rejected, based on the results.

- ❖ H1: There will be significant relationship between Smartphone Addiction and insomnia.
- ❖ H2: There will be significant relationship between Smartphone Addiction and Achievement motivation.
- ❖ H3: There will be significant relationship between Insomnia and Achievement motivation.
- ❖ H4: There will be a significant gender difference in Smartphone Addiction, insomnia and Achievement motivation among young adults.

Area

A particular institution was considered as the region for the current analysis. It is easy to obtain sufficient sample of young adults.

Sample

The population for the present research comprised of young adults from Coimbatore District. Both male and female were included in the study. The data was collected using simple random sampling method.

Inclusion Criteria

- ❖ Age ranges from 18-25 years
- ❖ Both male and female participants
- ❖ Students who score high in Smartphone Addiction Scale, Insomnia and Achievement Motivation
- ❖ Samples from College Students.

Exclusion Criteria

- ❖ The participants below the age of 18 and beyond the age of 25.
- ❖ The participants who are unwilling to participate.
- ❖ The participants with physical complaints were excluded from the study.
- ❖ Participants who did not complete full questionnaire were excluding from the study.

Tools

The following tools were used for data collection

- ❖ Smartphone Addiction Scale [Kwon et al, 2013]. It consists of 160 questions. The reliability of this scale is 0.97.
- ❖ Insomnia Inventory [The London Sleep Center, 2004]. It consists of 10 questions.
- ❖ Achievement Motivation Scale [Dr. D. Gopal Rao, 1974].

Smartphone Addiction Scale [Kwon et al, 2013]

The total score ranges from "strongly disagree" to "strongly agree," with a maximum of 198. The number of responses was divided into three levels of addiction: low (1-66), medium (67-132), and high (133-198). Smartphone Addiction Scale (SAS) was found to have an internal reliability of $\alpha = .97$. This scale will be used as a primary outcome and will be included in the baseline and follow-up assessments in order to determine the degree of change from baseline to follow-up.

Insomnia Inventory [The London Sleep Center, 2004]

Insomnia inventory was developed by the London Sleep Center (2004). It consists of 10 questions with two responses namely "True" or "False". Every "True" response weighs the value of 10 and the responses on "False" carries no values. The participants scored 30 or above exhibiting symptoms of insomnia, a persistent inability to fall asleep or stay asleep.

Achievement Motivation Scale [Dr. D. Gopal Rao, 1974]

Rao Achievement Motivation test is constructed and standardized by Dr. D. Gopal Rao. The test is in English. The test contains 20 incomplete sentences, each of which is followed by two possible alternatives, A&B, out of which one is an achievement-related items. Though both the alternatives are achievement oriented and socially acceptable, yet one of them implies a higher sense of achievement and excellence. The student has to indicate the alternative, he generally prefers. Generally, a student will take 8-10 minutes to complete the test.

Procedure

The subjects chosen for the research were students. Questionnaire and Response sheet were created and circulated to the participants. The inclusions in the sheets are Demographic data, Smartphone Addiction Scale, Insomnia Scale, Achievement motivation Scale. Participants were asked to fill each statements according to the instructions mentioned in the form with their consent. They were advised to attend all statements without fail. The scoring was done according to scoring key and interpreted using the norms provided by author.

Analysis of data

The data was analysed statistically using SPSS 29.0.0 (Statistical Package for the Social Sciences). Correlation was used to find the relationship between Smartphone Addiction, insomnia and Achievement motivation among Young Adults; and Independent Sample Test was computed.

Institutional Human Ethics Committee

As the study involves human subjects, all procedures described in the study was reviewed and approved by the Institutional Human Ethics Committee, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore. The approval number for the research purpose is **AUW/IHEC/CP-22-23/XMT-14**.

RESULTS AND DISCUSSION

Chapter IV

Results and Discussion

The present research is intended to explore the “**Effects of Smartphone Addiction on Insomnia and Achievement Motivation among Young Adults**”. The descriptive statistics include frequency and percentage was computed. The results of correlation and independent sample t test were used to identify the relationship between Smartphone Addiction on Insomnia and Achievement Motivation among Young Adults.

The sample consists of 200 students (both males and female) from an arts and Science College in the Coimbatore district based on inclusion and exclusion criteria. The inclusion criteria include age ranges from 18-25 years and the students who score high in Smartphone Addiction Scale, Insomnia and Achievement Motivation. The study includes the participants who have consented and are willing to participate in the study. The students were chosen using the Simple random sampling method. The data was analysed statistically using SPSS 29.0.0 (Statistical Package for the Social Sciences).

For clear understanding, this chapter has been included following tables.

