Still Minds, Timely Minds -

Personality, Procrastination, and the Promise of Meditation

A thesis submitted in the partial fulfilment of the requirement for the degree of

MASTER OF ARTS IN PSYCHOLOGY

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Abstract

This study investigates the interplay between personality, resilience, and academic procrastination. Drawing on ayurveda-based triguna and big five personality frameworks the research is structured into three studies. Study 1 employs a correlational design with 300 students to examine the relationships between Triguna personality types (Sattva, Rajas, Tamas), resilience, and academic procrastination among college students aged 17 to 24 years (M = 20.69, SD = 2.2). Sattva (the mindset of balance, purpose, and mindful action) came out as the strongest predictor (B = -1.211, p < .001) of procrastination. Study 2 examines concurrent validity between big five personality types and Triguna theory in academic procrastination. Conscientiousness negatively predicted procrastination (B = - 4.432, $p < .001$) and sattva was positively correlated with Conscientiousness (r = .275, p < .01) Study 3 attempts to enhance 'focus' an element of sattva via meditation. Headspace was used with 38 students aged 18 to 22 years (M = 19.32, SD = 1.2) over four weeks. Scores in high procrastination group dropped within the course of meditation t(18) = 7.53, $p < .001$, $d = 1.73$. Low procrastinators showed a moderate increase, t(18) = -2.69, $p = .015$, $d = -0.62$. Mind wandering showed significant time effect, $F(1.58, 3.08) = 11.27$, $p < .001$, $\eta^2 = .238$, with a notable reduction in high procrastinators ($p = .013$, $d = 0.76$), and a large between-group difference at (t(36) = 4.25, $p < .001$, $d = 1.45$). Impulsivity was measured with a go-no-go task. Omission errors decreased significantly over time ($p = .041$, $\eta^2 = 0.107$). Go accuracy improved significantly across sessions ($p = .041$, $\eta^2 = 0.107$), though reaction time showed no significant change.

Keywords : Procrastination, Personality, Meditation, Mind-Wandering, Impulsivity

CERTIFICATE

This is to certify that the thesis entitled, 'Still Minds, Timely Minds - Personality, Procrastination, and the Promise of Meditation' is being submitted in partial fulfilment of requirements for the award the of the degree of Master of Arts in Psychology, presented in the Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala is a bonafide work carried out under the supervision of Dr. Ipshita Chowdhury, Assistant Professor, Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala and that no part of this project has been submitted for the award of any other degree.

(NIDHI SINGH)

This is to certify that the above statement made by the student concerned is correct and true to the best of my knowledge.

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CANDIDATE'S DECLARATION

I hereby declare that the work presented in this thesis entitled, ‘Still Minds, Timely Minds - Personality, Procrastination, and the Promise of Meditation’ submitted in partial fulfilment of requirements for the award the of the degree Master of Arts in Psychology, presented in the Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala, is an authentic record of my work carried out under the supervision and guidance of Dr. Ipshita Chowdhury, Assistant Professor, Thapar School of Liberal Arts & Sciences, Thapar Institute of Engineering and Technology, Patiala and refers other researchers’ work which are duly listed in the reference section.

The matter embodied in this thesis has not formed the basis for awarding any other degree at this or any other university.

Date - May, 2025

(NIDHI SINGH)

This is to certify that the above statement made by the student concerned is correct and true to the best of my knowledge.

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TABLE OF CONTENTS

CHAPTER 1 - INTRODUCTION

1.1 The Triguna Framework in Indian Psychology

Triguna, an ancient Indian psychological and philosophical framework rooted in the Sankhya school, one of the six classical schools of Indian thought, underpins much of Ayurveda, Yoga, and the Bhagavad Gita (Rao & Paranjpe, 2015). This Indigenous theory describes the entire physical universe as an interaction of Purusha (pure consciousness) and Prakriti (nature or matter). Purusha forms the inner core of the personality, while everything in the universe (physical and psychological) is regarded as originating from Prakriti (Rajpurohit & Satpathy, 2022). According to the Sāṅkhya Kārikā (Ishvarakrishna), Purusha is guna-atīta (beyond the gunas – devoid of attributes), whereas Prakriti is trigunātmika (constituted by the three gunas) – Sattva, Rajas, and Tamas represent fundamental qualities believed to pervade all of nature and human behavior (Larson & Bhattacharya, 1987).

Sattva Guna is characterized by balance, harmony, goodness, purity, clarity, knowledge, joy, and tranquility. Individuals with dominant Sattva exhibit positive traits such as contentment, kindness, peace, wisdom, and self-control, making it conducive to spiritual growth and higher consciousness. Rajas Guna is defined by qualities like energy, activity, passion, movement, and ambition. It fosters positive traits like motivation for change, creativity, and industriousness. However, Rajas can also lead to negative traits such as impulsiveness, restlessness, uncertainty, attachment, greed, and stress. Tamas Guna embodies qualities of inertia, darkness, ignorance, lethargy, and apathy. It is linked to negative traits such as confusion, laziness, depression, dependency, and delusion, which tend to obstruct progress and hinder growth (Chandra, 2024). Chakraborty equated them to Sattva, Rajas, and Tamas – symbolizing illumination, movement,

and obstruction, respectively, which form the mental characteristics of an individual (Khanna et al., 2013).

According to Ayurvedic and yogic literature, these qualities are not mutually exclusive but every individual possesses all three gunas in varying proportions, which collectively define their personality and behavioral tendencies (Deshpande, 2013). They are always in a dynamic interaction. All three forces remain intertwined, affecting each other in various ways (Shilpa & Murthy, 2011). The earliest references to the gunas are found in the Bhagavad Gita, where they are described as the fundamental energies shaping human personality, behavior, and even dietary preferences (Sharma et al., 2021).

Historically, the Triguna concept was integrated into Ayurveda, where it is used to explain the psychological aspects of health, complementing the Tridosha theory that governs physical constitution. Ayurveda recognizes tridoshas (Vata, Pitta, Kapha) as an integral part of human physiology; similarly, Triguna forms an integral part of human psychology (Chandra, 2024). Classical Ayurvedic texts and later scholars like Acharya Bhavamisra have explored the relationship between Triguna and Tridosha, noting, for example, that Vata is predominantly Rajasic, Pitta is Sattvic, and Kapha is Tamasic in nature (Sandhya & Vinodkumar, 2021).

The vedic personality inventory and mysore triguna scale are the psychometric tools developed to operationalize the ancient Indian psychological concept of Triguna, quantifying these tendencies to allow for empirical research on how these gunas influence cognitive, emotional, and behavioral outcomes. Unlike Western personality theories, which emphasize static traits, the

Triguna framework sees personality as dynamic and transformable through lifestyle, ethical conduct, and spiritual practices (Wolf, 1999).

Existing research on Triguna personality has explored how Sattva, Rajas, and Tamas relate to emotional functioning, personality traits, and mental health across diverse populations. Administered to over 1,500 participants, including teachers, police officers, IT professionals, and general adults for assessing variables like job satisfaction and substance use. Among university students and young adults (ages 18 to 23), studies found Sattva associated with emotional stability, resilience, and adaptive coping, while Rajas and Tamas correlated with emotional reactivity and avoidance behaviors. Triguna traits have also been compared with models like the Big Five and Eysenck Personality Questionnaire, revealing parallels such as Sattva with emotional stability, Rajas with extraversion, and Tamas with neuroticism. Common variables studied include emotional style (attention, awareness, outlook), personality traits, mental health indicators, coping strategies, and subjective well-being. Across contexts, findings consistently support Sattva's link to psychological well-being and Rajas/Tamas to maladaptive outcomes.

1.2 Big Five Personality Model

The modern Big Five Personality Traits model was primarily shaped by Paul Costa and Robert McCrae in the 1980s. Building on earlier lexical and factor-analytic work, they developed and validated the NEO Personality Inventory (NEO-PI), one of the most widely used instruments for measuring the Big Five. Their work shifted the model from a descriptive tool to a robust theory of personality that could predict behavior across cultures and contexts. The five broad dimensions - Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and

Neuroticism have since been replicated across diverse populations and languages, establishing the Big Five as a universal and reliable framework for understanding personality (John & Srivastava, 1999).

In academic settings, personality traits significantly influence student's tendency to engage in academic procrastination, which is the intentional delay of academic tasks despite foreseeable negative consequences. Among the Big Five traits, low Conscientiousness, marked by poor organization, weak goal-setting, and lack of self-discipline is most strongly linked to procrastinatory behavior. Students with this trait often struggle with task initiation and time management, making them more susceptible to chronic delays. High Neuroticism, reflecting emotional instability and anxiety, also contributes to procrastination, as students may avoid tasks to escape negative emotions like fear of failure or academic pressure (Steel, 2007; Sirois & Pychyl, 2013). These traits impair self-regulation, which is crucial for timely academic engagement.

1.3 Resilience

Resilience is an individual's capacity to 'bounce back' from stress or adversity or recover from challenges (Smith et al., 2010). From a psychological perspective, resilience is considered a 'positive adaptation' in the face of adversity. It serves as a counterforce, helping students adapt, recover, and thrive in the face of setbacks or adversities (Bolo, 2024). It is not simply merely about enduring hardship, but also about using personal and social resources to recover and even grow from adversity. It helps maintain psychological equilibrium under stress, and adapt positively in challenging situations. Resilient individuals are able to face difficulties head-on,

maintain a sense of control, and avoid falling into despair or unhealthy coping strategies and tend to have a survivor mentality.

Resilience plays a significant role in academic environments, where students often encounter stress, failure, and performance pressure. Studies show that students with high resilience demonstrate better academic persistence, time management, and emotional regulation (Hartley, 2011). It has also been linked to lower levels of procrastination, as resilient individuals are better able to manage setbacks and stay committed to their goals (Sirois, 2014).

Prior research on resilience spans a wide range of populations and consistently explores how individuals adapt to adversity. Studies on general adults across countries like Norway, the Netherlands, and the U.S. have focused on factors such as self-rated health, positive affect, meaning in life, self-efficacy, and relationship satisfaction. Research involving clinical populations (individuals with PTSD or depression) examines resilience as a protective factor against poor mental health outcomes. Among students and youth, resilience is commonly studied in relation to academic stress, coping strategies, and social support. Older adults are studied for how they adapt to aging-related challenges, with emphasis on well-being and social cohesion. Across all groups, resilience is shown to predict mental health, coping effectiveness, and life satisfaction, with variables like optimism, attachment style, and loneliness often included to understand individual differences.

1.4 Academic Procrastination

According to McCloskey (2011), academic procrastination is defined as the tendency to postpone or delay school-related activities without a clear goal, even when there is awareness of the task's importance and a specific deadline for completion (Solomon & Rothblum, 1984). Steel (2007)

defines it as the intentional delay of academic tasks despite knowing that such delay could have negative consequences. Their perspective primarily emphasizes the detrimental effects of academic procrastination, highlighting it as a behavior that delays task completion unnecessarily, often leading to adverse outcomes. Academic procrastination is a prevalent issue among college students, affecting approximately 50 to 70% of the college students and is associated with stress, poor academic performance, anxiety, and reduced well-being (Rabin et al., 2011). While procrastination is not simply a time-management issue, contemporary research highlights its deeper links with self-regulation, emotional regulation, personality, and executive dysfunction that involves a disconnect between intention and action. Students who procrastinate often experience internal conflict desiring to complete a task but postponing it in favor of more immediately rewarding activities (Sirois & Pychyl, 2013). Students often find themselves caught in a cycle of delay, emotional discomfort, and further avoidance.

Academic procrastination is typically task-specific, occuring in situations that demand sustained cognitive effort, are perceived as aversive or difficult, or are associated with fear of failure. It is different from strategic delay, which may be used for productive planning. The Temporal Motivation Theory (TMT) further explains procrastination as the outcome of several interacting factors - expectancy (likelihood of success), value (importance of the task), delay (time until reward or deadline), and impulsiveness (Steel et. al., 2007). When expectancy or task value is low - or the deadline is distant - procrastination becomes more likely, especially in individuals with higher impulsivity. This helps explain why tasks perceived as unpleasant or irrelevant are often delayed, even when they are objectively important. To complement this motivational perspective, Emotion Regulation Theory offers an affective perspective for procrastination. It

argues that procrastination is a strategy to regulate negative emotions (e.g., anxiety, boredom) associated with academic tasks, offering short-term mood relief at the cost of long-term goal achievement (Sirois and Pychyl, 2013). This emotional avoidance often reinforces the cycle of delay and stress. Building on these insights, Cognitive-Behavioral Models introduce a cognitive lens, suggesting that maladaptive thought patterns like perfectionism, fear of failure, or low self-efficacy contribute to procrastination by fostering avoidance behavior. These cognitive distortions can undermine task engagement even when motivation and emotional regulation are otherwise in place.

Personality traits play a substantial role in the likelihood of procrastination, especially within academic environments. Among the Big Five traits, low Conscientiousness is the most consistent predictor of procrastination. Students who are disorganized, lack persistence, or have weak goal orientation are significantly more likely to delay academic work. High Neuroticism characterized by emotional instability, anxiety, and mood swings also contributes to procrastination, as students may avoid tasks out of fear of failure or self-doubt. These traits affect students' ability to self-regulate, plan, and execute tasks in a timely manner (Steel, 2007; Sirois & Pychyl, 2013). Similarly, individuals with dominant Tamasic and Rajasic qualities may lack clarity of purpose or be caught in restless indecision, exacerbating delay behaviors. Students often procrastinate to regulate mood and avoid the negative feelings associated with challenging academic tasks. Resilience has emerged as a buffer against procrastination, helping individuals stay committed to goals and bounce back from failures (Sirois, 2014). This underscores the importance of identifying both personality and psychological resources that can mitigate procrastinatory tendencies.

Beyond personality, recent studies have highlighted cognitive mechanisms that underlie procrastination. One such mechanism is executive dysfunction, which includes deficits in working memory, attention, and inhibitory control. These impairments can make it difficult for students to resist distractions, plan ahead, or stay focused on academic goals. Additionally, mind-wandering, or the tendency of attention to drift away from the present task, has been positively associated with procrastination. Students who frequently experience such lapses in attention may struggle to maintain the mental focus needed for sustained academic work. Another relevant factor is delay discounting - a cognitive bias in which individuals disproportionately devalue rewards that are further in the future, favoring immediate gratification over long-term benefits.

Prior research on academic procrastination has largely centered on university and college students, where the behavior is highly prevalent - affecting up to 80% of learners. Studies have investigated a range of psychological, behavioral, and contextual variables. Key constructs include poor time management, task aversiveness, low self-efficacy, and emotional dysregulation, all of which strongly predict procrastination tendencies. Negative emotions such as stress, anxiety, guilt, and shame have been shown to both contribute to and result from procrastination, while low self-esteem, smartphone addiction, and academic underperformance (GPA decline) are frequently reported correlates. Research has expanded to include children and adolescents, revealing that early difficulties in attention and motivation may predict later procrastination. In high-stress fields like medicine, studies have highlighted task-specific procrastination related to exams and assignments. Additional variables such as subjective well-being, school belonging, demographic differences, and even pro-environmental behaviors

have recently emerged in the literature, reflecting the multidimensional and cross-contextual nature of academic procrastination.

1.5 Interventions for Academic Procrastination

A wide range of interventions have been employed to reduce academic procrastination, drawing from psychological, behavioral, and educational frameworks. Cognitive Behavioral Therapy based interventions are among the most extensively studied and consistently effective. These interventions focus on identifying and restructuring maladaptive thought patterns (like perfectionism, fear of failure) and enhancing self-regulatory skills. Techniques commonly used include goal setting, time management training, cognitive restructuring, and behavioral activation. Meta-analyses indicate that CBT interventions yield moderate to large effect sizes in reducing procrastination, although limitations such as small sample sizes are frequently noted.

Mindfulness-based interventions have also gained empirical support. These approaches cultivate present-moment awareness and non-judgmental acceptance of thoughts and feelings, thereby improving emotional regulation and reducing task avoidance. Mindfulness practices such as focused breathing, body scans, and mindful journaling have been associated with significant reductions in procrastination, particularly by reducing stress and improving concentration.

Mindfulness helps reduce mind-wandering, a cognitive pattern strongly linked with procrastination (Mrazek et al., 2013). It also enhances response inhibition, which allows individuals to override impulsive avoidance tendencies and stay focused on long-term academic goals. These mechanisms suggest that meditation-based practices may be particularly effective in addressing the self-regulatory deficits that underpin procrastination.

Digital and internet-based interventions, often grounded in CBT principles, are increasingly utilized due to their accessibility and scalability. These include guided self-help modules, mobile apps, and online therapy platforms that deliver structured content targeting procrastination-related behaviors. Research shows they are effective in reaching wider populations, especially students who face barriers like time constraints, stigma, or lack of access to in-person counseling.

Classroom and instructor-led strategies represent another important category. These include deadline reminders, scaffolded task release, graded progress checks, and reflective assignments (like 'exam wrappers' that encourage metacognitive reflection). Some educators incorporate procrastination education directly into the curriculum, along with peer support systems and regular check-ins, to promote consistent engagement and motivation.

Lastly, behavioral strategies like the Pomodoro Technique, implementation intentions, and starting rituals (like countdown initiation techniques) are used to help students overcome the initial inertia often associated with task initiation. Utility-value interventions, which help students recognize the relevance and importance of academic tasks, have also been shown to increase motivation and reduce procrastination.

1.6 Meditation

Meditation is broadly defined as a set of intentional mental training techniques aimed at cultivating a self-regulated attentional state characterized by focused awareness, emotional balance, and present-centeredness. It involves the systematic engagement of mind and body to

enhance psychological functioning through practices such as focused attention, open monitoring, and compassion-based exercises (PMC, 2020; Frontiers in Psychology, 2022). Fundamentally, meditation is not a singular activity but a dynamic developmental process, wherein the method (the specific technique used) leads to a state (a transformed state of consciousness or awareness), which can, over time, evolve into enduring trait-level changes in cognition and emotion (Frontiers, 2013). Among the various forms of meditation, guided meditation (in which an external voice or app provides structured instructions) has become especially popular and accessible, particularly for beginners. It offers external scaffolding that supports attention and reduces cognitive overload, which is especially beneficial for individuals prone to mind-wandering, impulsivity, and academic stress (Headspace, 2023; PMC, 2019).