Table 1: The Demographic Details of the Students

Table 2: Level of Smartphone Addiction

Table 3: Level of Insomnia

Table 4: Level of Achievement Motivation

Table 5: Correlation between Smartphone Addiction and Insomnia

Table 6: Correlation between Smartphone Addiction and Achievement Motivation

Table 7: Correlation between Insomnia and Achievement Motivation

Table 8: Group statistics on gender and Independent sample t- test for gender differences

Table 1:

The Demographic Details of the Students were presented in the table 1

Demographic details	Options	Frequency	Percent
Age	19	125	63
	20	75	38
Gender	Male	99	49
	Female	101	51
Qualification	Computer Science	85	43
	Information Technology	115	58
	Nuclear	145	73
Family Type	Joint	55	28
Purpose of Smartphone Usage	Message	66	3
	Making Reels	60	30
	Gaming	74	37
Hours of Sleep	Less than 6-8 hours	55	28
	6-8 hours	75	38
	More than 6-8 hours	70	35

***Percentages are rounded off**

Table 1 illustrates the demographic details of the students consisting of 200 young adults who were selected for the study with 63% of young adults belongs to 19 years of age and 38% of young adults were in the age range of 20 years. A total of 100% participants were both male and female young adults do actively participated throughout the study. Students from the different departments were taken into the study and 43% of students were from the Computer Science department, 58% from information technology. The majority of the students were from the nuclear family type with 73% and only 28% of the students were from the joint family type. The students reported that they use their smartphone predominantly for making reels with 30%, they reported for gaming they reported with 74% and only 3% reported they use their smartphone for messaging purpose. The majority of the students were reported they sleep at least 6 to 8 hours 55% , most of the students reported that they sleep 6 – 8 hours and only 30% of the students recorded as less than 6 hours of sleep.

Smartphone Addiction

Table 2:

Level of Using Smartphone Addiction among Young Adults

Variable	Levels	N	Percent
	Low	3	2
Smartphone addiction	Average	80	40
	Above Average	108	54
	High	9	5

***Percentages are rounded off**

Table 2 shows the level of Smartphone addiction among young adults. Out of 200 students, only 4% of the participants scored as low level of smartphone addiction. This gives a clear indication that the students have a good awareness on the purpose of their smartphone use. Eighty four percent of the students had a medium screen time and 12% of students had a high level of smartphone usage. It proves that medium level of smartphone was seen in the students and low level of high smartphone users in this research. The students were using smartphone most of the time but still they do not get addicted to it. They know the consequences of smartphone usage such as neglect or trouble completing duties at work, school, or home, more and more time on using a phone, checking people's profiles repeatedly due to anxiety, accidents or injury due to phone use, working later to complete tasks and weak or non-existent social life. Only some of students had scored high in smartphone usage despite knowing the consequences. They can manage smartphone usage by doing meditation or make them involving with physical activity

Figure I:

Level of Using Smartphone among Young Adults

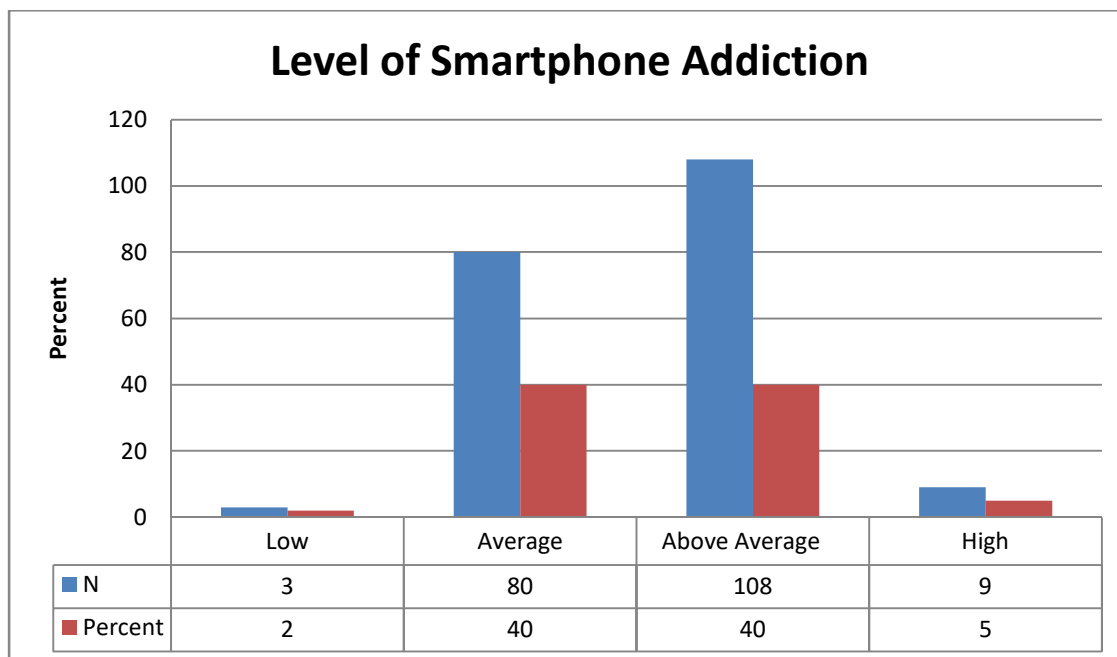


Figure I show that levels of smartphone usage among young adults. The bar graph indicates that most of the students have an above average level of smartphone usage. Only a least population of students have reported on high level of smartphone usage and low level of smartphone usage.

Insomnia

Table 3:

Level of Insomnia among Young Adults

Variable	Levels	N	Percent
Insomnia	Low	14	7
	Medium	22	11
	High	164	82

***Percentages are rounded off**

Table 3 illustrates the level of insomnia among young adults. Almost, all the students have a high score 82% in insomnia, 11% of the student scored medium level of insomnia and only 7% of the student scored minimal level of insomnia. This explains that all the students may face problems with their sleep. They might spend more time on other activities like increased screen-time, scrolling instagram and chatting with friends etc., rather than sleeping. So, their sleep time reduced to less than 6 hours. It might affect their physical as well as mental health. The person with poor sleep faces problems like lack of concentration, irritability and cannot do any daily activities and so on. To improve the quality of sleep, engaging in moderate aerobic activity increases the amount of restorative slow wave (deep) sleep you experience. Even while sleep is affected by physical exercise, the exact reason is unknown to researchers. It is well established that smartphone light disrupts sleep. So, we should avoid using smartphone before sleep for better morning.

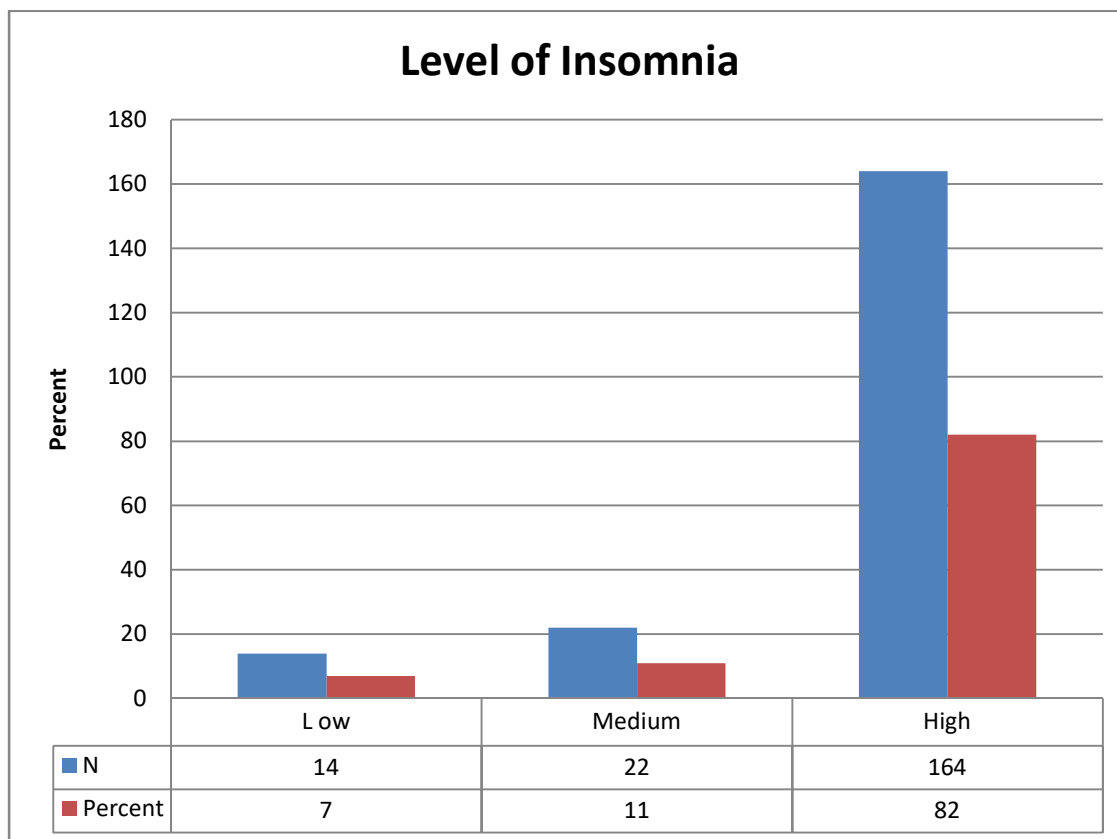
Figure II:*Level of Insomnia among Young Adults*

Figure II shows the level of insomnia among young adults. This bar graph indicates maximum level of students was reported to have insomnia. Only a limited population of students had a low level of insomnia. This shows that many of the young adults facing problem with sleep and cannot wake up early.

Achievement Motivation

Table 4:

Level of Achievement Motivation among Young Adults

Variables	Levels	N	Percent
	Low	97	49
Achievement	Medium	100	50
Motivation	High	3	2

***Percentages are rounded off**

Table 4 shows the level of achievement motivation among young adults. Most of the students 50% had a medium level of achievement motivation, 49% of students had a low level of achievement motivation and only 2% of students had high achievement motivation. It explains that the students have achievement motivation not up to high level. Also half of the students have low level in achievement motivation. Motivation helps people to achieve and to set a goal. A student should need achievement motivation to reach their setting goals and also to study. To improve the students' achievement motivation, they should set small goals which cannot get affected by the external factors and achieve it step by step. If they face any difficulty, they can seek help from teachers or friends to give them a feedback and improve the mistakes one by one.