The psychological mechanisms underlying meditation include enhanced self-regulated attention, reduced mind-wandering, and improved interoceptive awareness - the perception of internal bodily states - contributing to greater self-awareness and cognitive flexibility (PMC, 2020). These mechanisms are fundamental to the regulation of thoughts, emotions, and behaviors necessary for academic success. Moreover, meditation strengthens executive functions, including response inhibition, cognitive shifting, and sustained attention, addressing core deficits often implicated in academic difficulties. It also bolsters psychological resources such as self-compassion, emotional balance, and resilience, serving as protective factors against academic burnout and maladaptive habits like procrastination (Frontiers, 2024).

In academic settings, meditation has gained increasing prominence as a scientifically supported intervention for enhancing student's cognitive and emotional capacities. The academic environment often imposes high demands, which can lead to stress, burnout, and attentional fatigue. Meditation, particularly in guided formats, offers a structured approach to cultivating

attentional control, emotional regulation, and present-moment awareness, directly supporting academic functioning. Through regular practice, students can develop the ability to manage internal and external distractions, reduce cognitive overload, and maintain psychological equilibrium, which are key factors that contribute to academic engagement, motivation, and task completion.

A growing body of empirical research validates the effectiveness of meditation among student populations, particularly in addressing psychological and academic variables. Studies have consistently shown that even brief, structured meditation sessions ranging from 5 to 30 minutes can lead to significant reductions in stress, anxiety, and negative affect, while enhancing attention span, working memory, executive functioning, and emotional self-regulation (PMC, 2019; ERIC, 2018; Frontiers, 2024). Key variables explored in these studies include mind-wandering, impulsivity, academic procrastination, and resilience, each of which is closely tied to academic performance and cognitive control. Research designs commonly employ guided meditation protocols, delivered either in person or via mobile applications, to ensure consistency and accessibility for novice meditators.

These findings underscore not only the psychological benefits of meditation in academic contexts but also its ability to promote adaptive coping, goal-directed behavior, and academic perseverance, positioning it as a robust, evidence-based intervention in higher education.

1.7 Mind Wandering

Mind Wandering refers to the shift of attention from a task at hand to unrelated internal thoughts, fantasies, or concerns. It is a form of stimulus-independent and task-unrelated thought that occurs when attention drifts away from the external environment and becomes absorbed in

self-generated mental content (Smallwood & Schooler, 2006). According to Michael D. Mrazek, mind-wandering is defined as the interruption of task-focus by task-unrelated thought. This means that while engaged in a particular activity, attention drifts away from the immediate task to internal concerns or unrelated ideas. Mrazek and colleagues describe mind-wandering as a tendency for attention to shift away from the task at hand, resulting in decreased awareness of external stimuli and often leading to errors or lapses in performance (Mrazek et al., 2013). While mind-wandering is a common and often natural cognitive phenomenon, its frequency and impact can vary greatly depending on context, individual traits, and cognitive demands.

The relationship between mind-wandering and procrastination is particularly significant. Both involve difficulty maintaining task engagement and resisting internal distractions. Procrastinators often experience more task-unrelated thoughts and are less able to inhibit irrelevant cognitive activity, suggesting shared underlying mechanisms such as reduced response inhibition and executive function deficits. In academic settings, frequent and uncontrolled mind-wandering tends to impair performance by disrupting working memory, reducing comprehension, and prolonging task completion time. Furthermore, the desire to escape from an aversive academic task may lead to deliberate or semi-conscious disengagement, facilitated by wandering thoughts that provide temporary mental relief (Mrazek et al., 2013).

Research on mind-wandering has focused extensively on understanding the nature, frequency, and impact of task-unrelated thought, especially in university students and general adult populations, due to its prevalence and effect on cognitive performance. Studies have differentiated between intentional and spontaneous mind-wandering, as well as assessed levels of

meta-awareness - the individual's ability to recognize their own attentional lapses. Research consistently finds that higher neuroticism, trait anxiety, and low conscientiousness are associated with increased mind-wandering, while traits like attentional control, mindfulness, and emotional stability act as protective factors. In addition to college students, older adults have been studied to explore age-related attentional differences, while adolescents and cross-cultural samples have helped clarify developmental and cultural influences. Key variables linked to mind-wandering include task performance, cognitive failures, state anxiety, subjective well-being, loneliness, and flow disruption. These findings suggest that mind-wandering is not only a common cognitive phenomenon but also a predictor of academic inefficiency and emotional dysregulation, making it a relevant target for interventions such as mindfulness and cognitive training.

Given its impact on learning and performance, interventions targeting mind-wandering have gained attention. Mindfulness meditation has been shown to reduce the frequency of mind-wandering by strengthening meta-awareness and attentional control. Even brief mindfulness training has been associated with improvements in working memory, reading comprehension, and reduced mind-wandering during cognitive tasks (Mrazek et al., 2013; Zeidan et al., 2010). These findings suggest that mind-wandering is not only measurable but also modifiable, making it a valuable target for interventions aimed at improving academic outcomes and mental clarity.

1.8 Impulsivity

Impulsivity is broadly defined as a tendency to act prematurely, without adequate forethought or consideration of consequences. It is a multifaceted construct that encompasses behavioral,

emotional, and cognitive components, including inhibitory control deficits, response disinhibition (task inhibition), alongwith delay aversion (task initiation). In academic contexts, impulsivity is linked to difficulties in self-regulation, task persistence, and goal-directed behavior, all of which can contribute to procrastination, reduced academic performance, and poor decision-making (Evenden, 1999; Steel, 2007).

Impulsivity is a key predictor of academic procrastination. Impulsive students often struggle to delay short-term rewards like social media or leisure activities in favor of long-term academic goals, leading to habitual task avoidance. This behavior stems from deficits in self-regulation, inhibitory control, and planning which are the core components of impulsivity. Studies show that higher levels of attentional, motor, and non-planning impulsivity are associated with greater academic delay and poorer performance. This relationship holds across age groups and academic levels, highlighting impulsivity as a robust psychological factor that disrupts sustained attention, goal-directed behavior, and academic achievement.

Research on impulsivity spans a wide range of populations, including general adults, adolescents, clinical groups, and cross-cultural samples. In general adult populations, studies assess demographic differences, psychiatric comorbidities, and risk behaviors like substance use and aggression. Among adolescents and young adults, impulsivity has been linked to eating disorders, substance abuse, and risk-taking behaviors, often in school or clinical settings. In clinical populations, including individuals with ADHD, bipolar disorder, and personality disorders - impulsivity is studied as a core symptom, with focus on its cognitive, emotional, and behavioral dimensions. Key variables addressed include urgency, lack of premeditation, lack of

perseverance, sensation seeking, and deficits in self-regulation, as well as associated outcomes like anxiety, depression, and risky behavior. Research also explores demographic predictors (like age, gender, socioeconomic status) and social support as a moderating factor. Collectively, findings underscore impulsivity's multidimensional nature and its strong ties to both mental health and behavioral risk across diverse populations.

CHAPTER 2 - REVIEW OF LITERATURE

2.1 Triguna Framework and Academic Procrastination

In recent years, there has been increasing interest in applying the Triguna personality framework, rooted in Indian philosophical traditions, to the study of academic behaviors. Emerging research suggests that the gunas are predictive of a student's academic self-regulation, motivational orientations, and potentially their propensity to procrastinate. Although not all studies directly measure procrastination and guna traits, a growing body of both empirical and theoretical work - particularly in Indian college student populations has revealed consistent patterns that support meaningful associations between Triguna dimensions and academic procrastination.

A research study by Chokkalingam et al. (2015) depicts a direct connection between Tamas Guna and procrastination. The research indicates that individuals high in Tamas may experience reduced initiative, low energy, and emotional disengagement from academic responsibilities. These characteristics mirror classic symptoms of academic procrastination, such as task aversion, lack of motivation, and delayed initiation. In this context, college students with a dominant Tamas profile may be particularly prone to procrastinatory behaviors, struggling to maintain consistent academic efforts.

Further insight into the role of Triguna in academic functioning is offered by Verma et al. (2020). The study explored Triguna traits in relation to academic goal orientations in 377 Indian college students. Findings indicated that Sattva positively correlates with mastery-oriented academic goals and self-compassion, while Rajas and Tamas correlate negatively with mastery goals and positively with performance-approach goals. These patterns suggest that students high in Sattva

are better equipped to manage academic demands and less likely to delay tasks. In contrast, Tamas may contribute indirectly to procrastination by diminishing motivation and fostering emotional disengagement, especially in performance-avoidant settings.

This view is reinforced by other Triguna-based studies that link Sattva to clarity, discipline, and emotional balance - traits consistently associated with lower academic delay. Conversely, Rajas, characterized by restlessness and impulsivity, may contribute to inconsistent focus and task switching, indirectly feeding into procrastination cycles.

Supporting this view, He (2017) identifies laziness, poor discipline, and confusion as core reasons behind academic procrastination in undergraduates - qualities that align closely with Tamas. Similarly, a study by Rabin et. al. (2010) conceptualizes procrastination as a self-regulation failure, which resonates with the low motivational energy and executive dysfunction associated with Tamas. These works underscore that Tamas likely contributes to procrastination via poor self-regulation and emotional passivity.

Existing findings indicate that students with higher Tamas and Rajas tendencies may be more vulnerable to academic delay, while those with higher Sattva characteristics may be more resilient and self-regulated; acting as a buffer against procrastination.

2.2 Big Five personality types and Academic Procrastination

When examining academic procrastination through the lens of personality psychology, one of the most widely applied and empirically supported frameworks is the Big Five Personality Traits model (Costa & McCrae, 1992). A growing body of cross-cultural research has explored how these traits predict student's tendencies to delay academic tasks. Across diverse samples and

geographic contexts, conscientiousness consistently emerges as the strongest negative predictor of procrastination, while neuroticism is often positively associated. Other traits, such as extraversion, agreeableness, and openness to experience, show weaker and less consistent associations.

A cross-cultural study by Hidalgo-Fuentes et al. (2024) involving 457 university students from Honduras and Spain found that conscientiousness significantly predicted lower procrastination in both national groups, reaffirming its protective role. The influence of the other traits varied by cultural context, suggesting that sociocultural factors may moderate the relationship between personality and procrastination. Similarly, a study by Swaraswati et al. (2017) with 207 Indonesian undergraduates reported that both conscientiousness and academic self-efficacy were strong negative predictors of academic procrastination, while neuroticism and extraversion were positively associated. Agreeableness and openness, however, did not show significant effects. This study also highlighted the role of academic self-efficacy as a motivational variable that interacts with personality traits to influence procrastinatory behavior.

Further support for these findings comes from a study conducted in Pakistan which examined 250 undergraduate students. The results replicated the established trend - conscientiousness was negatively correlated with procrastination, while neuroticism showed a positive association. The study also explored gender and academic level as moderating variables and found that female and senior students tended to procrastinate less, suggesting that demographic factors may influence how personality traits translate into academic behavior (Bushra & Suneel, 2021). Similarly, a study conducted in Baghdad, Iraq yielded similar findings, reinforcing the

cross-cultural stability of conscientiousness and neuroticism as key predictors of academic procrastination (Radeef & Muhee, 2018).

Adding a further layer to the personality–procrastination model, a study by Awad et al. (2023) conducted among Lebanese medical students examined the mediating role of emotional intelligence (EI). The findings indicated that EI partially mediated the relationships between conscientiousness, neuroticism, and procrastination, suggesting that students with higher emotional intelligence may be better equipped to regulate tendencies associated with low conscientiousness or high neuroticism. This introduces an important emotional regulation component to the understanding of how personality impacts procrastination.

In addition to cross-cultural evidence, studies conducted within India provide further validation for the role of personality in academic procrastination. A study by Khosla (2021) with 100 Indian college students found that only conscientiousness was significantly and negatively correlated with procrastination, highlighting its core role in promoting academic discipline and task engagement. Another Indian study focusing on emerging adults similarly reported that conscientiousness negatively and neuroticism positively predicted procrastination. The positive association with neuroticism may reflect the impact of emotional instability - on student's ability to initiate and sustain academic tasks (C & Anjilimoottil, 2023). This is particularly relevant in high-pressure academic environments, where psychological resilience is often tested.

2.3 Triguna Framework and Big Five personality types

While the Big Five framework remains the dominant model in personality psychology, indigenous frameworks like the Triguna model have gained increasing empirical attention in contemporary personality research. In particular, a growing number of studies have investigated the concurrent validity between the Big Five and Triguna models, especially among student populations.

One such study by Matani et al. (2025), conducted among 200 medical and engineering students, revealed significant positive correlations between Sattva and both Conscientiousness and Openness, while Tamas was negatively associated with Conscientiousness. These results underscore a theoretical parallel between Sattva and high self-regulatory functioning, suggesting that Sattva reflects traits such as clarity, discipline, and balance. Conversely, the association between Tamas and low conscientiousness reflects a connection to traits such as lethargy, disorganization, and emotional instability.

Additional evidence from Indian student samples, as reported by Nedungottil et al. (2022), has further clarified and expanded upon these relationships. A comparative study found that Sattva correlated positively with Conscientiousness and Agreeableness, Tamas with Neuroticism, and Rajas with Extraversion. These patterns not only reinforce the concurrent validity of the Triguna and Big Five models but also demonstrate how the Triguna framework can enhance our understanding of subjective well-being and personality dynamics in culturally specific contexts. By capturing nuances in emotional regulation and behavioral tendencies, the Triguna model offers culturally resonant constructs that align with key psychological outcomes.

Cross-cultural support for these associations has also emerged. When the Triguna model was applied to a German student sample, results showed that Sattva positively correlated with Conscientiousness and Agreeableness, while Tamas was linked to higher Neuroticism and lower Conscientiousness (Roy & Geuking, 2020). Notably, these findings mirrored those observed in Indian samples, suggesting that the Triguna model captures universal dimensions of personality that transcend cultural boundaries.

Another study by Khanna et al. (2013), focused on Indian students, extended these insights by exploring the interplay between Triguna traits, Big Five factors, and subjective well-being. Again, Sattva was positively associated with Conscientiousness and Agreeableness, Tamas with Neuroticism, and Rajas with Extraversion. These findings align with broader psychological theories connecting emotional balance and self-regulation to mental health outcomes, reinforcing the potential of the Triguna model to serve as a culturally grounded extension of the Big Five in predicting life satisfaction, mental health, and academic functioning.

A more targeted application of this conceptual overlap was explored by Verma et al. (2020), which examined the relationship between Triguna traits and self-compassion in relation to academic goal orientations. Using the Vedic Personality Inventory alongside Big Five measures, the researchers found that Sattva was significantly associated with mastery-oriented goals and positive self-compassion - traits often linked to Conscientiousness and Emotional Stability. This not only supports the concurrent validity of the Triguna framework but also highlights its unique contribution to understanding motivation, resilience, and academic performance through an

indigenous psychological lens. Together, these findings illustrate that the Triguna model, while culturally rooted, maps meaningfully onto established Western personality dimensions.

In conclusion, the convergence of findings across diverse cultural contexts and student populations demonstrates that the Triguna model offers a valid and culturally meaningful counterpart to the Big Five framework.

2.4 Resilience and Academic Procrastination

Beyond personality traits, resilience has emerged as a significant psychological resource that influences academic functioning, particularly in relation to procrastination. Resilience has consistently shown a negative association with academic procrastination across multiple student populations. Students exhibiting higher levels of resilience are generally better equipped to manage academic pressures, regulate emotions, and maintain motivation, thereby reducing the likelihood of delaying academic tasks.

A study on 80 undergraduate students in India investigated this relationship. The findings revealed a significant negative correlation ($r = -0.258$, $p < .05$) between resilience and academic procrastination. The authors suggest that enhancing resilience through interventions or training could reduce procrastination and improve academic performance (Kumar & Jayalakshmi, 2022). Further evidence comes from a study which also found that students with higher levels of psychological resilience reported lower levels of academic procrastination. The data-driven model indicated that resilience plays a protective role by reducing avoidance-oriented behaviors and fostering proactive task engagement.

In a study conducted in China, Song et al. (2024) developed a predictive model based on resilience to understand patterns of academic procrastination among college students. The results indicated that resilience was a significant negative predictor of procrastination, suggesting that students with greater capacity for psychological adaptation and stress management are less likely to delay academic tasks. These findings hold important implications for early identification and intervention among vulnerable student populations.

The connection between resilience, procrastination, and emotional distress is further illustrated in a large-scale study by Li et al. (2024) comprising 595 medical students, which found that resilience inversely predicted academic procrastination. Moreover, the study revealed that resilience mediated the relationship between procrastination and anxiety, meaning that students with higher resilience not only procrastinated less but were also more protected from the anxiety typically associated with academic delays.

A similar mediating effect was found in a study by Zhang et al. (2024) that examined resilience as a link between emotional intelligence and academic procrastination. The findings showed that students with higher emotional intelligence exhibited lower levels of procrastination, primarily due to their increased resilience. This positions resilience as a key psychological mechanism that enables emotionally intelligent students to regulate task avoidance and manage academic delay.

This mediating role was also confirmed during the COVID-19 pandemic. In a study by Astutik & Firdana (2023) involving Indonesian high school students, academic resilience was shown to mediate the relationship between self-efficacy and procrastination. Students with higher

self-efficacy were more resilient, and in turn, procrastinated less underscoring the importance of resilience during periods of heightened uncertainty and stress.

These findings gain further significance when viewed through the lens of fear-related triggers of procrastination. Fear of failure is widely recognized as a primary contributor to procrastinatory behavior, as individuals avoid tasks to escape the possibility of underperformance. Sudirman et al. (2023) found that fear of failure accounted for 30.89% of the variance in academic procrastination. Complementing this, Awan et al. (2023) reported that students who procrastinate frequently exhibit heightened fear of negative evaluation, suggesting that emotional vulnerability and performance anxiety fuel avoidance behaviors.

Crucially, resilience appears to moderate these fear-based triggers. Savira and Lathifah (2023) demonstrated that resilient coping strategies, particularly cognitive reframing, reduce rumination about failure and directly counter procrastination tendencies linked to fear of evaluation. Resilient students exhibit greater stress tolerance and adopt goal-oriented behaviors in the face of academic adversity. Kumar and Jayalakshmi (2022) reaffirm this, noting that resilience was negatively correlated with procrastination ($r = –.258$, $p < .05$), suggesting that resilient individuals are less inclined toward avoidance and more likely to engage with academic tasks directly.

This protective function of resilience is further emphasized by Ragusa et al. (2023), who found that resilience facilitates proactive, rather than fear-driven, engagement with academic work. Li et al. (2024) reported that higher resilience reduced academic anxiety by 34% through proactive

coping, and also showed that resilience mediated the relationship between procrastination and anxiety with a significant indirect effect (–0.068, $p < 0.05$). These results underscore resilience's regulatory role in emotion-task interactions.