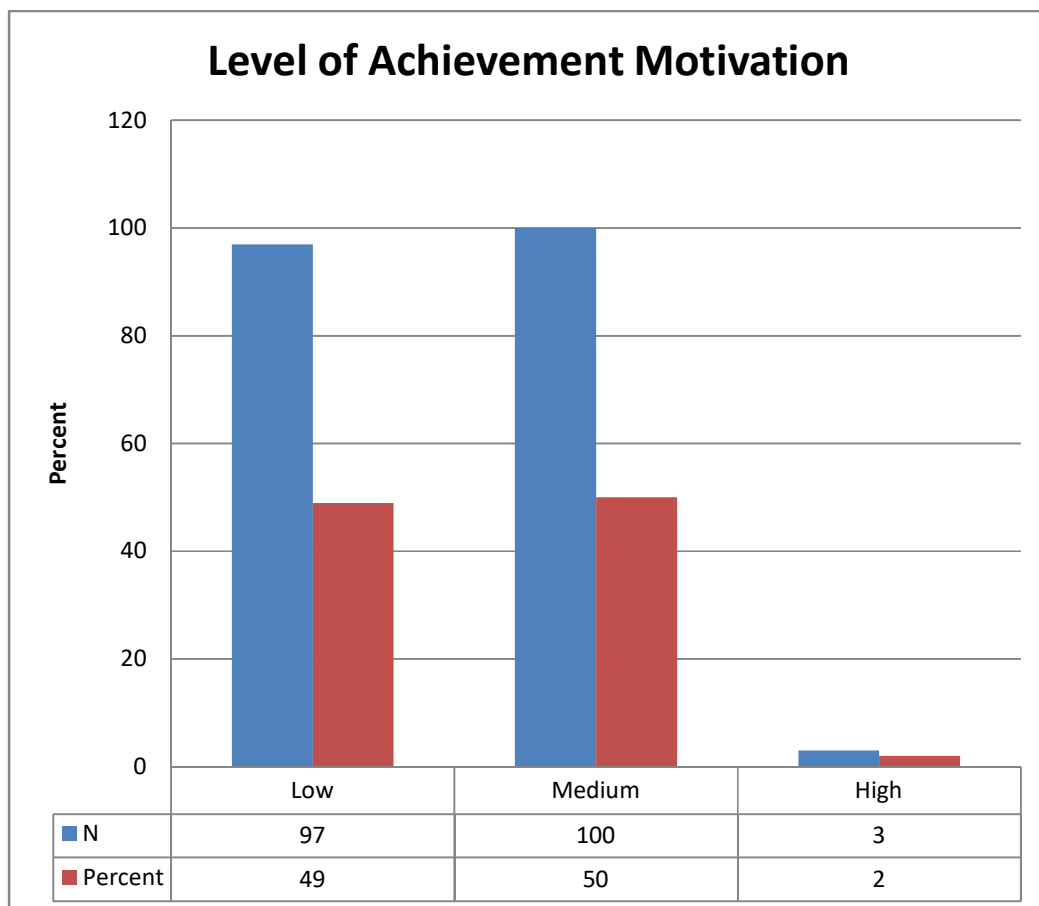
Figure III:*Level of Achievement Motivation among Young Adults*

Figure III shows the level of achievement motivation among young adults. This bar graph shows that the half of the students has medium level of achievement motivation and half of the students have low level of achievement motivation. Only few members have a high level of achievement motivation. So they need a guidance on improving one's own achievement motivation.

Correlation

Table 5:

Correlation between Smartphone Addiction and Insomnia among Young Adults

Variables		Smartphone Addiction	Insomnia
Smartphone Addiction	Pearson Correlation	1	.324**
	Sig. (2-tailed)		<.001
	N	200	200
Insomnia	Pearson Correlation	.324**	1
	Sig. (2-tailed)	<.001	
	N	200	200

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

Table 5 shows the Correlation between Smartphone Addiction and Insomnia among young adults. The correlated score between smartphone addiction and insomnia is found to be 0.32, which shows there is a significantly positive correlation. Therefore, higher levels of smartphone addiction are predicted to have higher levels of insomnia. Smartphone frequently enable access

to numerous types of entertaining material, such as social media, gaming, and entertainment applications. Excessive smartphone use, particularly before night, can cause a delay in sleep initiation and a reduction in sleep length. The stimulating nature of smartphone activities can interfere with the natural process of calming down and preparing for sleep, contributing to insomnia symptoms. Smartphone addiction and insomnia can lead to a vicious cycle of reliance in which excessive smartphone use causes sleep disruptions, and the accompanying insomnia leads to further smartphone use as individuals try to relieve boredom or find distractions during restless nights. Blue light emitted by smartphone, tablets, and laptops might disrupt their sleep. Avoid using electronic gadgets at least an hour before going to bed. If they must use them, consider utilizing blue light filters or setting night mode to decrease the impact on their sleep. Both smartphone addiction and sleeplessness symptoms can be perpetuated by this self-perpetuating loop. Engage in relaxing activities before going to bed to communicate to our body that it's time to unwind. Activities such as reading a book, taking a warm bath, practicing relaxation techniques such as deep breathing or meditation, or listening to soothing music can all fall into this category.