Finally, the link between resilience and academic behavior is reinforced by Anthonysamy (2023), who found that resilient learners employed metacognitive strategies to manage stress and optimize learning outcomes. This aligns with findings by Safari and Yousefpoor (2022), who reported that positive metacognitive beliefs predicted lower procrastination, including a 34% increase in active coping and significant reductions in task delay ($p < 0.001$).

Together, these studies indicate that resilience not only buffers against fear-based procrastination, but also enables students to engage in self-regulated and goal-directed academic behavior, strengthening both academic outcomes and psychological well-being.

2.5 Meditation and Academic Procrastination

A growing body of research has turned to the role of meditation and mindfulness interventions in mitigating procrastination among college students and older adolescents. These interventions ranging from structured to unstructured training are designed to enhance self-awareness, emotional regulation, and attentional control, all of which are essential for reducing avoidance-oriented behaviors characteristic of academic procrastination.

Multiple empirical studies have demonstrated that mindfulness-based interventions (MBIs) can significantly reduce academic procrastination. A prominent study by Rad et al. (2022) which

investigated the effects of mindfulness training on university students with high procrastination levels. The intervention group showed a significant reduction in procrastination, along with improvements in self-regulation and mindfulness. This suggests that mindfulness practices which often include guided meditation, enhance cognitive and emotional capacities necessary for academic engagement.

Similarly, a study by Singh et al. (2024) assessed the impact of guided meditation on female students aged 12 to 15, a group categorized as low academic achievers. The findings remain relevant, demonstrating that guided meditation significantly reduced procrastination, while also improving attention and self-esteem. This underscores the effectiveness of contemplative practices even in early adolescent academic populations.

A study by Sujamani and Usharani (2022) during the COVID-19 pandemic, focused on Indian college students and found that regular practice of mindfulness meditation was associated with lower levels of academic procrastination and enhanced academic performance. The study recommends incorporating mindfulness meditation as a preventive mental health strategy for students prone to procrastination.

Drawing from several empirical sources (Chen, 2012; Su, 2016; Rad Hassan et al., 2023), a cross-national review found that mindfulness interventions negatively predicted academic procrastination. One of the key mechanisms identified was learning vigor, which mediated the relationship between mindfulness and procrastination, reinforcing the idea that mindfulness enhances academic engagement through both emotional and motivational pathways.

Further support comes from a study by Taghavi-Nejad, Fallah and Lotfi Gaskaree (2024), which explored mindfulness and procrastination among university English as a Foreign Language (EFL) learners. The study found a significant negative relationship between mindfulness and academic procrastination, with mindfulness practices including guided meditation improving self-regulated learning and attentional control.

Expanding the evidence base, a study by Asani et al. (2022) tested the effects of mindfulness-based cognitive therapy (MBCT) on 30 undergraduate students with high procrastination. After eight structured sessions, students reported decreased procrastination and increased academic optimism and positive academic emotions, indicating that deeper therapeutic mindfulness models can influence both behavioral and affective academic outcomes.

Similarly, a pilot study by Dionne (2016) published used a brief group intervention combining acceptance and mindfulness techniques with university students. Results indicated a measurable decrease in procrastination and enhancements in mindfulness and acceptance processes, suggesting that even short-form or low-intensity interventions can have a positive impact.
A review by Bailey (2021) further synthesized findings from multiple studies on mindfulness interventions among college students. The review concluded that mindfulness and guided meditation practices led to reductions in academic procrastination and moderate improvements in academic performance, both in immediate post-intervention assessments and short-term follow-ups.

Taken together, these studies provide evidence that guided meditation and mindfulness-based interventions are effective in reducing academic procrastination across diverse cultural and educational settings. Whether delivered through structured therapy, classroom-based programs, or brief group sessions, these practices improve self-regulation, emotional balance, attentional focus, and academic motivation. As such, meditation-based approaches offer a practical, non-invasive, and evidence-based supplement to existing interventions aimed at addressing academic delay behavior in college students.

2.6 Meditation and Mind Wandering

In addition to reducing academic procrastination, mindfulness meditation and guided meditation practices have also been shown to significantly impact another critical cognitive factor - mind-wandering. Mind-wandering is a common occurrence in academic contexts and is strongly associated with reduced attention, poor academic performance, and lower engagement. Several recent studies demonstrate that mindfulness meditation can reduce the frequency of mind-wandering and improve sustained attention among college students.

According to research by Rahl et al. (2016), brief mindfulness meditation training reduces mind-wandering. It is found that even short-term mindfulness meditation significantly reduced mind-wandering during the Sustained Attention to Response Task (SART). College-aged participants in the meditation condition exhibited more consistent on-task focus and fewer attentional lapses than those in control conditions, suggesting that mindfulness promotes attentional stability.

A study by Green (2015) directly compared the effects of mindfulness meditation versus a mind-wandering induction in undergraduate students. Although the primary outcome was hopefulness, the design allowed for exploration of how mindfulness versus mind-wandering impacts cognitive focus. Results suggested that mindfulness practice fosters more adaptive and focused mental states, especially under stress, even if the differences were not statistically significant in this small sample. A systematic review by Feruglio et al. (2021) expanded this evidence base by synthesizing findings across multiple laboratory and real-world studies. The review concluded that mindfulness meditation reliably reduces mind-wandering in both short and long term interventions. Many included studies featured university student samples, indicating that these effects are especially relevant in academic settings.

Complementing this, Desai (2024) focused specifically on Indian college students. The findings confirmed that mindfulness meditation improves attention, memory, and executive functioning, with reduced mind-wandering identified as a key mechanism underlying these improvements. These cognitive gains suggest that mindfulness training not only reduces distraction but also enhances academic information processing.

A quasi-experimental study by Swargiary and Roy (2024) added additional support by evaluating a four-week mindfulness meditation program among college students. Participants in the meditation group demonstrated significant improvements in cognitive performance and classroom engagement. Qualitative feedback indicated that students experienced heightened self-awareness and decreased distractibility, pointing to reduced mind-wandering as a primary factor behind the observed improvements.

Similarly, Belardi et al. (2022) explored the inverse relationship between mindfulness and mind-wandering. The research found that higher levels of mindfulness - often cultivated through regular meditation were associated with lower frequencies of mind-wandering. These findings support the theoretical basis for using meditation as a cognitive tool to enhance attentional regulation.

In summary, these studies demonstrate that mindfulness and guided meditation practices significantly reduce mind-wandering and improve cognitive control in university students. These effects are observed not only in controlled laboratory settings but also in classroom environments, supporting both the internal and external validity of these interventions.

2.7 Meditation and Impulsivity

In addition to its benefits for reducing academic procrastination and mind-wandering, mindfulness meditation has been increasingly studied for its effects on impulsivity. Impulsivity, especially in academic contexts, is often associated with poor decision-making, decreased focus, and increased vulnerability to distractions. Given its capacity to enhance attentional control and emotional regulation; meditation, particularly mindfulness-based practices, has shown promise in reducing impulsive behavior among college students and young adults.

Early evidence from India comes from a study which examined 370 undergraduate students from colleges in Kerala. The study found that dispositional mindfulness was negatively correlated with all domains of impulsivity - attentional, motor, and non-planning. These correlations

remained significant even after controlling for psychological distress, suggesting that higher mindfulness levels are associated with reduced impulsivity among students (Rajesh et al., 2013). Similarly, Krishna et al. (2022) reported that college students with short-term and long-term Heartfulness Meditation experience exhibited significantly lower levels of impulsiveness compared to non-meditators. Both attentional and behavioral forms of impulsivity were reduced, and meditation experience was positively associated with mindfulness and negatively with impulsiveness. These findings indicate a consistent relationship between regular meditation practice and improved impulse control.

Additional support comes from a study by Dwivedi et al. (2022), which compared college-aged meditators to non-meditators. Students who practiced Heartfulness Meditation reported significantly lower impulsiveness, demonstrating better attention, planning ability, and self-control, further linking meditation practice to improved executive functioning.

Expanding this evidence, a meta-analysis by Tsang et al. (2025) reviewed studies from 2015 to 2020 and found significant reductions in impulsivity due to mindfulness meditation across both behavioral and neurophysiological measures. Notably, college student samples were included, and the analysis reported that mindfulness meditation positively influenced brain regions involved in impulse regulation, such as the anterior cingulate cortex and ventromedial prefrontal cortex. These findings suggest that mindfulness operates through both behavioral and neurobiological pathways to reduce impulsivity.

From a neurocognitive perspective, a review by Calderone et al. (2024) highlighted that mindfulness-based interventions, including mindfulness based stress reduction (MBSR) programs commonly applied to college populations, led to improved emotional regulation and prefrontal cortex activation, both of which are critical for inhibitory control and impulse management. Similarly, a study by Rajesh et al. (2013) found that a short-term mindfulness-based intervention significantly reduced impulsivity and psychological distress, while increasing mindfulness levels among young adults.

Evidence initially focused on children with ADHD, but findings from Elzohairy et al. (2024) extended this research to young adults and college students, concluding that mindfulness-based training improves impulsivity, attention, and emotional regulation. These cross-age findings further support the generalizability of meditation's effects on impulse control across the academic lifespan.

A quasi-experimental study by Vinci et al. (2016) explored the effects of a brief mindfulness intervention among 207 college students with at-risk drinking behaviors. The results suggested that mindfulness-based strategies moderated the influence of trait impulsivity on behavioral outcomes like urge to drink, indicating that even short-term interventions can influence impulsivity-related outcomes, though effectiveness may vary based on impulsivity subtype. Another study by Korponay et al. (2019) found that long-term mindfulness meditators had significantly lower impulsivity compared to non-meditators. However, an 8-week mindfulness intervention did not yield significant reductions in impulsivity among healthy adults, suggesting that the duration and consistency of practice may be key to achieving measurable benefits.

Finally, a study by Rehman et al. (2025) investigated the mediating role of cognitive arousal in the relationship between impulsivity, sleep quality, and well-being among college students. The authors concluded that interventions targeting arousal regulation - like meditation and mindfulness practices can effectively moderate impulsivity and enhance academic and psychological outcomes.

Taken together, these findings demonstrate that both dispositional mindfulness and structured meditation practices are associated with lower impulsivity among college students and young adults. While short-term interventions can produce meaningful changes, the most robust benefits appear to be associated with long-term or consistent meditation practice. These reductions in impulsivity are supported by both behavioral outcomes and neurobiological evidence. As such, mindfulness meditation represents a viable and evidence-based strategy for reducing impulsivity and enhancing self-regulation in academic populations.

CHAPTER 3 - RESEARCH GAP AND OBJECTIVES

3.1 Research Gap

Existing research on Triguna, resilience, and academic procrastination is fragmented and lacks integration. Most studies rely on Western personality models (e.g., the Big Five), with minimal attention to Indigenous frameworks like Triguna. Currently, no research applies Triguna theory specifically to academic procrastination, despite its relevance in capturing emotional and behavioral tendencies. Additionally, the combined role of Triguna and resilience in predicting procrastination remains underexplored among Indian college students.

Although the Big Five traits - particularly conscientiousness and neuroticism - are well-established predictors of procrastination, little research compares or aligns these traits with the Indigenous Triguna framework. The concurrent validity of these two personality models in academic contexts is insufficiently addressed.

Research has shown that mindfulness apps improve mental health outcomes among college students by reducing stress, anxiety, and depression, while increasing mindfulness and self-compassion. However, while such interventions enhance emotional regulation and overall well-being, their effects on specific academic behaviors like procrastination have been largely overlooked. Moreover, there is a lack of focused experimental studies in Indian student populations that examine how app-based guided meditation influences procrastination alongside cognitive variables such as mind-wandering and impulsivity.

3.2 Objectives of the study

1) To examine the relationship between Ayurveda-based Triguna personality types and academic procrastination among college students.
2) To assess the association between resilience and academic procrastination.
3) To examine the relationship between Big Five personality traits and resilience as the predictors for academic procrastination.
4) To explore the convergent validity between the Big Five personality traits and the Triguna typology.
5) To assess the effect of app-based guided meditation on academic procrastination in high and low procrastinators.
6) To examine the effect of app-based guided meditation on mind-wandering behaviour in high and low procrastinators.
7) To evaluate the effect of app-based guided meditation on response inhibition/ impulsivity in high and low procrastinators.

Study 1 -

3.3 Aim

To assess the relationship between Ayurveda-based personality types (Triguna) and Resilience on Academic Procrastination among college students.

3.4 Hypothesis

1) Sattva Guna will be a negative predictor of Academic Procrastination
2) Rajas Guna will be a positive predictor of Academic Procrastination

3) Tamas Guna will be a positive predictor of Academic Procrastination
4) Resilience will be a negative predictor of Academic Procrastination

Study 2 -

3.5 Aim

The study aims to assess the relationship between the Big Five Personality traits and academic procrastination among college students, and to explore the convergent validity between the Big Five Personality Inventory and the Vedic Personality Inventory (Triguna).

3.6 Hypothesis

1) Conscientiousness will be a negative predictor of Academic Procrastination.
2) Sattva Guna will be positively correlated with conscientiousness.
3) Rajas Guna will be positively correlated with neuroticism.
4) Tamas Guna will be positively correlated with neuroticism.

Study 3 -

3.7 Aim

To examine the effect of app-based guided meditation on academic procrastination, mind-wandering, and response inhibition among high and low academic procrastinators across three time-points.

3.8 Hypothesis

1) App-based meditation leads to a significant difference in procrastination levels between high and low procrastinators over T1 and T3.
2) Mind wandering behaviour significantly differs between high and low procrastinators over three time periods.
3) Impulsivity significantly differs between high and low procrastinators over three time periods.

CHAPTER 4 - METHODOLOGY

Study 1: Correlational study

Aim: To assess the relationship between Ayurveda-based personality types (Triguna) and Resilience on Academic Procrastination among college students.

4.1 Sample

The study was conducted at Thapar Institute of Engineering and Technology (TIET), Punjab. The research sample consisted of 300 students who were enrolled on a full-time basis in an undergraduate, postgraduate, or doctoral program. The participants were recruited through academic networks and social circles, with the initial participants referring others through a snowball sampling process. Over a period of 10 weeks, interested students filled out the questionnaire, and their initials were recorded to maintain anonymity. Informed consent was obtained from all participants, and institutional ethical clearance was secured for the research.

4.2 Sample Characteristics

The sample consisted of male and female participants in Thapar University. The age of students ranged between 17 to 24 years. The sample for this study consisted of undergraduate, postgraduate and doctorate students, with a mean age of 20.69 years (SD = 2.2). Participants represented various educational backgrounds, with the following distribution - 236 undergraduate students (78.67%), 61 postgraduate students (20.3%), and 3 doctoral students (1%). Although no written data was collected, the university is residential and most students opt living on campus.

4.3 Research Design

This study adopts a correlational research design to examine the relationship between three variables - Vedic personality types (Sattva, Rajas, Tamas), academic procrastination, and resilience. The study includes two categories of variables - independent variables (IVs) and a dependent variable (DV). The independent variables are Sattva guna, Rajas guna, Tamas guna, and resilience, while the dependent variable is academic procrastination.

4.4 Tools Required

1) The **Vedic Personality Inventory,** developed by Dr. David Wolf in 1998, is an extensively researched and validated tool used for assessing the three Gunas - Sattva, Rajas, and Tamas - as psychological constructs derived from Vedic philosophy. It consists of 56 statements (including 15 Sattva, 19 Rajas, and 22 Tamas items) to which respondents rate their level of agreement on a 7-point scale. To calculate the score for each Guna, we sum all the responses for a Guna, then divide this sum by the total possible score for that Guna. This provides the Guna score as a percentage. To obtain a standardized score for a Guna, we sum the three Guna percentage scores and divide by the total of the Guna percentage scores. The three standardized scores form the Guna profile for a person. The scores for Sattva (S), Rajas (R), and Tamas (T) for each individual are expressed as percentages, with the total (S + R + T) equaling 100%. Wolf (1999) reported that the VPI has good internal consistency, ranging from $\alpha = 0.70$ to 0.92 for the three Gunas. Reliability coefficients for the questionnaire reported by the researchers ranged from 0.74 to 0.79 (Dasa, 1999). In the present study, reliability values of $\alpha = 0.756$ (for Sattva), $\alpha = 0.798$ (for Rajas), and $\alpha = 0.842$ (for Tamas) were reported.

2) **The Academic Procrastination Scale** developed by McCloskey in 2011 consists of 25 items (with a 5-point Likert-type response scale) designed to assess an individual's tendency to delay or postpone academic tasks. The total score is calculated by summing the responses to all items. Given the 5-point scale and 25 items, the possible score range is 25 to 125. The APS exhibits high internal consistency with a Cronbach's alpha of 0.94 to 0.95 (McCloskey, 2011). According to Bravo et al. (2022), the APS also demonstrates convergent validity through significant correlations with other established procrastination measures, including Solomon and Rothblum's PASS ($r = 0.53$), Lay's PASS ($r = 0.64$), and Tuckman's ATPS ($r = 0.70$). Reliability values of $\alpha = 0.809$ were reported in the present study.

3) **Brief Resilience Scale** developed by Smith et al. in 2008 is a 6-item scale (whose scaling comprises five response options) designed to measure an individual's ability to 'bounce back.' The final score is the mean of all six items, with scores ranging from 1 to 5. The scale shows good internal consistency with Cronbach's alpha ranging from 0.71 to 0.94 across various studies. It exhibits good convergent validity, correlating positively with measures of well-being, optimism, self-esteem, and self-efficacy (Fung, 2020), while showing discriminant validity through negative correlations with anxiety, depression, and perceived stress (Broll et al., 2024). The BRS demonstrates good criterion validity when compared to other established resilience measures (Fung, 2020). Its cross-cultural validity has been established through validation in multiple countries and languages (Lins de Holanda Coelho et al., 2016). Reliability values of $\alpha = 0.703$ were reported in the present study.

4.5 Procedure

The initial step involved identifying a few students enrolled in various courses at Thapar Institute of Engineering and Technology (TIET), Patiala. Once these initial participants were recruited, they were asked to refer to other students who met the study criteria, creating a snowball sampling process. Data collection began after obtaining informed consent from the participants. After being identified, the students were contacted to arrange a convenient time and setting for data collection during their college hours. Prior to participation, they were informed about the study's purpose, and their agreement was obtained to ensure they understood and consented to the research goals and procedures.

Before completing the questionnaires, students were given the following instructions - ‘This study explores your personality as a student and our tendency to delay work. After understanding what it means, please proceed to fill out the questionnaire using the QR code provided. There are no right or wrong answers.’ All recruited participants then accessed and completed three standardized psychological scales to assess self-reported measures. These scales were administered at a single time point following recruitment. After completing the questionnaire, a debriefing session was conducted, during which students were informed that honest responses would help in determining patterns of student academic behaviours linked to Vedic personality types and resilience. The collected data were automatically entered into Google Sheets and reviewed by the investigator.

4.6 Precautions

1) There was no external disturbance during data collection; a quiet environment was maintained.

2) Questionnaires were completed individually to reduce peer influence and maintain response authenticity.
3) Initial participants referred others voluntarily, without any pressure, maintaining ethical integrity.
4) No engagement with any material or device apart from the form itself was permitted during the session.
5) Instructions were clearly explained beforehand to avoid confusion during the process.
6) Participants were encouraged to ask questions to the primary data collector in case of a doubt.

Study 2: Comparative Study

Aim - 1) To assess the relationship between Big Five Personality Inventory and Resilience on Academic Procrastination among college students.

2) Explore the convergent validity between the Big Five personality traits and the Vedic Personality Inventory.

4.7 Sample

The present study was conducted at Thapar Institute of Engineering and Technology (TIET), Punjab. The sample consisted of 150 full-time students enrolled across various academic levels, including undergraduate, postgraduate, and doctoral programs. Participants were recruited through a convenience sampling method. Those who had previously participated in Study 1 were contacted via their institutional email addresses and invited to take part in the current research.

Students who expressed interest were scheduled at a mutually convenient time to complete the questionnaire. To maintain participant anonymity, only their initials were recorded. Prior to participation, all students provided informed consent in accordance with ethical research standards. Participation was entirely voluntary, and students were assured of the confidentiality of their responses.

4.8 Sample Characteristics

The sample for this study was drawn from male and female participants at Thapar Institute of Engineering and Technology. Participants were aged between 17 and *24* years, with a mean age of 20.62 years (SD = 1.97). The sample included students from various academic levels, specifically undergraduate, postgraduate, and doctoral programs. The distribution of participants was as follows: 119 undergraduate students (79.33%) and 31 postgraduate students (20.67%).

4.9 Research Design

This study employs a correlational research design to explore the relationship between three key variables - the Big Five personality traits, academic procrastination. The research framework includes two categories of variables: independent variables (IVs) and a dependent variable (DV). The independent variables consist of the Big Five personality traits - openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. The dependent variable is academic procrastination.

Additionally, the study investigates the relationship between the Big Five personality traits and the Vedic Personality Inventory. This component of the research aims to explore the convergent

validity between established psychological model and culturally rooted framework. By examining the correlations between the dimensions of the Big Five and the traits outlined in the Vedic Personality Inventory, the study seeks to offer insights into cross-cultural perspectives on personality.

4.10 Tools Required

1) **Big Five Inventory - 10 (BFI-10)** was developed by Rammstedt, B., and John, O. P. in 2007 as a brief measure of the Big Five personality traits: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. These five broad domains describe key dimensions of human personality. The scale uses a 5-point Likert scale, where 1 = Disagree Strongly and 5 = Agree Strongly. Each trait is assessed using two items, with scoring done by summing the two relevant responses after applying reverse scoring where required. Test-retest reliability across 6 to 8 weeks ranged from r = .65 (Openness) to r = .79 (Extraversion) in U.S. samples, and from r = .49 (Neuroticism) to r = .62 (Openness) in German samples (Rammstedt et al., 2023), with intraclass correlation coefficients ranging between 0.401 and 0.790 - indicating poor to good temporal stability (Azis et al., 2024). In terms of validity, the test shows strong convergent validity with the BFI-44 (r = .83), explaining approximately 70% of the variance. Discriminant validity is supported by low intercorrelations among the Big Five domains, ranging from r = .08 to .13 (Rammstedt et al., 2023). Criterion validity is evident through meaningful correlations with peer ratings and sociodemographic variables, such as the association between Conscientiousness and academic performance.

2) **Academic Procrastination Scale** developed by McCloskey

4.11 Procedure

The data collection process commenced by reaching out to all 300 students from Thapar Institute of Engineering and Technology (TIET), Patiala who had participated in the initial phase of the study. Invitations were sent via their official institutional email addresses. From this pool, 150 participants were successfully identified and recruited for the second phase. Arrangements were subsequently made to conduct data collection sessions during college hours, ensuring convenience and minimizing disruption to their academic schedules.

Prior to participation, each student was provided with detailed information regarding the study's objectives, procedures, and ethical considerations. Informed consent was obtained to confirm their voluntary participation and understanding of the research protocol. Participants were then instructed as follows: 'This study is the follow-up to the previous one and explores your personality as an individual. After understanding what it means, please proceed to fill out the questionnaire using the QR code provided. There are no right or wrong answers.'

Following this, participants completed the Big Five Inventory–10 (BFI-10). This was administered in addition to the Academic Procrastination Scale and the Brief Resilience Scale, which had been completed by the participants during the earlier phase of the research. The BFI-10 was administered at a single time point during the second phase.

Upon completion of the questionnaires, a debriefing session was conducted to reiterate the importance of providing honest responses. Participants were informed that their input would contribute to a deeper understanding of the relationship between personality traits, resilience, and academic behaviors among university students. All responses were digitally recorded and automatically compiled into Google Sheets, where the data were subsequently reviewed for accuracy and completeness by the principal investigator.

4.12 Precautions

1) Data collection was conducted in a quiet, disturbance-free environment, minimizing external interference.
2) Questionnaires were completed individually to reduce the likelihood of peer influence and to maintain the authenticity of responses.
3) Use of any materials or electronic devices, other than the questionnaire itself, was prohibited during the data collection session.
4) Clear and detailed instructions were provided beforehand to minimize confusion and facilitate accurate completion of the questionnaire.
5) Participants were encouraged to seek clarification from the investigator if they had any questions or required assistance.

Study 3: Meditation and Procrastination

Aim - To assess the effect of app-based guided meditation on the academic procrastination, mind-wandering and impulsivity of college students.

4.13 Sample

A sample of 38 participants aged 18 to 22 years, consisting of both male and female students, was shortlisted based on their scores on Academic Procrastination Scale by McCloskey from Thapar University.

4.14 Sample Characteristics

The sample consisted of both male and female individuals, with 19 participants in each group, distributed based on their academic procrastination scores. The age range of the participants was between 18 and 22 years, with a mean age of 19.45 years (SD = 1.25). In terms of educational backgrounds, the majority of the participants were undergraduate students (92.1%). Specifically, there were 22 First-Year students (21 undergraduates, 1 postgraduate), 12 Second-Year students (10 undergraduates, 2 postgraduate), and 4 Third-Year students (all undergraduates). Out of the total 38 participants, 16 were females. Participants came from a variety of academic disciplines. There were 21 individuals from Engineering and Technology, 11 from Humanities and Social Sciences, 3 from Computer Applications or IT, and 3 from Business or Management.

Regarding relationship status, 22 participants reported being single, 13 were in a relationship, and 3 had recently gone through a breakup. The CGPA distribution among participants was diverse. 1 participant had a CGPA below 6.0, 4 had a CGPA between 6.0 and 6.9, 8 had between 7.0 and 7.9, 17 had between 8.0 and 8.9, and 8 had a CGPA between 9.0 and 10.

In terms of time spent on academic work per week, the distribution was as follows - 17 participants spent less than 5 hours, 10 participants spent between 6 to 10 hours, 9 participants spent between 11 to 15 hours, and 2 participants spent more than 15 hours on academic work each week..

As for mental health history, 11 participants reported having a history of mental health issues, while 27 participants did not. Regarding meditation experience, 17 participants had experience with meditation, and 21 participants had not.

4.15 Sample Criteria

Due to the selective nature of the intervention, only 38 participants were chosen from an initial pool of 300 students, based on predefined academic procrastination criteria. The selection process employed criterion sampling, using scores from the Academic Procrastination Scale by McCloskey (range: 25 to 125). Students scoring between 25 and 60 were assigned to the Low Procrastination group, while those scoring between 90 and 125 were placed in the High Procrastination group.

4.16 Research Design

The study employed a mixed factorial design Repeated Anova design, consisting of both between-subjects and within-subjects factors. The between-subjects factor was procrastination level, with participants categorized into Low and High Procrastination.

The within-subjects factor was time periods - T1 (baseline) - before the meditation intervention began, T2 - after completion of first course of intervention ‘Basic-I’, T3 - after completion of second course of intervention ‘Dealing With Distractions’, with three distinct assessments conducted throughout the study.

The independent variables in the study were app-based meditation and procrastination level, while the dependent variables were mind-wandering and impulsivity. Both are considered to be manifestations that are inversely related to sattvic traits as outlined in traditional Indian philosophical system (Ravindra & Babu, 2021; Bhargav et al., 2023).

4.17 Tools Required

1) **Headspace** app was founded in 2010 by Andy Puddicombe, a former Buddhist monk, and Richard Pierson, a marketing expert. Andy has over 20 years of experience in teaching meditation and mindfulness. He aimed to make these practices widely accessible to all. Puddicombe's engaging teaching style and authentic mindfulness background have become defining features of the app's identity and success. Since its launch in 2010, Headspace has been downloaded over 80 million times globally as of early 2025. Headspace's user base is notably diverse, with balanced representation across various age groups (18 to 65 years) and genders.

   Headspace has received the highest average Mobile Application Rating Scale (MARS) score (4.0 out of 5.0) among all the mindfulness apps evaluated, reflecting its superior performance across key subscales, like engagement, functionality, visual aesthetics, information quality, and user satisfaction. The MARS review process involved expert raters, and the app's high scores suggest that it provides credible, professionally developed mindfulness content.

   The app scored particularly well in the area of engagement - aspect that is essential in intervention studies, as they directly influence participant adherence and sustained involvement. Finally, visual aesthetics and user experience were noted as strengths of Headspace. The app's appealing design contributes to a positive user experience, which can play a critical role in participant retention over the course of a study. An illustration of the task interface is provided in Figure 1.

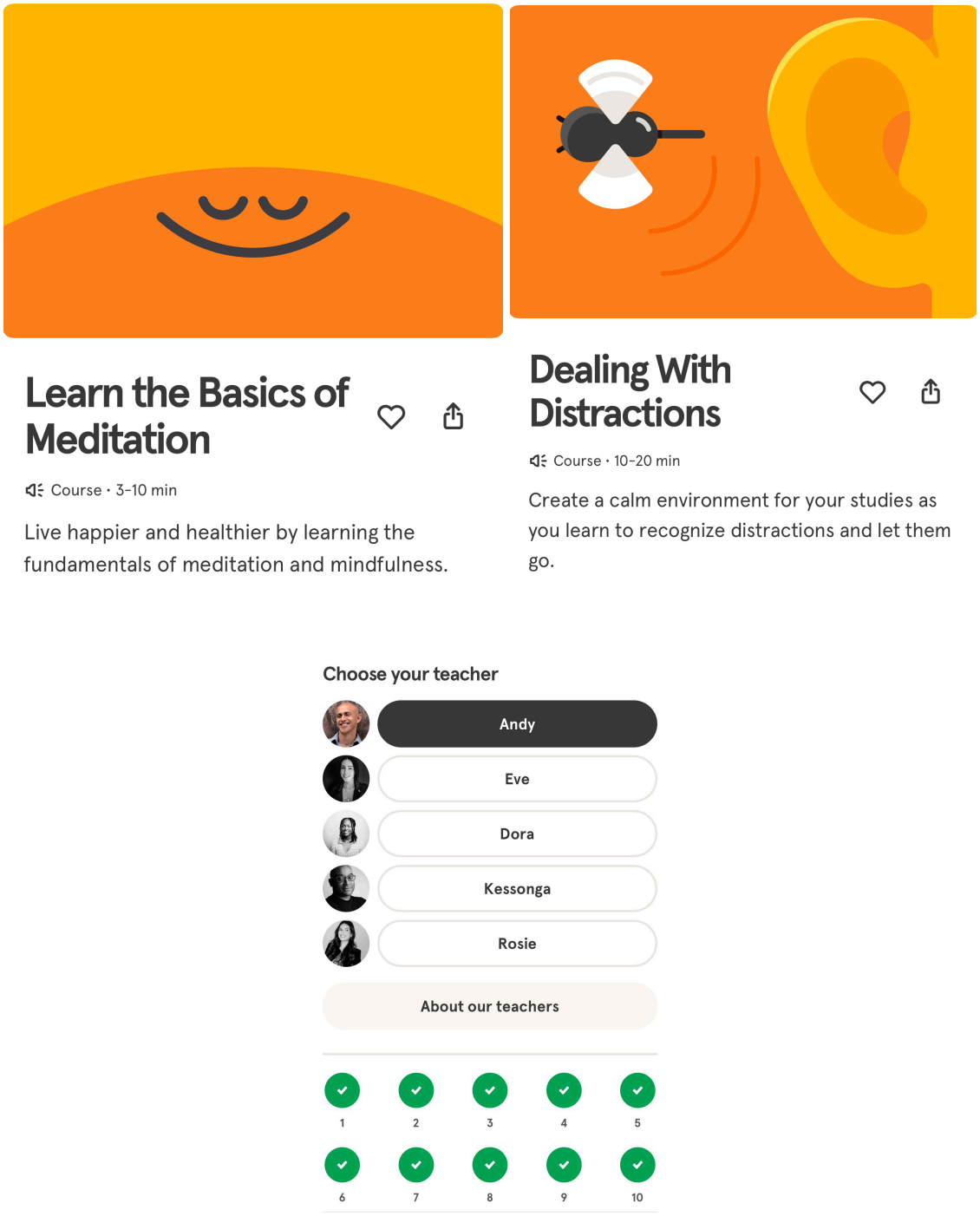

Figure No. 1 - User Interface of Headspace Intervention Modules

(‘Basics I’ and ‘Dealing with Distractions’)

2) The **Mind Wandering Questionnaire** was developed by Mrazek et. al. (2013). According to them, mind wandering is task-unrelated thought - the experience of thoughts that interrupt one's focus on the current task or activity. The MWQ consists of five items, each rated on a 6-point Likert scale ranging from 1 (Almost Never) to 6 (Almost Always). Scores are calculated by taking the average of the responses to all five items, with higher average scores indicating a greater tendency toward trait-level mind wandering. The questionnaire demonstrates strong psychometric properties, showing high internal consistency, with Cronbach's alpha values ranging from 0.85 to 0.89 in college students (Mrazek et al., 2013), and excellent test-retest reliability (r = 0.81) over a four-week interval (Pourabdol, 2023). The MWQ exhibits strong convergent validity through significant correlations with thought sampling and attention lapse measures (Mrazek et. al., 2013), and appropriate divergent validity with negative correlations to mindfulness and positive associations with stress, anxiety, and depression (Pourabdol, 2023). Criterion validity is supported by its ability to predict lower reading comprehension, mood, life satisfaction, and self-esteem (Mrazek et. al., 2013).

3) The **Go/No-Go Task**, developed by the PsyToolkit Team in the 2020s, is a widely used cognitive paradigm to assess executive functions, especially response inhibition, response initiation, and attentional control.

   In this task, participants are presented with visual cues - either a 'Go' or a 'No-Go' stimulus. On Go trials, they are instructed to perform a motor response (by pressing the space bar) within a 2-second window. On No-Go trials, they are required to inhibit their response and withhold any action for the same duration. This design creates a prepotent

tendency to respond, making the requirement to withhold a response during No-Go trials a robust measure of inhibitory control.

Performance is evaluated on various behavioral metrics - Go Accuracy measures the proportion of correct responses to Go trials, reflecting response initiation; No-Go Accuracy captures the proportion of correctly withheld responses on No-Go trials, indicating the strength of inhibitory control; Reaction Time (RT) on Go trials assesses the speed of information processing and motor execution; Omission Errors occur when a participant fails to respond to a Go stimulus, often reflecting lapses in attention; and Commission Errors refer to incorrect responses on No-Go trials, typically associated with impulsivity and poor inhibitory control.

The standard version of the task comprises 25 trials, consisting of 20 Go trials and 5 No-Go trials. Each trial records the trial type (Go or No-Go), reaction time in milliseconds (or a 2000 ms timeout for No-Go trials where no response is expected), and an error status - where 0 indicates a correct response and 1 an error. An illustration of the task interface is provided in Figure 2, offering a visual representation of the experimental design.