A study aimed to assess Chinese medical students' smartphone addiction and its effects on sub health and insomnia. Of 2741 students who completed the survey, 1,447 (52.8%) had smartphone addiction. The result indicates that there was a significant relationship between smartphone addiction and insomnia (Liu, H et al., 2022).

A study on "Relationships between Problematic Smartphone Use, Sleep Quality, and Mental Health Symptoms in Adolescents" (Demirci et al., 2015) explains about the association between problematic smartphone uses, sleep quality, and mental health symptoms was studied in this study of 309 Turkish adolescents. According to the findings, there is a substantial positive link

between problematic smartphone use and sleep disturbances, implying that excessive smartphone use can disrupt sleep patterns and negatively impact mental health.

Hence the Hypothesis 1 stating, “*There will be a significant relationship between Smartphone Addiction and Insomnia among young adults*” is **accepted**

Table 6:*Correlation between Smartphone Addiction and Achievement Motivation among Young Adults*

Variables		Smartphone Addiction	Achievement Motivation
Smartphone Addiction	Pearson Correlation	1	-.002 ^{NS}
	Sig. (2-tailed)		.982
	N	200	200
Achievement Motivation	Pearson Correlation	-.002 ^{NS}	1
	Sig. (2-tailed)	.982	
	N	200	200

Table 6 shows the Correlation between Smartphone Addiction and Achievement Motivation among Young Adults. The score between the smartphone addiction and achievement motivation was found to be -.002, which indicates there was no correlation was existed between these two variables. It explains that, even when smartphone addiction increases, it will not create any changes in achievement motivation of the young adults. Smartphone addiction and achievement

motivation are two distinct notions with unique psychological foundations. Smartphone addiction is defined as excessive and problematic smartphone use, which is frequently accompanied by a loss of control and bad repercussions in numerous aspects of life. Achievement motivation, on the other hand, refers to an individual's ambition and drive to succeed, achieve goals, and strive for personal progress. These two concepts are not necessarily linked and address separate aspects of human behaviour. Other elements that must be examined can alter the association between smartphone addiction and accomplishment motivation. Socioeconomic position, educational background, parental support, and peer influences, for example, can all play important roles in an individual's accomplishment drive. These factors can interact with smartphone use patterns and have independent effects on motivation, making it difficult to draw a direct link between smartphone addiction and accomplishment motivation. The students can divide their most ambitious objectives into smaller, more manageable activities. This keeps them from becoming overwhelmed and gives them a chance to feel like they've made progress, which can be encouraging.

Hence the Hypothesis 2 stating, “*There will be significant relationship between Smartphone Addiction and Achievement motivation*” is **rejected**.

Table 7:*Correlation between Insomnia and Achievement Motivation among Young Adults*

Variables		Insomnia	Achievement Motivation
Insomnia	Pearson Correlation	1	-.038 ^{NS}
	Sig. (2-tailed)		
	N	200	200
Achievement Motivation	Pearson Correlation	-.038 ^{NS}	1
	Sig. (2-tailed)	.592	.592
	N	200	200

Table 7 shows the Correlation between Insomnia and Achievement Motivation among Young Adults. The correlated score of insomnia and achievement motivation is found to be -.038, which shows that these two variables are Negatively correlated and . That is, even the levels of insomnia are high or low; it cannot affect the level of achievement motivation among the participants. Having trouble falling asleep, having trouble staying asleep, or having poor-quality sleep is referred to as insomnia. The motivation to attain goals and succeed in all areas of life, on the other hand, is related to a person's drive and motivation. There are various underlying mechanisms for each of these unique psychological constructs. While accomplishment motivation concentrates on the inner urge to succeed and complete objectives, insomnia largely impacts sleep patterns and quality. The two ideas are not related in any inherent way because of

this. People's vulnerability to insomnia and levels of achievement motivation vary. Some people may suffer from insomnia while being highly motivated and eager to attain their goals, whilst others may battle with both sleep and motivation. The effect of insomnia on accomplishment motivation is expected to differ based on factors such as resilience, coping methods, and the presence of other external motivational stimuli. Individual characteristics make establishing a consistent and direct relationship between sleeplessness and achieving motivation difficult.

Hence the Hypothesis 3 stating, "*There will be significant relationship between Insomnia and Achievement motivation*" is **rejected**.

Table 8

Group statistics on gender and Independent sample t- test for gender differences among variables

Variables	Gender	N	Mean	SD	<i>t</i>	<i>p</i>
Smartphone Addiction	Male	99	2.07	.357	-.832	.406
	Female	101	2.12	.454		
Insomnia	Male	99	2.77	.512	-1.009	.316
	Female	101	2.83	.376		
Achievement Motivation	Male	99	1.58	.497	1.211	.227
	Female	101	1.49	.559		

Table 8 shows the gender difference in smartphone addiction, insomnia and achievement motivation among young adults calculated using Independent sample *t* -test. The mean score of smartphone addiction among male and female are 2.07 and 2.12 respectively. The mean score of insomnia among male and female are 2.77 and 2.83 respectively. The mean score of achievement motivation among male and female are 1.58 and 1.49 respectively. The *t*- value for smartphone addiction is found to -.832. The *t* - value for insomnia is found to -1.009. The *t*- value for achievement motivation is found to 1.211. There is no gender difference in smartphone addiction, insomnia and achievement motivation among young adults. However, it is important to keep in mind that different research may have different definitions of "smartphone addiction," and different ways of measuring problematic smartphone use can yield different results. Insomnia can be caused by a variety of variables, some of which may differ between men and women, including stress, lifestyle choices,

and underlying medical issues. It is significant to emphasize those societal and cultural expectations, as well as other factors, can affect accomplishment motivation, and that these influences may vary between males and females.