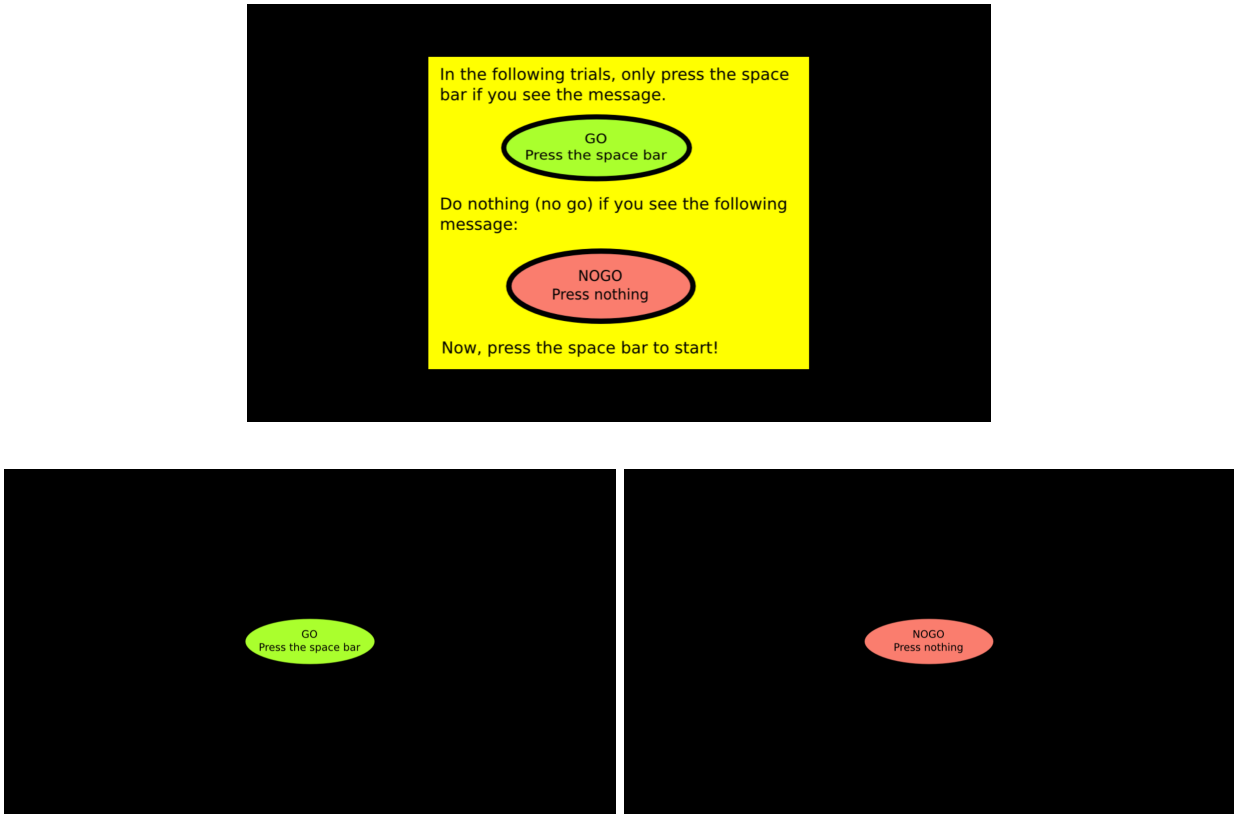

Figure No. 2 - Experimental Interface for Go/No-Go Task in PsyToolkit

4) Academic Procrastination Scale

4.18 Procedure

During this assessment, each participant was scheduled individually at a time convenient to them. The procedure of the study was explained in detail, following which participants completed the demographic details form, provided information about their academic habits (which were used as control variables), and gave their informed consent to participate. Subsequently, they completed the MWQ. Following this, each participant was individually escorted to an experimental laboratory setup - a soundproof, dark room designed to minimize external distractions - where they received instructions for the Go/No-Go task. The experimenter remained in the room passively while participants completed the task.

From the following day, the meditation intervention began. Participants were grouped in sets of five, based on their availability, and sessions were scheduled at times convenient for them. A quiet and secluded classroom within the department was selected for the intervention, and prior permission was obtained to ensure uninterrupted sessions (see Figure 3 for a visual representation of the meditation setup).

Figure No. 3 - Classroom setting arranged for group-based guided meditation sessions

Each day, students were given approximately five minutes to settle in before the meditation session began. It was encouraged that participants attend the session at a time when they were free from academic or personal commitments to ensure a relaxed and focused state of mind. If a

student missed a session, the same session was conducted again with them by adding them to another group on a different day, ensuring that no participant missed any part of the intervention. The intervention began with the 'Basics I' or 'Learn the Basics of Meditation' course. This course consisted of ten guided sessions, each lasting approximately eleven and a half minutes, delivered over ten consecutive weekdays.. Participants completed the MWQ followed by the Go/No-Go task in the same laboratory setup.

Following this, participants began the dealing with distractions course, which also comprised ten guided sessions, each approximately eleven and a half minutes in duration, administered over ten weekdays. The third and final assessment was conducted upon completion of the second course, using the same measures and procedure as the previous assessments (see Figure 4 for a schematic overview of the study procedure). Both meditation courses were guided by Andy Puddicombe.

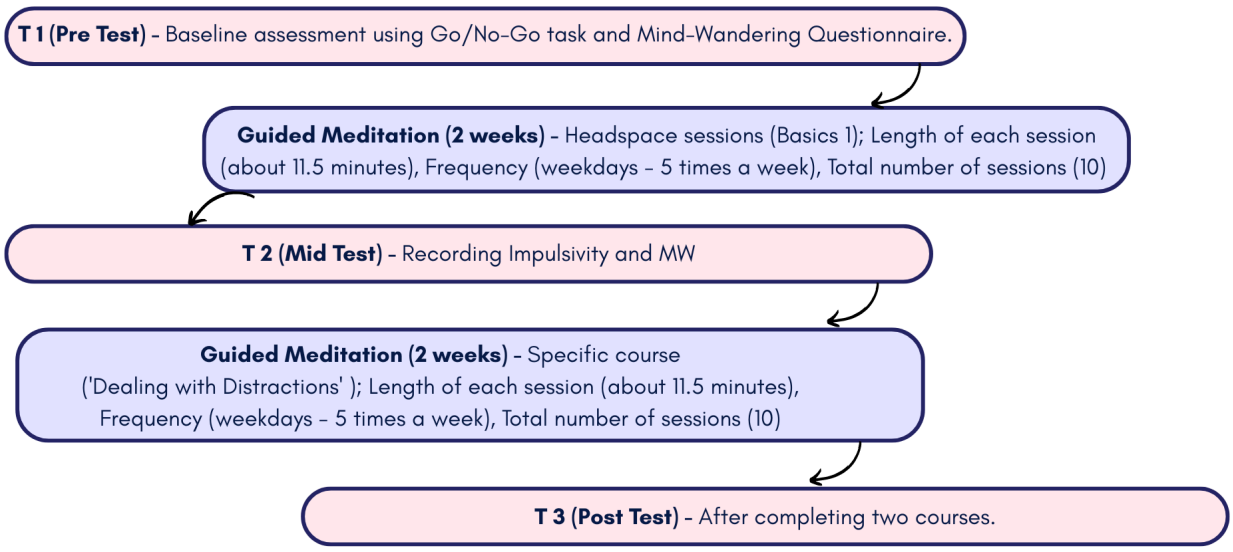

Figure No. 4 - Schematic representation of the experimental procedure followed across all three assessment points

In conclusion, the study was carried out with careful attention to methodological rigor and participant convenience. Each phase from initial assessments to the structured meditation intervention was meticulously planned to ensure consistency, engagement, and minimal external interference. The use of guided meditation in a controlled environment, along with repeated measures using standardized tasks, provided a robust framework for examining the effects of mindfulness training on cognitive and behavioral outcomes.

4.19 Precautions

1) Allow participants to settle by starting the session five minutes after they have taken their seats.
2) During this time, check in regularly to ensure they are calm, helping to establish a comfortable atmosphere before beginning the meditation.
3) Maintain a calm environment with no noise or interruptions.

CHAPTER 5 - RESULTS

Study 1

5.1 Survey Results

The Statistical Package for the Social Sciences (SPSS 29) was used to compute the descriptive and inferential statistics for the above (Chapter 4) mentioned sample sizes.

Table 1 : Descriptive Statistics of Vedic Personality Types, Academic Procrastination and Resilience

	Mean	Std. Deviation	N	Minimum	Maximum
Sattva	39.993	.389	300	25.13	68.58
Rajas	32.565	.190	300	19.14	42.58
Tamas	27.443	.270	300	12.28	36.81
Procrastination	76.413	1.042	300	28.00	121.00
Resilience	3.224	.039	300	1.17	5.00

Note. The above table shows the mean and SD of all variables.

Table 1 shows that academic procrastination scores ranged from 28 to 121, with a mean of 76.41 (SD = 1.04). Scores for Sattva, Rajas, and Tamas ranged from 25.13 to 68.58, 19.14 to 42.58, and 12.28 to 36.81, respectively, with means of 39.99 (SD = 0.39), 32.57 (SD = 0.19), and 27.44 (SD = 0.27) respectively. Resilience ranged from 1.17 to 5.00, with a mean of 3.22 (SD = 0.39).

Table 2 : Intercorrelations for Vedic Personality Types, Academic Procrastination and Resilience

	Sattva	Rajas	Tamas	Procrastination	Resilience
Sattva	1				
Rajas	-.774**	1			
Tamas	-.896**	.411**	1		
Procrastination	-.457**	.355**	.409**	1	
Resilience	.434**	-.307**	-.408**	-.209**	1

*Note. N= 300. ** = $p < 0.01$*

Table 2 indicates significant correlations between the variables. Sattva strongly negatively correlates with academic procrastination ($r = -0.46$, $p < .01$). Both Rajas ($r = 0.36$, $p < .01$) and

Tamas (r = 0.41, p < .01) positively correlate with academic procrastination. There is a negative relationship between resilience and academic procrastination (r = -0.21, p < .01).

Table 3 : The model summary and Regression Coefficient table show the regression analysis

Model		B	Std. Error	β	t value	Sig.	Adjusted R^2
1	(Constant)	125.449	5.604		22.384	<.001	.206
	Sattva	-1.226	0.138	-0.457	-8.872	<.001	
2	(Constant)	125.971	6.079		20.723	<.001	.204
	Sattva	-1.211	.154	-.452	-7.885	<.001	
	Resilience	-.347	1.550	-.013	-.224	.823	

Note: B = un-standardized coefficient; β = standardized coefficient

a. Dependent Variable: Procrastination

b. Predictors: (Constant), Sattva

c. Predictors: (Constant). Sattva, Resilience

Table 3 depicts the regression analysis exploring the relationship between Vedic personality types and resilience as predictors of academic procrastination. Model 1, which included only Sattva, showed a significant negative relationship with academic procrastination ($B = -1.23$, $p < .001$). Model 2, which added resilience to the equation, did not improve the model significantly ($p = .823$). However, Sattva remained a significant predictor in Model 2 ($B = -1.21$, $p < .001$). The slight reduction in the beta value from -1.226 to -1.211 suggests minimal change when resilience is included. The adjusted R^2 decreased slightly from .206 to .204, reinforcing that resilience adds little explanatory power.

Study 2

5.2 Convergent Validity Results

The Statistical Package for the Social Sciences (SPSS 29) was used to compute the descriptive and inferential statistics for the above (Chapter 4) mentioned sample sizes.

Table 4 : Descriptive Statistics of Big Five Personality and Academic Procrastination

	Mean	Std. Deviation	N
Openness to Experience	7.03	1.519	150
Conscientiousness	6.40	1.563	150
Extroversion	6.05	1.996	150
Agreeableness	7.40	1.447	150
Neuroticism	5.83	1.912	150
Academic Procrastination	77.55	19.177	150

Note. The above table shows the mean and SD of all variables.

Table 4 shows academic procrastination scores have a mean of 77.55 (SD = 19.177). Among the Big Five traits, Agreeableness had the highest mean score of 7.40 (SD = 1.447), followed by Openness to Experience at 7.03 (SD = 1.519), Conscientiousness at 6.40 (SD = 1.563), Extraversion at 6.05 (SD = 1.996), and Neuroticism with the lowest mean of 5.83 (SD = 1.912).

Table 5 : Intercorrelations for Big Five Personality and Academic Procrastination

	AP	E	A	C	N	O
AP	1					
E	.038	1				
A	-.078	.027	1			
C	-.361***	.152*	-.018**	1		
N	.096	-.319***	.027**	-.238**	1	
O	.042	.042	.065**	.188*	-.105	1

*Note. N= 150. * = p < 0.05, ** = p < 0.01, *** = p < 0.001*

Note. AP = Academic Procrastination; E = Extroversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness to Experience

Table 5 indicates significant correlations between Big Five personality traits and Academic Procrastination. Conscientiousness shows a strong negative correlation with academic procrastination ($r = -0.36$, $p < .001$), suggesting that higher conscientiousness is associated with lower procrastination. Neuroticism positively correlates with academic procrastination ($r = 0.096$), though this association is not statistically significant. Other traits like extraversion ($r = .038$), agreeableness ($r = -.078$), and openness to experience ($r = .042$) show weak and non-significant correlations with academic procrastination.

Table 6 : The model summary and Regression Coefficient table show the regression analysis

Model		B	Std. Error	β	t value	Sig.	Adjusted R^2
1	(Constant)	105.917	6.195		17.099	<.001	.125
	Conscientiousness	-4.432	.940	-.361	-4.713	<.001	

Note: B = un-standardized coefficient; β = standardized coefficient

a. Dependent Variable: Procrastination

b. Predictors: (Constant), Conscientiousness

Table 6 presents a regression analysis examining the predictive role of conscientiousness on academic procrastination. The model is significant (F change $p < .001$) and explains 13% of the variance in procrastination ($R^2 = .130$, Adjusted $R^2 = .125$). Conscientiousness emerged as a significant negative predictor ($B = -4.43$, $\beta = -0.361$, $p < .001$), indicating that higher conscientiousness is associated with lower levels of procrastination. The strong beta value underscores its substantial influence as a protective factor against procrastination.

Table 7 : Intercorrelations for Vedic Personality Types and Big Five Personality Types

	E	A	C	N	O	S	R	T
E	1							
A	.027	1						
C	.152	-.018	1					
N	-.319***	.027	-.238**	1				
O	.042	.065	.188*	-.105	1			
S	.177*	.264**	.275***	-.368***	.053	1		
R	-.227**	-.244**	-.098	.257**	.020	-.762***	1	
T	-.089	-.203*	-.324***	.342***	-.090	-.884***	.370***	1

*Note. N= 150. * = p < 0.05, ** = p < 0.01, *** = p < 0.001*

Note. E = Extroversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness to Experience; S = Sattva; R = Rajas; T = Tamas.

Table 7 presents intercorrelations between Vedic and Big Five personality traits. Sattva shows weak positive correlations with conscientiousness (r = .275, p < .001), agreeableness (r = .264, p < .01), and extraversion (r = .177, p < .05), and a moderate negative correlation with neuroticism (r = -.368, p < .001). Rajas exhibits weak negative correlations with agreeableness (r = -.244, p < .01) and extraversion (r = -.227, p < .01), and a weak positive correlation with neuroticism (r = .257, p < .01). Tamas demonstrates a moderate negative correlation with conscientiousness (r = -.324, p < .001), a weak negative correlation with agreeableness (r = -.203, p < .05) and a moderate positive correlation with neuroticism (r = .342, p < .001).

Study 3

5.3 Intervention Results

Table 8 : Descriptive Statistics for Academic Procrastination for High and Low Procrastinators for two time points

	T1		T2	
	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination
Mean	98.105	52.684	81.105	58.737
Median	96.000	53.000	83.000	57.000
Std. Deviation	7.651	6.675	12.653	11.293
Std. Error	1.755	1.531	2.903	2.591
N	19	19	19	19

Note. The above table shows the mean, median, SD and SE for academic procrastination

Descriptive statistics were computed for academic procrastination at two time points (T1 and T3) for high and low procrastinators. At Time 1, high procrastinators reported substantially higher academic procrastination (M = 98.11, SD = 7.65, Mdn = 96.00, SE = 1.755) compared to low procrastinators (M = 52.68, SD = 6.68, Mdn = 53.00, SE = 1.531). This difference remained evident at Time 2, with high procrastinators again showing higher levels (M = 81.11, SD =

12.65, Mdn = 83.00, SE = 2.903) than low procrastinators (M = 58.74, SD = 11.29, Mdn = 57.00, SE = 2.591). Each group consisted of 19 participants at both time points.

Table 9 : Paired Sample T-test for Academic Procrastination

Measure 1	Measure 2	t	df	p	Cohen's d	SE Cohen's d
High Procrastination - (T1)	High Procrastination - (T2)	7.532	18	<.001	1.728	0.312
Low Procrastination - (T1)	Low Procrastination - (T2)	-2.686	18	0.015	-0.616	0.250

Note. Student's t-test.

A paired samples t-test was conducted to examine the effect of time on academic procrastination scores in high and low procrastination groups. For participants in the high procrastination group, scores at Time 2 (T2) were significantly lower than at Time 1 (T1), t(18) = 7.53, $p < .001$, $d = 1.73$, SE = 0.31, indicating a large reduction in procrastination over time. Conversely, for the low procrastination group, scores at T2 were significantly higher than at T1, t(18) = -2.69, $p = .015$, $d = -0.62$, SE = 0.25, suggesting a moderate increase in procrastination over time. As shown in Figures 5 and 6, academic procrastination scores significantly decreased for high procrastinators and moderately increased for low procrastinators following the intervention, consistent with the results presented.

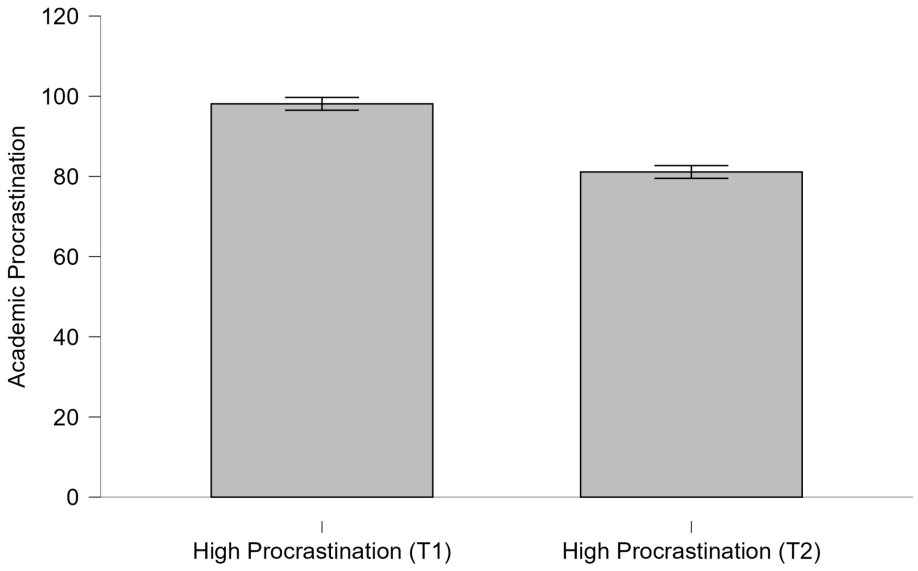

Figure No. 5 - Academic Procrastination for

High Procrastinators at Pre and Post-Intervention

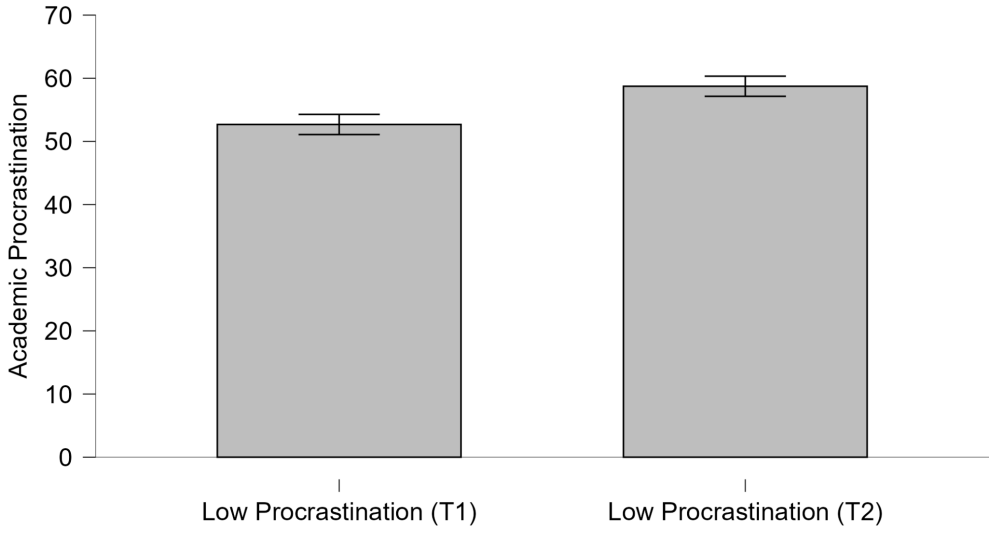

Figure No. 6 - Academic Procrastination Scores for

Low Procrastinators at Pre and Post-Intervention

Table 10 : Descriptive Statistics for Mind Wandering for High and Low Procrastinators for three time points

	Baseline (T1)		Basics (T2)		Dealing with Distractions (T3)	
	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination
Mean	4.274	3.211	4.337	3.284	3.716	2.968
Median	4.200	3.200	4.400	3.200	4.000	3.000
Std. Deviation	0.905	0.609	0.696	0.605	0.915	0.601
N	19	19	19	19	19	19

Note. The above table shows the mean, median and SD for mind wandering

Descriptive statistics were calculated for mind wandering scores at three time points (T1, T2, T3) for high and low procrastinators. At Time 1, high procrastinators reported greater mind wandering (M = 4.27, SD = 0.91, Mdn = 4.20) than low procrastinators (M = 3.21, SD = 0.61, Mdn = 3.20). This pattern persisted at Time 2, where high procrastinators again scored higher (M = 4.34, SD = 0.70, Mdn = 4.40) compared to low procrastinators (M = 3.28, SD = 0.61, Mdn = 3.20). At Time 3, high procrastinators continued to show higher mind wandering (M = 3.72, SD

= 0.92, Mdn = 4.00) than low procrastinators (M = 2.97, SD = 0.60, Mdn = 3.00). Each group consisted of 19 participants at every point.

Table 11 : Within Subjects Effects for Mind Wandering

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η^2_p
Mind Wandering	Greenhouse -Geisser	4.865	1.580	3.079	11.27 3	<.001	0.238
Mind Wandering ✻ Group	Greenhouse -Geisser	0.611	1.580	0.387	1.416	0.249	0.038

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05)

A repeated-measures ANOVA was conducted to examine changes in mind wandering across time and whether this effect differed between high and low procrastinators. Mauchly's test indicated that the assumption of sphericity was violated ($p < .05$); therefore, Greenhouse–Geisser corrections were applied.

There was a significant main effect of time on mind wandering, $F(1.58, 3.08) = 11.27$, $p < .001$, partial $\eta^2 = .238$, indicating that levels of mind wandering significantly changed across time points. However, the interaction between time and procrastination group was not statistically

significant, $F(1.58, 0.39) = 1.42$, $p = .249$, partial $\eta^2 = .038$, suggesting that changes in mind wandering over time did not significantly differ between high and low procrastinators. As illustrated in Figure 7, mind wandering showed a declining trend across time, especially for high procrastinators, consistent with the significant effects reported.

Table 12 : Between Subjects Effects for Mind Wandering

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p
Group	25.959	1	25.959	21.859	<.001	0.378

Note. Type III Sum of Squares

A between-subjects analysis of variance was conducted to examine the effect of group (e.g., high vs. low procrastinators) on mind wandering. The results revealed a significant main effect of group, $F(1, 25.96) = 21.86$, $p < .001$, partial $\eta^2 = .378$, indicating that levels of mind wandering significantly differed between the groups.

Mauchly's test of sphericity was conducted to assess the assumption of sphericity for the within-subjects factor of mind wandering. The test indicated a significant violation of the sphericity assumption, $W = 0.734$, $\chi^2(2) = 10.81$, $p = .004$. As a result, the Greenhouse–Geisser correction ($\varepsilon = 0.790$) was applied to adjust the degrees of freedom. The lower-bound estimate was $\varepsilon = 0.500$.

Table 13 : Post Hoc Comparisons for Mind Wandering

		Mean Difference	SE	df	t	Cohen's d	pbonf
Level 1	Level 2	-0.068	0.101	36	-0.678	-0.093	1.000
	Level 3	0.400	0.130	36	3.076	0.544	0.012
Level 2	Level 3	0.468	0.083	36	5.610	0.638	<.001

Note. P-value adjusted for comparing a family of 3 estimates.

Note. Results are averaged over the levels of: Group

Post hoc pairwise comparisons were conducted to examine differences in mind wandering across the three time points, with p-values adjusted using the Bonferroni correction. The comparison between Level 1 and Level 2 showed a non-significant mean difference of - 0.07, t(36) = - 0.68, p = 1.000, d = −0.09. A significant difference was found between Level 1 and Level 3, with a mean difference of 0.40, t(36) = 3.08, p = .012, d = 0.54. Additionally, the comparison between Level 2 and Level 3 also yielded a significant mean difference of 0.47, t(36) = 5.61, p < .001, d = 0.64. These results are averaged over the levels of the group variable.

Table 14 : Post Hoc Comparisons for Group for Mind Wandering

		Mean Difference	SE	df	t	Cohen's d	pbonf
High, Procrastination	Low, Procrastination	0.954	0.204	36	4.675	1.299	<.001

Note. Results are averaged over the levels of - Mind Wandering

A post hoc comparison was conducted to examine differences in mind wandering between the high and low procrastination groups, with the p-value adjusted using the Bonferroni correction. The results revealed a significant mean difference of 0.95 between the two groups, $t(36) = 4.68$, $p < .001$, $d = 1.30$, indicating a large effect size. These results are averaged over the levels of mind wandering.

Table 15 : Post Hoc Comparisons - Group ✻ Mind Wandering - Conditional on Group

Group			Mean Difference	SE	df	t	Cohen's d	pbonf
High Procrastination	Level 1	Level 2	-0.063	0.143	36	-0.442	-0.086	1.000
		Level 3	0.558	0.184	36	3.034	0.759	0.013
	Level 2	Level 3	0.621	0.118	36	5.260	0.845	<.001
Low Procrastination	Level 1	Level 2	-0.074	0.143	36	-0.516	-0.100	1.000
		Level 3	0.242	0.184	36	1.316	0.330	0.589
	Level 2	Level 3	0.316	0.118	36	2.674	0.430	0.034

Note. P-value adjusted for comparing a family of 3 estimates.

Post hoc pairwise comparisons were conducted to examine differences in mind wandering across the three time points, separately for high and low procrastination groups, with p-values adjusted using the Bonferroni correction.

For the high procrastination group, the comparison between Level 1 and Level 2 showed non-significant mean difference of - 0.06, t(36) = - 0.44, p = 1.000, d = - 0.09. The comparison between Level 1 and Level 3 revealed a significant mean difference of 0.56, t(36) = 3.03, p = .013, d = 0.76. Additionally, the difference between Level 2 and Level 3 was also significant, with a mean difference of 0.62, t(36) = 5.26, p < .001, d = 0.85. For the low procrastination group, the comparison between Level 1 and Level 2 was not significant, with a mean difference of - 0.07, t(36) = - 0.52, p = 1.000, d = - 0.10. The difference between Level 1 and Level 3 was also not significant, with a mean difference of 0.24, t(36) = 1.32, p = .589, d = 0.33. However, the comparison between Level 2 and Level 3 yielded a significant mean difference of 0.32, t(36) = 2.67, p = .034, d = 0.43. These results reflect post hoc comparisons conducted within each group, with all p-values adjusted for multiple comparisons.

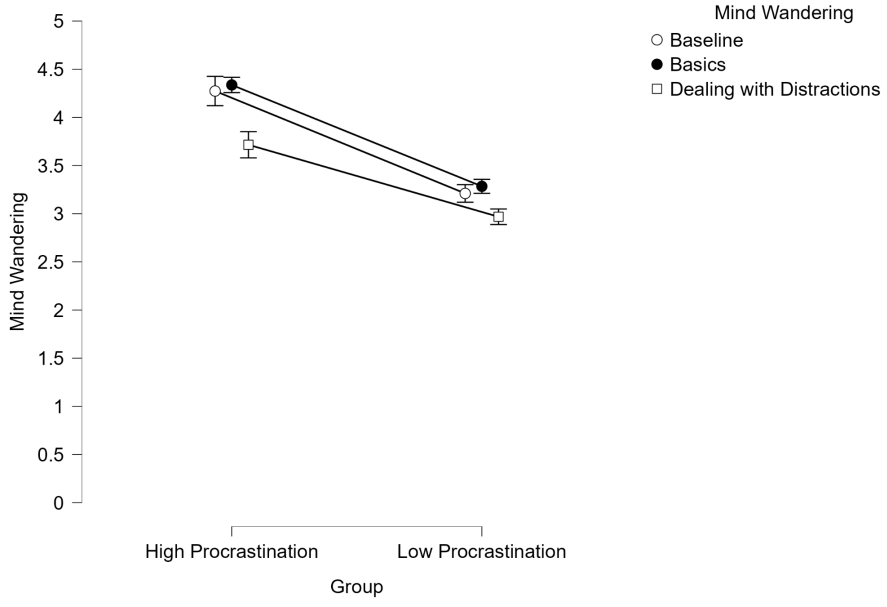

Figure No. 7 - Mind Wandering Across Three Time Points for High and Low Procrastinators

Table 16 : Descriptive Statistics for Reaction time on Go trials for High and Low Procrastination for three time points

	Baseline (T1)		Basics (T2)		Dealing with Distractions (T3)	
	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination
Mean	539.836	468.256	424.908	482.312	444.198	444.929
Median	494.900	428.650	397.950	433.950	414.180	402.950
Std. Deviation	222.451	154.726	90.441	184.088	92.297	133.080
N	19	19	19	19	19	19

Note. The above table shows the mean, median and SD for reaction time on go trials

Descriptive statistics were calculated for reaction times of go trials at three time points (T1, T2, T3) for both high and low procrastinators. At Time 1, high procrastinators had a higher mean reaction time (M = 539.836 ms, SD = 222.451, Mdn = 494.90) compared to low procrastinators (M = 468.256 ms, SD = 154.726, Mdn = 428.650). At Time 2, high procrastinators showed a lower mean reaction time (M = 424.908 ms, SD = 90.441, Mdn = 397.95) than low procrastinators (M = 482.312 ms, SD = 184.088, Mdn = 433.95). At Time 3, mean reaction times were comparable between high procrastinators (M = 444.198 ms, SD = 92.297, Mdn = 414.18)

and low procrastinators (M = 444.929 ms, SD = 133.08, Mdn = 402.95). Each group consisted of 19 participants at every time point.

Table 17 : Within Subjects Effects for Reaction Time

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η^2_p
Reaction Time	Greenhouse-Geisser	78074.303	1.551	50323.724	2.112	0.141	0.055
Reaction Time ✻ Group	Greenhouse-Geisser	79411.690	1.551	51185.752	2.149	0.137	0.056

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

The repeated measures ANOVA examined the main effect of reaction time and its interaction with procrastination group. The Greenhouse-Geisser correction was applied due to a violation of sphericity (as per Mauchly's test, $p < .05$). The main effect of reaction time across conditions was not statistically significant, $F(1.551, 55.852) = 2.112$, $p = .141$, $\eta^2 = .055$, suggesting no substantial differences in reaction time across the within-subject conditions. Similarly, the interaction effect of reaction time and group (high vs. low procrastination) was also non-significant, $F(1.551, 55.852) = 2.149$, $p = .137$, $\eta^2 = .056$. These findings indicate that

neither condition nor procrastination level significantly impacted overall reaction time in the sample.

Table 18 : Between Subjects Effects for Reaction Time

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p
Group	572.363	1	572.363	0.017	0.897	4.688×10^{-4}

Note. Type III Sum of Squares

The one-way ANOVA tested the effect of group (high vs. low procrastination) on overall reaction time. The results indicated no significant main effect of group, $F(1, 36) = 0.017$, $p = .897$, $\eta^2 = .0005$. This suggests that procrastination did not significantly influence participant's average reaction time across all conditions.

The post hoc analyses on reaction time data were conducted across time points, group differences, and conditional comparisons within groups. Across the three time points (Baseline, Basics, and Dealing with Distractions), no statistically significant differences were found in reaction times when averaged across both procrastination groups. The largest mean difference observed was between Baseline and Dealing with Distractions (M = 59.48 ms, $p = .333$, $d = 0.387$), followed by Baseline and Basics (M = 50.44 ms, $p = .426$, $d = 0.328$), and the smallest between Basics and Distractions (M = 9.05 ms, $p = 1.000$, $d = 0.059$). Likewise, the

comparison between high and low procrastinators across all time points yielded a negligible mean difference of 4.48 ms (p = .897, d = 0.029), indicating no significant group effect. When examining changes in reaction time within each group, none of the time point comparisons reached statistical significance either. For high procrastinators, the Baseline vs. Basics comparison approached significance (M = 114.93 ms, p = .062, d = 0.748), indicating a moderate effect, but still fell short of the adjusted significance threshold. All other comparisons for both high and low procrastinators produced non-significant results with small effect sizes ($ps \geq .215$). Overall, these findings suggest that neither time-based interventions nor procrastination group status significantly influenced reaction time performance, although a trend toward improvement in the high procrastination group suggests a need for further study.

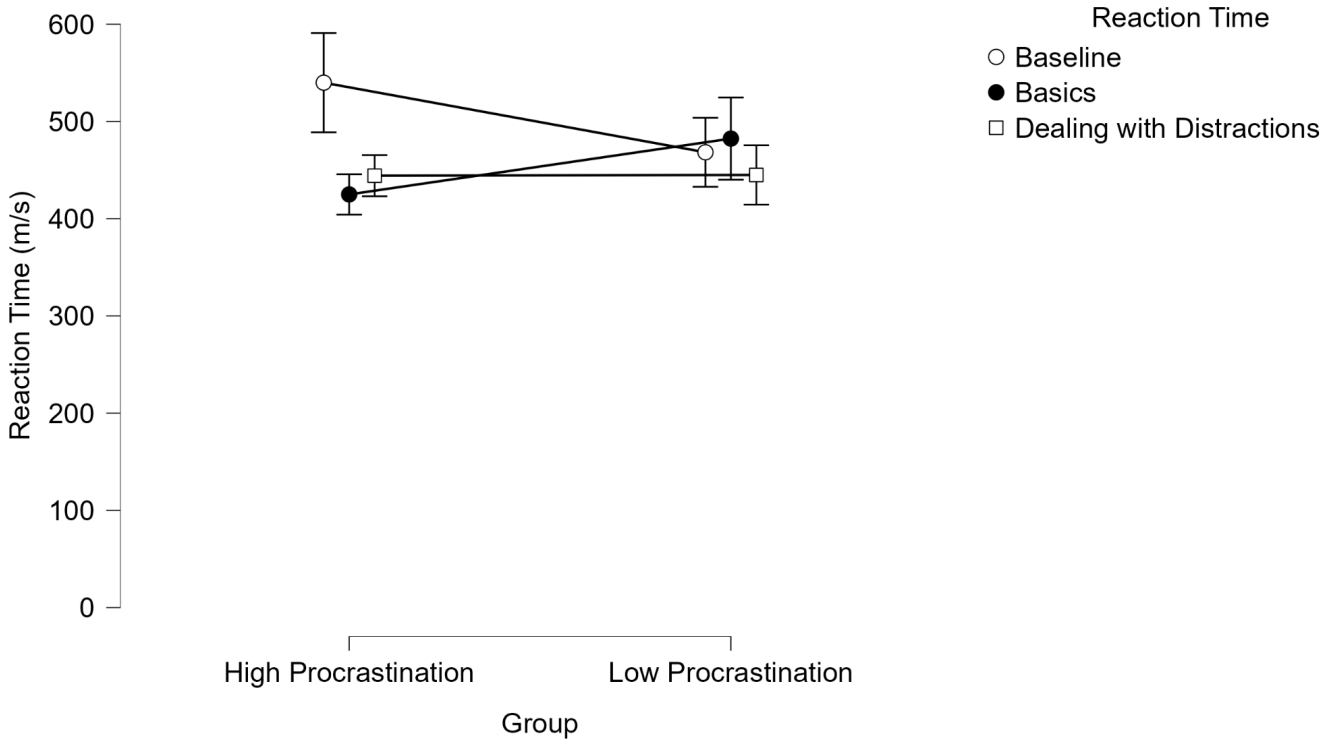

Figure No. 8 - Mind Wandering Across Three Time Points for High and Low Procrastinators

Table 19 : Descriptive Statistics for Go Trials Accuracy for High and Low Procrastination for three time points

	Baseline (T1)		Basics (T2)		Dealing with Distractions (T3)	
	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination
Mean	95.789	94.737	100.00	98.947	100.00	100.00
Median	100.00	100.00	100.00	100.00	100.00	100.00
Std. Deviation	14.266	11.239	0.000	4.588	0.000	0.000
N	19	19	19	19	19	19

Note. The above table shows the mean, median and SD for go trials accuracy

The table presents descriptive statistics for Go Trials Accuracy among high and low procrastinators across three time points: Baseline (T1), Basics (T2), and Dealing with Distractions (T3). At T1, the mean accuracy was 95.789 (SD = 14.266) for high procrastinators and 94.737 (SD = 11.239) for low procrastinators. At T2, the mean for high procrastinators was 100.000 (SD = 0.000), and for low procrastinators, it was 98.947 (SD = 4.588). At T3, both high and low procrastinators had a mean of 100.000 with no variability (SD = 0.000). The median

accuracy was consistently 100.000 across all groups and time points. Each group consisted of 19 participants.

Table 20 : Within Subjects Effects for Go Accuracy

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η^2_p
Go Accuracy	Greenhouse-Geisser	512.281	1.089	470.558	4.308	0.041	0.107
Go Accuracy ✻ Group	Greenhouse-Geisser	7.018	1.089	6.446	0.059	0.830	0.002

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

The repeated measures ANOVA for go accuracy revealed a significant main effect of time point, $F(1.089, 39.192) = 4.308$, $p = .041$, $\eta^2 = .107$, using the Greenhouse-Geisser correction due to a significant violation of sphericity (Mauchly's $W = 0.163$, $p < .001$). This suggests that go accuracy differed significantly across the three time points. However, the interaction between time point and group (high vs. low procrastination) was not significant, $F(1.089, 39.192) = 0.059$, $p = .830$, $\eta^2 = .002$, indicating that the pattern of go accuracy changes over time did not differ between the two groups.