According to a 2019 study that appeared in the journal *Computers in Human Behaviour*, there were no appreciable differences in achievement motivation, smartphone addiction, or insomnia between male and female college students in China. The same publication, however, reported in 2020 that male college students in India had higher levels of smartphone addiction than female college students. In a similar vein, while some research has shown a link between smartphone addiction and insomnia, others have not. And although some research has identified no substantial link between smartphone addiction and insomnia and achievement motivation, others have not.

There is no significant gender difference in Smartphone Addiction, Insomnia and Achievement motivation among young adults. Hence the formulated hypothesis 4 has been **rejected**.

SUMMARY AND CONCLUSIONS

Chapter V

Summary and Conclusion

Effects of Smartphone Addiction on Insomnia and Achievement Motivation among Young Adults were conducted to understand the psychological aspects of Smartphone Addiction, Insomnia and Achievement Motivation. The uncontrolled and extensive use of a smartphone is known as smartphone addiction. When used excessively, smartphone can be troublesome. Excessive smartphone use, for example, can result in the maladaptive behavioral difficulties seen in impulse control disorders in general or pathological gambling; it can interfere with school or work, reduce real-life social interaction, reduce academic ability, cause relationship problems, and cause physical health-related problems such as blurred vision and pain in the wrists or back of the neck. Insomnia is the inability to sleep adequately. Causes may include poor sleeping conditions, circulatory or brain disorders, a respiratory disorder known as apnea, stress, or other physical or mental disorders. Motivation means any forces acting either on or within a person to initiate behaviour.

The study was initiated with the following objectives

- ❖ To find the influence of smartphone addiction on Insomnia and motivation achievement among young adults.
- ❖ To explore the relationship on smartphone addiction, Insomnia and motivation achievement among young adults.
- ❖ To assess the level of smartphone addiction among the young adults
- ❖ To assess the level of Achievement Motivation among the young adults

- ❖ To assess the level of insomnia among the young adults

The hypothesis formulated for the research was

- ❖ H1: There will be a significant relationship between Smartphone Addiction and insomnia among young adults.
- ❖ H2: There will be significant relationship between Smartphone Addiction and Achievement motivation.
- ❖ H3: There will be significant relationship between Insomnia and Achievement motivation.
- ❖ H4: There will be a significant gender difference in Smartphone Addiction, insomnia and Achievement motivation among young adults.

The sample for the study consisted of 200 young adults of age 18 to 25 years (99 male and 101 female), who live in Coimbatore. The data was collected in person using purposive sampling technique. Socio-demographic status profile Smartphone Addiction Scale [Kwon et al, 2013], Insomnia Inventory [The London Sleep Center, 2004] and Achievement Motivation Scale [Dr. D. Gopal Rao, 1974] were given to the participants and they were instructed to read each item very carefully and choose the options that suits them the best. They were informed that the data collected will be confidential. The scoring was done according to the scoring key and interpreted using the norms provided by the authors. The results were analyzed using the SPSS software version 29.0.0.0. Pearson Correlation and Independent Sample T test were used to verify the hypothesis.

- Hence the Hypothesis 1 stating, **“There will be a significant relationship between Smartphone Addiction and Insomnia among young adults”** is accepted.
- Hence the Hypothesis 2 stating, **“There will be significant relationship between Smartphone Addiction and Achievement motivation”** is rejected.
- Hence the Hypothesis 3 stating, **“There will be significant relationship between Insomnia and Achievement motivation”** is rejected.
- There is no significant gender difference in **Smartphone Addiction, Insomnia and Achievement motivation among young adults**. Hence the formulated hypothesis 4 has been rejected.

Conclusion

Smartphone addiction among young adults may cause problems both physically and mentally. It affects the sleep cycle and achievement motivation of the students. They know the consequences of smartphone usage such as neglect or trouble completing duties at work, school, or home, more and more time on using a phone, checking people’s profiles repeatedly due to anxiety, accidents or injury due to phone use, working later to complete tasks and weak or non-existent social life. The person with poor sleep faces problems like lack of concentration, irritability and cannot do any daily activities and so on. The results indicated that there is a significant relationship between Smartphone addiction and insomnia among young adults. However, there is no significant relationship between Smartphone addiction and achievement motivation also no relationship was found between Insomnia and achievement motivation among young adults. Hence, it is important to focus on the Smartphone and its effects over sleep. This study shows the relationship between Smartphone addiction and sleep among young adults.