Table 21 : Between Subjects Effects for Go Accuracy

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p
Group	14.035	1	14.035	0.248	0.621	0.007

Note. Type III Sum of Squares

A one-way ANOVA assessed the main effect of group on go accuracy, averaged across all time points. The effect was not statistically significant, $F(1, 36) = 0.248$, $p = .621$, $\eta^2 = .007$, indicating that high and low procrastinators did not differ in their overall go accuracy across the experiment. The extremely small effect size supports this lack of group-level difference.

Table 22 : Post Hoc Comparisons for Go Accuracy

		Mean Difference	SE	df	t	Cohen's d	pbonf
Baseline	Basics	-4.211	2.184	36	-1.928	-0.551	0.185
	Dealing with Distractions	-4.737	2.083	36	-2.274	-0.619	0.087
Basics	Dealing with Distractions	-0.526	0.526	36	-1.000	-0.069	0.972

Note. P-value adjusted for comparing a family of 3 estimates.

Post hoc comparisons of go accuracy across the three time points revealed no statistically significant differences, despite moderate effect sizes suggesting a trend. The comparison between Baseline and Basics indicated a decrease of 4.21% in accuracy (p = .185, d = - 0.551), while the Baseline to Dealing with Distractions comparison showed a slightly larger decrease of 4.74% (p = .087, d = - 0.619). However, the difference between Basics and Distractions was minimal (- 0.53%, p = .972, d = - 0.069), indicating stable performance across these two points. Although these findings suggest a potential decline in accuracy from the initial to later time points, especially from Baseline to Distractions, none of the differences reached statistical

significance. This pattern may reflect a ceiling effect in the later time points, particularly given the high overall accuracy rates observed.

Table 23 : Post Hoc Comparisons for Group for Go Accuracy

		Mean Difference	SE	df	t	Cohen's d	pbonf
High, Procrastination	Low, Procrastination	0.702	1.408	36	0.498	0.092	0.621

Note. Results are averaged over the levels of - Go Accuracy

The post hoc comparisons examining the main effect of group on go accuracy, averaged across all time points, revealed no statistically significant difference between high and low procrastinators. The mean difference in accuracy was minimal at 0.70%, with a small effect size (d = 0.092) and a non-significant p-value of .621. These results indicate that procrastination did not meaningfully influence participant's go accuracy, and performance levels were comparable across both groups regardless of time point.

Table 24 : Post Hoc Comparisons - Group ✻ Go Accuracy - Conditional on Group

Group			Mean Difference	SE	df	t	Cohen's d	pbonf
High Procrastination	Baseline	Basics	- 4.211	3.089	36	- 1.363	- 0.551	0.544
		Dealing with Distractions	- 4.211	2.946	36	- 1.429	- 0.551	0.485
	Basics	Dealing with Distractions	-6.725×10^{-16}	0.744	36	-9.035×10^{-16}	0.000	1.000
Low Procrastination	Baseline	Basics	- 4.211	3.089	36	- 1.363	- 0.551	0.544
		Dealing with Distractions	- 5.263	2.946	36	- 1.786	- 0.688	0.247
	Basics	Dealing with	- 1.053	0.744	36	- 1.414	- 0.138	0.498

Distractions

Note. P-value adjusted for comparing a family of 3 estimates.

The post hoc comparisons conducted within each group across the three time points revealed no statistically significant differences in go accuracy for either high or low procrastinators. For the high procrastination group, accuracy was complete during the Basics and Dealing with Distractions time points (M = 100.00, SD = 0), while a slight reduction was observed at Baseline (M = 95.79, SD = 14.27); however, none of the pairwise comparisons were significant. Similarly, within the low procrastination group, go accuracy improved from Baseline (M = 94.74) to Basics (M = 98.95) and reached ceiling performance at the Distractions time point (M = 100.00), but these differences were also not statistically significant. These findings indicate that both groups demonstrated consistently high levels of accuracy across all time points, with no meaningful intra-group variation over time.

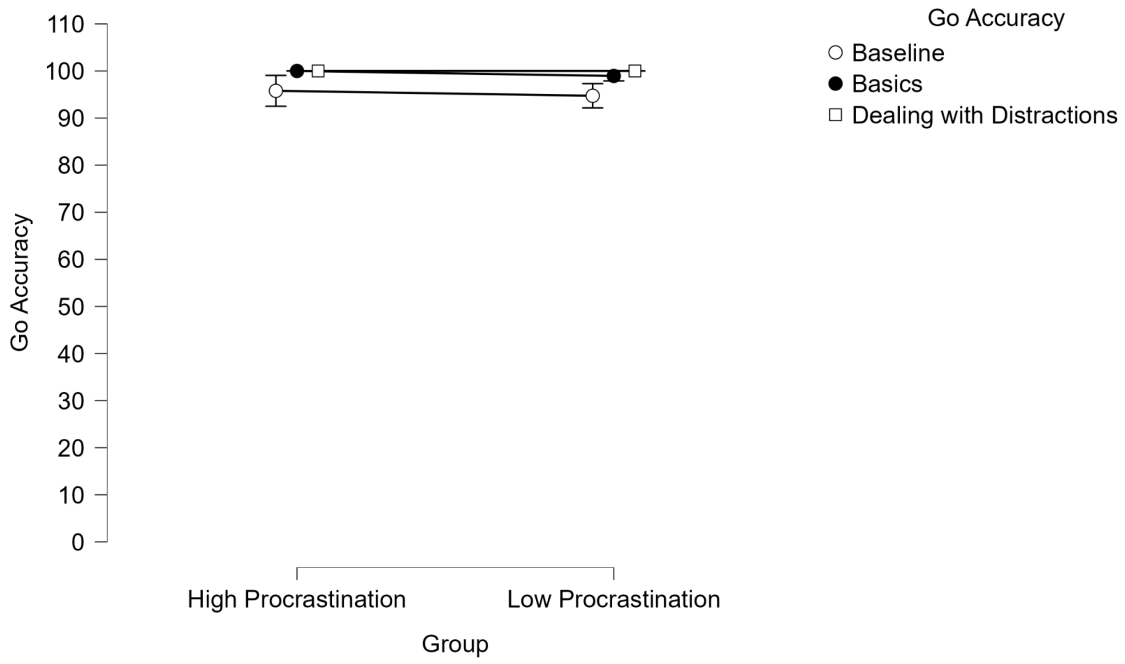

Figure No. 9 - Go Accuracy Across Three Time Points for High and Low Procrastinators

Table 25 : Descriptive Statistics for Omission Errors for High and Low Procrastination for three time points

	Baseline (T1)		Basics (T2)		Dealing with Distractions (T3)	
	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination
Mean	0.211	0.263	0.000	0.053	0.000	0.000
Median	0.000	0.000	0.000	0.000	0.000	0.000
Std. Deviation	0.713	0.562	0.000	0.229	0.000	0.000
N	19	19	19	19	19	19

Note. The above table shows the mean, median and SD for omission errors

The table presents descriptive statistics for omission errors among high and low procrastinators across three time points - Baseline (T1), Basics (T2), and Dealing with Distractions (T3). At T1, the mean omission error was 0.211 (SD = 0.713) for high procrastinators and 0.263 (SD = 0.562) for low procrastinators. At T2, the mean for high procrastinators was 0.000 (SD = 0.000), while for low procrastinators it was 0.053 (SD = 0.229). At T3, both groups recorded a mean of 0.000 with no variability (SD = 0.000). The median omission error was 0.000 for all groups at all time points. Each group consisted of 19 participants.

Table 26 : Within Subjects Effects for Omission Errors

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η^2_p
Omission Errors	Greenhouse-Geisser	1.281	1.089	1.176	4.308	0.041	0.107
Omission Errors ✻ Group	Greenhouse-Geisser	0.018	1.089	0.016	0.059	0.830	0.002

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

A repeated measures ANOVA with Greenhouse-Geisser correction was conducted to assess the effect of condition (Baseline, Basics, and Dealing with Distractions) on omission errors. Mauchly's test of sphericity was violated ($p < .001$), so Greenhouse-Geisser correction was applied. The results revealed a statistically significant main effect of condition, $F(1.09, 39.19) = 4.31$, $p = .041$, $\eta^2 = .107$, indicating that omission errors varied significantly across the three time points. This suggests that time points influenced the frequency of omission errors.

Table 27 : Between Subjects Effects for Omission Errors

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p
Group	0.035	1	0.035	0.248	0.621	0.007

Note. Type III Sum of Squares

The between-subjects effect examining group differences in omission errors across time points was not statistically significant, $F(1, 36) = 0.25$, $p = .621$, $\eta^2 = .007$. This indicates that high and low procrastination groups did not differ significantly in their overall omission error rates when averaged across the time points.

Table 28 : Post Hoc Comparisons for Omission Errors

		Mean Difference	SE	df	t	Cohen's d	pbonf
Baseline	Basics	0.211	0.109	36	1.928	0.551	0.185
	Dealing with Distractions	0.237	0.104	36	2.274	0.619	0.087
Basics	Dealing with Distractions	0.026	0.026	36	1.000	0.069	0.972

Note. P-value adjusted for comparing a family of 3 estimates.

Post hoc comparisons averaged across the high and low procrastination groups showed that none of the pairwise comparisons between conditions reached statistical significance. The comparison between Baseline and Basics yielded t(36) = 1.93, p = .185, d = 0.551. The comparison between Baseline and Dealing with Distractions approached significance, t(36) = 2.27, p = .087, d = 0.619. The comparison between Basics and Dealing with Distractions was clearly non-significant, t(36) = 1.00, p = .972, d = 0.069. These results suggest a trend of reduced omission errors over time, but these changes were not statistically robust when averaged across groups.

Table 29 : Post Hoc Comparisons for Group for Omission Errors

		Mean Difference	SE	df	t	Cohen's d	pbonf
High, Procrastination	Low, Procrastination	-0.035	0.070	36	- 0.498	- 0.092	0.621

Note. Results are averaged over the levels of - Omission Errors

The direct comparison of omission errors between the high and low procrastination groups, averaged across all three time points, was not statistically significant, t(36) = - 0.50, p = .621, d = - 0.092. This negligible effect size suggests that group membership did not meaningfully influence overall omission error performance.

Table 30 : Post Hoc Comparisons - Group ✻ Omission Errors - Conditional on Group

Group			Mean Difference	SE	df	t	Cohen's d	pbonf
High Procrastination	Baseline	Basics	0.211	0.154	36	1.363	0.551	0.544
		Dealing with Distractions	0.211	0.147	36	1.429	0.551	0.485
	Basics	Dealing with Distractions	0.000	0.037	36	0.000	0.000	1.000
Low Procrastination	Baseline	Basics	0.211	0.154	36	1.363	0.551	0.544
		Dealing with Distractions	0.263	0.147	36	1.786	0.688	0.247
	Basics	Dealing with	0.053	0.037	36	1.414	0.138	0.498

					Distractions

Note. P-value adjusted for comparing a family of 3 estimates.

Within-group post hoc comparisons across the three time points revealed no statistically significant differences in omission errors for either the high or low procrastination group. In the high procrastination group, the Baseline vs. Basics comparison yielded $t(36) = 1.36$, $p = .544$, $d = 0.551$, and Baseline vs. Dealing with Distractions yielded $t(36) = 1.43$, $p = .485$, $d = 0.551$. The Basics vs. Distractions comparison showed no difference at all, $t(36) = 0.00$, $p = 1.000$, $d = 0.000$. In the low procrastination group, the Baseline vs. Basics comparison yielded $t(36) = 1.36$, $p = .544$, $d = 0.551$; the Baseline vs. Dealing with Distractions comparison showed $t(36) = 1.79$, $p = .247$, $d = 0.688$; and the Basics vs. Distractions comparison yielded $t(36) = 1.41$, $p = .498$, $d = 0.138$. These findings indicate that omission errors did not significantly change across conditions within either group.

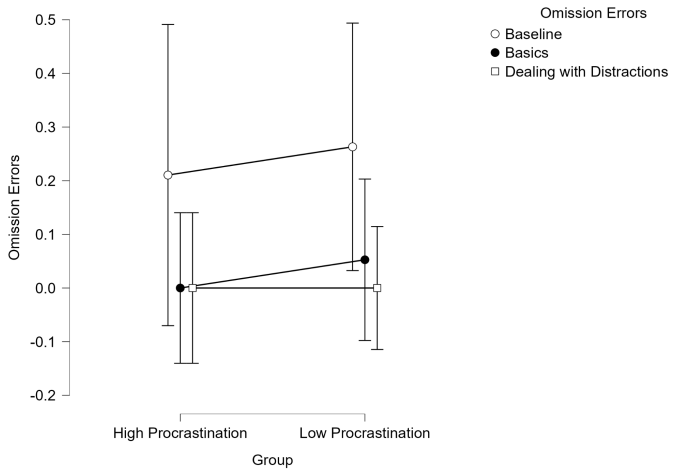

Figure No. 10 - Omission Errors Across Three Time Points for High and Low Procrastinators

Table 31 : Descriptive Statistics for No-Go Trials Accuracy for High and Low Procrastination for three time points

	Baseline (T1)		Basics (T2)		Dealing with Distractions (T3)	
	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination
Mean	95.789	91.579	91.579	95.789	93.684	91.579
Median	100.00	100.00	100.00	100.00	100.00	100.00
Std. Deviation	8.377	15.371	12.140	8.377	9.551	10.145
N	19	19	19	19	19	19

Note. The above table shows the mean, median and SD for no-go trials accuracy

The table presents descriptive statistics for No-Go Trials Accuracy among high and low procrastinators across three time points: Baseline (T1), Basics (T2), and Dealing with Distractions (T3). At T1, the mean accuracy was 95.789 (SD = 8.377) for high procrastinators and 91.579 (SD = 15.371) for low procrastinators. At T2, both high and low procrastinators had mean accuracies of 91.579 and 95.789 respectively, with standard deviations of 12.140 and 8.377. At T3, the mean was 93.684 (SD = 9.551) for high procrastinators and 91.579 (SD =

10.145) for low procrastinators. The median accuracy was consistently 100.000 across all groups and time points. Each group included 19 participants.

Table 32 : Within Subjects Effects for No-Go Trials

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η^2_p
No-Go Trials	Greenhouse-Geisser	28.070	1.966	14.276	0.107	0.896	0.003
No-Go Trials ✻ Group	Greenhouse-Geisser	384.912	1.966	185.584	1.387	0.257	0.037

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

A repeated measures ANOVA was conducted to examine the effect of time point on No-Go accuracy. Mauchly's test of sphericity indicated that the assumption of sphericity was met (p = .739), and the Greenhouse-Geisser correction was applied. The analysis revealed no statistically significant main effect of time point on No-Go accuracy, $F(1.97, 70.79) = 0.11$, p = .896, η^2 = .003. This indicates that participant's accuracy on No-Go trials did not significantly differ across the three time points.

Table 33 : Between Subjects Effects for No-Go Trials

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p
Group	14.035	1	14.035	0.146	0.704	0.004

Note. Type III Sum of Squares

The between-subjects analysis assessed whether No-Go accuracy differed between high and low procrastinators across time points. The results showed no significant group effect, $F(1, 36) = 0.15$, $p = .704$, $\eta^2 = .004$, indicating that overall No-Go accuracy did not differ between the high and low procrastination groups.

The interaction between time point and group on No-Go accuracy was not statistically significant, $F(1.97, 70.79) = 1.39$, $p = .257$, $\eta^2 = .037$, indicating that the pattern of change in No-Go accuracy over time did not differ between high and low procrastination groups. Bonferroni-adjusted post hoc comparisons averaged across groups revealed no statistically significant differences between any time points - Baseline vs. Basics, $t(36) \approx 0.00$, $p = 1.000$, $d \approx 0.000$; Baseline vs. Dealing with Distractions, $t(36) = 0.40$, $p = 1.000$, $d = 0.096$; and Basics vs. Distractions, $t(36) = 0.43$, $p = 1.000$, $d = 0.096$. The direct comparison between high and low procrastinators across all time points was also not significant, $t(36) = 0.38$, $p = .704$, $d = 0.064$. Within-group post hoc analyses across time points similarly showed no significant changes in No-Go accuracy. For high procrastinators, comparisons between Baseline and Basics ($p = .871$, d

= 0.385), Baseline and Distractions (p = 1.000, d = 0.192), and Basics and Distractions (p = 1.000, d = - 0.192) were non-significant. Likewise, for low procrastinators, no significant differences were found across time - Baseline vs. Basics (p = .871, d = - 0.385), Baseline vs. Distractions (p = 1.000, $d \approx 0.000$), and Basics vs. Distractions (p = .710, d = 0.385). These results suggest that No-Go accuracy remained stable across time and was not influenced by group differences or the interaction of group and time.