Limitations

- The research is conducted from a particular institution at Coimbatore only.
- The sample included only young adults (18 to 25 years) who using smartphone.
- Only the students from Computer Science and Information technology were included.

Suggestion

- A study can expanded to diversify and cross cultured samples.
- Interventions studies can be done in the present study.
- The study can include other variables like aggression, isolation, happiness and so on.

Implication

According to the current study, smartphone addiction causes sleeplessness, which may lower young adults' ambition to succeed. Therefore, the students require early help and direction to enhance sleep and motivation for academic success. According to the study, students should learn how to manage their increased use of smartphone using psychological strategies, such as engaging in soothing activities before night to signal to their bodies that it's time to decompress. Activities that fit into this category include reading a book, having a warm bath, meditating, deep breathing, or listening to calming music. These activities can also aid with a person's sleep cycle. Putting their attention on these areas enables young adults to focus and get over obstacles.

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ANNEXURES

Annexure I

Consent Form

Student Consent Form

I (Priyadharsini S) am pursuing my Master's degree in Clinical Psychology and I would like to have your participation in this academic research. I assure confidentiality with the details provided by you and it will be used only for the academic purpose. Thank you for the same.

Study Procedure

You will be given three tests in form type along with socio demographic profile. You need to Respond to all items in the tests. There is no risk in undertaking the study. There will be no direct benefits to you for your participation in this study. Your response to the question will be anonymous and kept confidential. Your participation in this study is voluntary. It is up to decide to whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign this form. You are free to withdraw at any time and without giving any reason. There is no cost to you for your participation in this study.

Consent Form

“By signing this consent form, I confirm that I have and understood the information and have the opportunity to ask questions. I understand that my participation is voluntary and I am free to withdrawal any time, without giving a reason and without cost. I voluntarily agree to take part in this study.”

Name of the participant:

Signature:

Date:

Place:

Annexure II

Socio-Demographic Status Profile

NAME :

AGE :

GENDER : M/F

CLASS PURSUING :

QUALIFICATION :

FAMILY TYPE :

AREA : Rural/ Semi Urban/ Urban

HOURS OF SLEEP :

I assure that the data collected will be used only for the study and will not be used for any other purposes and confidentiality will be maintained throughout and even after the study.

Annexure III

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore - 641043, India.

Confidentiality Statement

I Priyadharsini. S, pursuing II MSc., in Clinical Psychology from the Department of Clinical Psychology in Avinashilingam Institute for Home science and Higher Education for Women, Coimbatore-43, is assigned to do a thesis as a part of curriculum to complete my course. In this connection, I am going to collect the information from Young adults (18 – 25 years) as my topic is **“Effects of Smartphone Addiction on Insomnia and Achievement Motivation among Young Adults”**. I assure that the data collected will be used only for the study and will not be used for any other purposes and confidentiality will be maintained throughout and even after the study.

Place:

Signature of the Researcher

Date:

Annexure IV

Smartphone Addiction Scale (SAS)

Instructions:

Read each statement carefully and mark your response on the 6 point rating scale based on your situation, to what extent do you agree with the following statements.

S. No	Statement	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1.	Missing planned work due to smartphone use						
2.	Having a hard time concentrating in class, while doing assignments, or while working due to smartphone use						
3.	Experiencing light headedness or blurred vision due to excessive smartphone use						
4.	Feeling pain in the wrists or at the back of the neck while using the smartphone						
5.	Feeling tired and lacking adequate sleep due to excessive smartphone use						
6.	Feeling calm or cozy						

	while using a Smartphone						
7.	Feeling pleasant or excited while using smartphone						
8.	Feeling confident while using a smartphone						
9.	Being able to get rid of stress with a smartphone						
10.	There is nothing more fun to do than using my smartphone						
11.	My life would be empty without my Smartphone						
12.	Feeling most liberal while using a smartphone						
13.	Using a smartphone is the most fun thing to do						
14.	Won't be able to stand not having a smartphone						
15.	Feeling important and fretful when I am not holding my smartphone						
16.	Having my smartphone in my mind even when I am not using it						
17.	I will never give up using my smartphone even when my daily life is						

	already greatly affected by it						
18.	Getting irritated when bothered while using my smartphone						
19.	Bringing my smartphone to the toilet even when I am in a hurry to get there						
20.	Feeling great meeting more people via smartphone use						
21.	Feeling that my relationships with my smartphone buddies are more intimate than my relationships with my real-life friends						
22.	Not being able to use my smartphone would be as painful as losing a friend						
23.	Feeling that my smartphone buddies understand me better than my real-life friends						
24.	Constantly checking my smartphone so as not to miss conversations between other people on Twitter or Face book						
25.	Checking SNS (Social Networking Service)						

	sites like Twitter or Facebook right after waking up						
26.	Preferring talking with my smartphone buddies to hanging out with my real-life friends or with the other members of my family						
27.	Preferring searching from my smartphone to asking other people						
28.	My fully charged battery does not last for one whole day						
29.	Using my smartphone longer than I had intended						
30.	Feeling urge to use my smartphone again right after I stopped using it						
31.	Having tried time and again to shorten my smartphone use time, but failing all the time						
32.	Always thinking that I should shorten my smartphone use time						
33.	The people around me that I use my smartphone too much						

Annexure V

Insomnia Inventory

The London Sleep Centre (2004)

Take this to see if you could be affected by a sleep disorder. There are two possible responses to each item, true or false. Tick anyone of the 2 options, which applies to you. Do it as quickly as possible.

S.NO	QUESTIONS	TRUE	FALSE
1.	I have difficulty in falling asleep		
2.	Thoughts race through my mind and this prevents me from sleeping		
3.	I feel afraid to go to sleep		
4.	I wake up during the night and can't go back to sleep.		
5.	I worry about things and have trouble relaxing.		
6.	Despite sleeping all night, I don't feel refreshed when I awaken.		
7.	I wake up earlier in the morning than I would like to.		
8.	I lie awake for half an hour or more before I fall asleep.		
9.	I wake in the morning with muscle or joint stiffness and aches.		
10.	I feel sad and depressed.		

Annexure VI

Achievement Motivation Scale

Dr. D. Gopal Rao, 1974

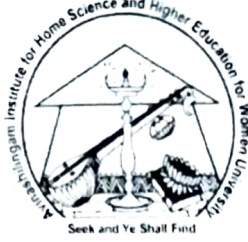
This test contains 20 incomplete sentences each of which is followed by two possible alternatives, A and B. You have to indicate the alternative which is preferable to you. Do not omit any questions.

S.NO	QUESTIONS	ALTERNATIVES
1	I enjoy reading	a) A comic book b) A book of adventure
2	As a student, I like to be called	a) A well-dressed student in my class b) An intelligent student in my class
3	When I grow up, I want	a) To do something which others have not done b) To lead a comfortable life
4	As a doctor, I want	a) To be well known surgeon b) To make a lot of money
5	During the holiday, I want	a) To visit my friends and relatives b) To paint or write a story or a poem
6	While answering in the examination, I aim	a) At finishing before time b) At answering better than my classmates
7	I want to become rich	a) By earning money by hard work

- 8 I take pride
- 9 It is my nature
- 10 I have a tendency
- 11 I want to study well
- 12 As an engineer, I would like
- 13 After 10 years, I will be
- 14 As a student, I would like
- 15 I feel very unhappy
- 16 I want to do something
- 17 Generally I make friends
- b) By winning a prize in the lottery
- a) In standing first in my class
- b) In helping poor students
- a) To take life easily
- b) To undertake difficult tasks
- a) To work on a task till it is completed
- b) To change the task if I get bored
- a) To avoid blame from my parents
- b) To excel others in my class
- a) To construct a method in building in my town
- b) To grow rich and buy a car
- a) Earning a lot of money
- b) A well-known person in my job
- a) To study for my future career
- b) To visit different places in the world
- a) When someone knocks away my purse
- b) When I fail to do my best in the examination
- a) Which will make me wealthy
- b) Which others can hardly do
- a) With those who are intelligent

- 18 I feel upset
- 19 I feel my success depends
- 20 I want to practice hockey everyday
- b) With those who are clean and neat
- a) When I am blamed
- b) When I fail to succeed
- a) Upon my hardwork
- b) Upon my parents and relatives
- a) So that I may be selected for the Olympic game
- b) So that I may keep myself fit and healthy

INSTITUTIONAL HUMAN ETHICS COMMITTEE



Avinashilingam

Institute for Home Science and Higher Education for Women
(Deemed to be university under Category 'A' by MHRD, Estd. u/s 3
of UGC Act 1956) Re-accredited with 'A⁺⁺' Grade by NAAC.
Recognised by UGC Under Section 12 B
Coimbatore- 641043, Tamil Nadu, India

06.01.2023

Chairman

Dr. Sudha Ramalingam
Director – Research and Innovation
Professor- Community Medicine,
PSG Institute of Medical Sciences
&Research, Coimbatore

Member Secretary

Dr. A Thirumani Devi
Professor
Department of Food Science and
Nutrition

Members

Mr. K. Arulmoli (Legal Expert)
Dr. SubashiniK.Sripathi
Dr. A Saraswathy (Medical Officer)
Ms. D. Kavitha
Dr. A R Sudamani Ramasamy
Dr. G. Victoria Naomi
Dr. Judith Justin
Dr. Anitha Subash
Dr. K. Sampath Rani

To
Ms. Priyadharsini, S.
Department of Clinical Psychology
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore- 641043

Dear Priyadharsini,

Ref: Your proposal No. IHEC/22-23/CP-14 entitled "Effect of Smartphone Addiction and Insomnia and Achievement Motivation among Young Adults" submitted for approval of IHEC on 19.11.2022.

The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No.IHEC/22-23/CP-14 entitled "Effect of Smartphone Addiction and Insomnia and Achievement Motivation among Young Adults" submitted by you. The Approval number for the same is AUW/IHEC/CP-22-23/XMT-14.

We wish you all the best in your research endeavours.

Regards


6.1.23
Dr. A Thirumani Devi
Member Secretary