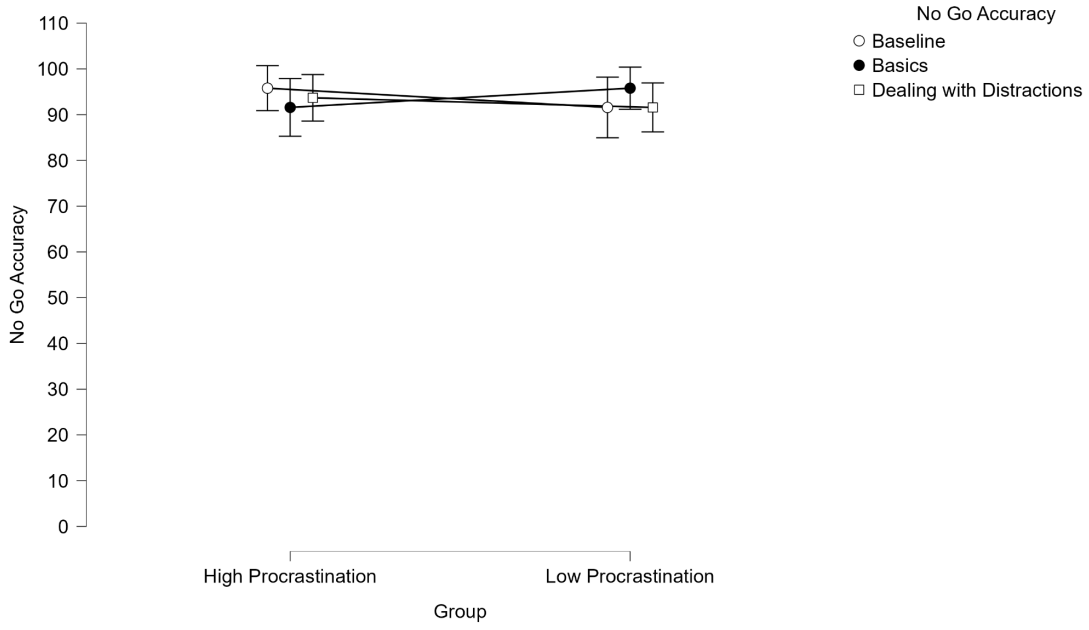

Figure No. 11 - No-Go Accuracy Across Three Time Points for High and Low Procrastinators

Table 34 : Descriptive Statistics for Commission Errors for High and Low Procrastination for three time points

	Baseline (T1)		Basics (T2)		Dealing with Distractions (T3)	
	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination	High Procrastination	Low Procrastination
Mean	0.211	0.421	0.421	0.211	0.316	0.421
Median	0.000	0.000	0.000	0.000	0.000	0.000
Std. Deviation	0.419	0.769	0.607	0.419	0.478	0.507
N	19	19	19	19	19	19

Note. The above table shows the mean, median and SD for comission errors

The table presents descriptive statistics for Commission Errors among high and low procrastinators across three time points: Baseline (T1), Basics (T2), and Dealing with Distractions (T3). At T1, the mean commission error was 0.211 (SD = 0.419) for high procrastinators and 0.421 (SD = 0.769) for low procrastinators. At T2, high procrastinators had a mean of 0.421 (SD = 0.607), while low procrastinators had a mean of 0.211 (SD = 0.419). At T3, the mean was 0.316 (SD = 0.478) for high procrastinators and 0.421 (SD = 0.507) for low

procrastinators. The median value remained 0.000 across all groups and time points. Each group consisted of 19 participants.

Table 35 : Within Subjects Effects for Commission Errors

Cases	Sphericity Correction	Sum of Squares	df	Mean Square	F	p	η^2_p
Commission Errors	Greenhouse-Geisser	0.070	1.966	0.036	0.107	0.896	0.003
Commission Errors ✻ Group	Greenhouse-Geisser	0.912	1.966	0.464	1.387	0.257	0.037

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

A repeated measures ANOVA was conducted to examine the effect of time point (Baseline, Basics, and Dealing with Distractions) on commission errors. Mauchly's test of sphericity indicated that the assumption of sphericity was met, $W = 0.983$, $\chi^2(2) = 0.605$, $p = .739$. Therefore, sphericity was assumed, but the Greenhouse-Geisser correction was still reported for consistency. The analysis revealed that the main effect of time point on commission errors was not statistically significant, $F(1.97, 70.79) = 0.11$, $p = .896$, $\eta^2 = .003$. This indicates that

participants' commission error rates did not significantly change across the three phases of the task.

Table 36 : Between Subjects Effects for Commission Errors

Cases	Sum of Squares	df	Mean Square	F	p	η^2_p
Group	0.035	1	0.035	0.146	0.704	0.004

Note. Type III Sum of Squares

A between-subjects analysis was conducted to assess whether commission errors differed between high and low procrastination groups, averaged across all time points. The result revealed no statistically significant group effect, $F(1, 36) = 0.15$, $p = .704$, $\eta^2 = .004$, indicating that the two groups performed similarly overall in terms of commission errors. The mean square for the group was 0.035, and the residual mean square was 0.240. This small effect size further supports the conclusion that procrastination level did not meaningfully influence commission error performance when collapsed across time.

The interaction between time point and group on commission errors was not statistically significant, $F(1.97, 70.79) = 1.39$, $p = .257$, $\eta^2 = .037$, indicating that changes in commission errors over time did not differ meaningfully between high and low procrastination groups. Bonferroni-adjusted post hoc comparisons averaged across groups revealed no statistically significant differences in commission errors between any of the three time points: Baseline vs.

Basics, t(36) ≈ 0.00, p = 1.000, d ≈ 0.000; Baseline vs. Dealing with Distractions, t(36) = - 0.40, p = 1.000, d = - 0.096; and Basics vs. Distractions, t(36) = - 0.43, p = 1.000, d = - 0.096. The comparison between high and low procrastinators, averaged across all time points, was also non-significant, t(36) = - 0.38, p = .704, d = - 0.064, reflecting negligible group differences. Within-group comparisons across time points showed no statistically significant changes in commission errors for either group. For high procrastinators, comparisons between Baseline and Basics (p = .871, d = - 0.385), Baseline and Dealing with Distractions (p = 1.000, d = - 0.192), and Basics and Distractions (p = 1.000, d = 0.192) were all non-significant. Similarly, for low procrastinators, no significant differences were observed across time: Baseline vs. Basics (p = .871, d = 0.385), Baseline vs. Dealing with Distractions (p = 1.000, d ≈ 0.000), and Basics vs. Distractions (p = .710, d = - 0.385). These results indicate that commission errors remained stable across time, with no meaningful differences either between or within procrastination groups.

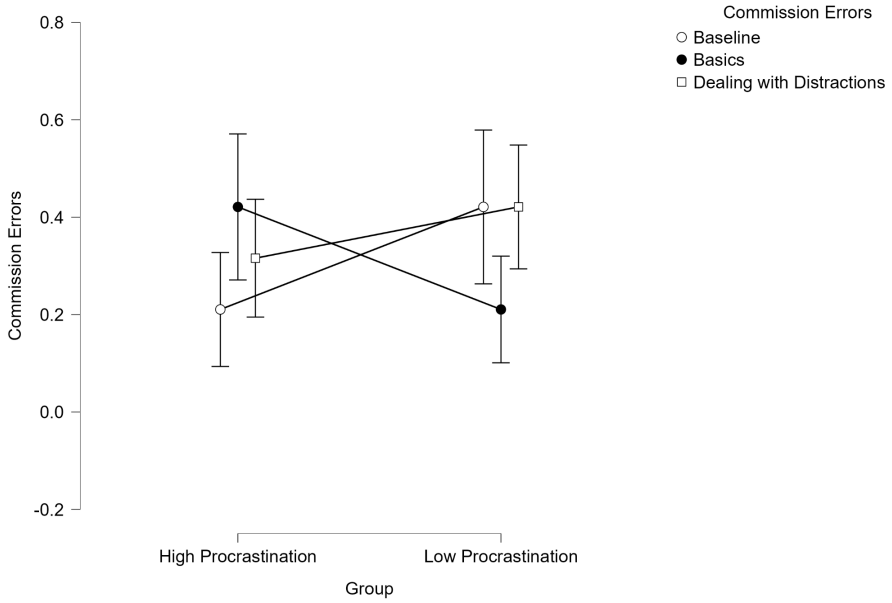

Figure No. 12 - Commission Errors Across Three Time Points for High and Low Procrastinators

CHAPTER 6 - DISCUSSION

The aim of this study is to examine the relationship between Ayurveda-based personality types (Triguna) and resilience with academic procrastination. Furthermore, the study aims to explore the convergent validity between the Big Five Personality Inventory and the Vedic Personality Inventory. In addition, the study investigates the impact of app-based guided meditation on academic procrastination, mind-wandering behavior, and impulsivity among college students.

H1 : Accepted. The predictive relationship is evident from Table 3, where Sattva Guna significantly negatively predicts academic procrastination. Individuals high on Sattva Guna exhibit better regulation skills (Kumar et al., 2022), which are essential for managing time and tasks effectively. Self-regulation is described as a process through which individuals plan, monitor, and evaluate their own behaviour (De La Fuente et al., 2022), which plays a crucial role in reducing academic procrastination. Studies by Brahma & Saikia (2023) and Elizondo et al. (2024) support this negative correlation, with better self-regulation leading to lower procrastination levels.

The ability to stay focused and ignore distractions is enhanced in those with a Sattva personality (Ravindra & Babu, 2021), allowing them to prioritize academic responsibilities over sidetracks and manage time effectively. In line with these findings, a study shows that Sattva fosters a mindset that aligns with higher states of being, promoting adaptive self-beliefs and reducing maladaptive thoughts that typically drive procrastination behaviours (Agrawal, 2021). They demonstrate better academic outcomes, as their balanced mind helps them to stay focused and manage tasks efficiently.

Additionally, Khosla (2021) found that conscientiousness, a trait associated with Sattva, is negatively correlated with procrastination. Higher self-efficacy reduces procrastination by fostering confidence in overcoming academic challenges. Dhawan & Maini (2022) found that Sattva Guna positively correlates with self-efficacy, exhibiting 27% higher self-efficacy than Tamas-dominant peers. According to Sharma & Kewalramani (2024), Sattvic individuals employ problem-focused coping mechanisms like active planning and rational decision-making. These strategies, coupled with their ability to tolerate stress and adopt methodical approaches to challenges (Kashyap et al., 2022), further enhance their ability to manage academic tasks efficiently.

H2 : Accepted. The correlation is evident from Table 2, where Rajas Guna significantly positively predicts academic procrastination. A study on university students found that academic pressure increased in Rajas, as they relied on its 'force' to meet deadlines but struggled to sustain productivity (Yadav, 2019). Another study noted that Rajas had no significant relationship with self-efficacy, implying that high energy alone does not translate to confidence in task completion (Dhawan & Maini, 2022).

Characterized by hyperactivity (Dey, 2021), emotional instability (Ravindra & Babu, 2021), and a tendency toward outward motion causing self-seeking action (Kewalramani, 2016), individuals with Rajas Guna disrupt goal-directed action in ways like – reduced tolerance for tedious tasks → frequently abandoning tasks for novel stimuli (Gustavson et al., 2014) → switching tasks without completing them (impulsivity) (Gustavson et al., 2014) → delaying core academic responsibilities. Furthermore, they struggle to maintain calm during academic challenges,

displaying heightened agitation (Dey, 2021). Their sensory-seeking behaviour further contributes to distractibility, as they prioritize short-term gratification over long-term academic challenges (Ravindra & Babu, 2021). These traits closely align with procrastination behaviours, where students delay tasks due to poor time management or the avoidance of stressful demands.

Academic environments often demand multitasking, which intensifies Rajas-driven tendencies. Students with a dominant Rajas Guna tend to have a high level of ambition and activity (Kashyap et al., 2022), which can lead to overcommitment to activities, scattering their focus across multiple tasks and ultimately resulting in burnout. They often struggle to prioritize tasks effectively (Yadav, 2019), making it difficult to manage their workload efficiently. Additionally, the anxiety they experience (Ravindra & Babu, 2021) may further contribute to procrastination, as they may feel overwhelmed by their responsibilities and delay essential tasks.

H3 : Accepted. The correlation is evident from Table 2, where Tamas Guna significantly positively predicts academic procrastination. Characterized by passivity, lack of initiative, and indifference to consequences (Sachar et al., 2023), individuals with a dominant Tamas Guna often struggle in academic settings, manifesting as chronic delays in starting or completing tasks (Rai, 2024), as they lack the motivation to engage with their responsibilities proactively. Additionally, they exhibit apathy toward deadlines and academic goals (Akter & Nahar, 2024), further contributing to procrastination and poor academic performance.

Difficulties in executive functioning, such as poor attention, reduced short-term memory, planning deficits, and impaired decision-making, are common among procrastinators (Atha et al.,

2024) and may be particularly pronounced in individuals with a Tamas personality. Research shows Tamas has a negative correlation with selective attention (Ravindra & Babu, 2021) and cognitive flexibility (Bhargav et al., 2023), making it harder to transition from procrastination to action. Tamas-dominated individuals lack the clarity to break tasks into manageable steps or seek guidance.

In Yadav's study (2019), Group A (spiritual lifestyle) and Group B (non-spiritual lifestyle) differed significantly in their Tamas scores. Group B had a higher Tamas score of 24.11 compared to Group A's score of 20.49. This indicates that individuals in Group B, who were not living in a spiritual environment, exhibited more characteristics associated with Tamas, which can negatively impact academic planning and task completion. The spiritual environment of Group A likely contributed to lower Tamas levels, suggesting a positive influence on mental clarity and motivation.

Aeon et al. (2021) state that low levels of conscientiousness are linked to poor time management and organizational skills, further contributing to procrastination. When compared, Tamasic individuals lack goal-directed efforts (Verma et al., 2020), exhibit lower self-assessment capabilities (Soubhari, 2015), and show reduced responsibility for task outcomes (Sachar et al., 2023). This creates a cycle of procrastination where tasks are neither initiated promptly nor managed effectively once started (Deshpande et al., 2008).

H4 : Rejected. As indicated in Table 3, resilience demonstrated a negative but statistically non-significant predictive relationship with academic procrastination. This suggests that while

resilience may have an individual relationship with academic procrastination, its unique contribution becomes negligible when personality factors are considered. A plausible explanation is the moderate positive correlation between resilience and Sattva ($r = 0.43$), indicating potential overlap in psychological constructs. Sattva-related qualities may subsume or overshadow the protective effects of resilience in managing procrastination. Conceptually, while resilience pertains to the ability to recover from adversity, it may not directly influence habitual behaviors like procrastination. In contrast, Sattva's focus on clarity, focus, and discipline may more directly buffer against everyday procrastinatory tendencies.

Study 2

H1: Accepted. Empirical studies by Johnson and Bloom (1995) and Lay et al. (1998) found that students scoring higher in conscientiousness were significantly less likely to delay academic tasks. Consistent with the Big Five personality framework, numerous studies like Ngamaleu and Nke (2021) report a significant negative correlation between conscientiousness and academic procrastination (e.g., $r = -0.435$, $p < 0.01$). Meta-analytic evidence by Steel (2007) identified conscientiousness as the strongest personality-related predictor of procrastination. Across diverse samples, individuals with higher levels of conscientiousness consistently exhibited lower levels of procrastination.

The mechanism underlying this relationship is likely rooted in the self-regulatory skills characteristic of conscientious individuals, enabling them to resist distractions and maintain sustained focus on their academic goals (Steel & Klingsieck, 2016). In contrast, individuals with

lower conscientiousness often struggle with organization and impulse control, rendering them more vulnerable to procrastinatory behaviors.

H2 : Accepted. This proposition is strongly supported by both classical Indian philosophical thought and contemporary empirical research. As described in the Bhagavad Gita and yoga philosophy, Sattva Guna, reflects qualities like purity, self-discipline, orderliness, truthfulness, and a commitment to virtuous action (Sharma, Singh, & Mehrotra, 2016). These attributes closely parallel the key facets of psychological construct of conscientiousness within the Big Five personality model, which include self-discipline, dutifulness, orderliness, achievement striving, and deliberation (Costa & McCrae, 1992).

Furthermore, empirical findings strengthen this conceptual parallel. Swaroop et. al. (2017) confirmed that individuals with high on Sattvic traits also tend to score high on conscientiousness, supporting the cross-cultural validity of this association. A clinical study by Nedungottil et. al. (2022) found a strong positive correlation between Sattva and conscientiousness, with correlation coefficients of 0.72 in clinical samples and 0.45 in community samples, suggesting that this relationship is robust across different populations.

H3: Accepted. Rajas Guna is traditionally linked to restlessness, desire-driven behavior, and emotional turbulence (Radhakrishnan, 1948). These characteristics closely mirror the core features of neuroticism in the Big Five personality model, which capture emotional instability, anxiety, impulsivity, and vulnerability to stress (Costa & McCrae, 1992).

Mohan and Sandhu (1988) found that individuals with higher Rajasic scores exhibited more neurotic tendencies. Das (1991) similarly reported a significant positive correlation between Rajas and neuroticism, reinforcing the connection between Rajas and emotional instability.

Clinical studies further support this association. Sharma et al. (2012) found that individuals with anxiety disorders had significantly higher Rajas scores than healthy controls, and these scores positively correlated with severity of anxiety. Likewise, research has shown that individuals who are predominately Rajasic tend to experience emotional instability, despair, rumination, and aversive emotional responses. Clinical research further substantiates the association between Rajas and negative emotional outcomes. Sharma et al. (2012) found that individuals with anxiety disorders had significantly higher Rajas scores than healthy controls, with Rajas scores positively correlating with anxiety severity. Similarly, individuals high in Rajasic traits have been shown to experience emotional instability, despair, rumination, and heightened aversive emotional responses (Ravindra & Babu, 2021). Swaroop et al. (2017) reported that Rajas is positively associated with anxiety, impulsivity, and emotional instability.

H4 : Accepted. Tamas, characterized by inertia, lethargy, confusion, emotional instability and a tendency towards negative affect (Sachar et al., 2023), closely aligns with the core dimensions of Neuroticism in the Big Five personality model, such as susceptibility to negative emotions, anxiety, and depressive tendencies.

A study by Khanna et al. (2013) reported that Tamas demonstrated a significant positive correlation with neuroticism ($r = 0.36$, $p < 0.01$), indicating an association between emotional

dysregulation and Tamasic disposition. Mohan and Sandhu (1988), as well as Das (1991), found that Tamas is associated with psychotic tendencies, highlighting its link to more severe forms of emotional and cognitive dysfunction.

Nedungottil et. al. (2023) reported this positive correlation in both clinical and community samples, suggesting that individuals with higher Tamasic traits are more prone to neurotic tendencies. Furthermore, a study highlighted that individuals high in Tamas Guna scored significantly higher on subscales measuring anxiety, anger, depression, and phobia, aligning with neuroticism.

Study 3

H1 : Accepted. For participants identified as high procrastinators, a significant decrease in procrastination was observed, as shown in Figure 5 and supported by the statistical results in Table 9. Research demonstrates a significant negative correlation between mindfulness and academic procrastination both at the trait and intervention levels. Meta-analytic evidence shows that higher trait mindfulness is associated with lower procrastination ($r = -0.365$, $p < 0.0001$) and this relationship is robust across populations (Mao et al., 2024). Thye et al. (2016) found that mindfulness-based interventions significantly reduce academic procrastination while enhancing self-regulation and attentional control. Thus, those with higher mindfulness demonstrate better attention control and learning efficiency, making them less likely to procrastinate. Moreover, the Short-Term Mood Regulation Theory posits that procrastination often functions as a maladaptive coping strategy to avoid the negative emotions associated with academic tasks (Yue et al., 2024). In this context, mindfulness by cultivating present-moment awareness and a non-judgmental

acceptance, enhances emotional regulation and helps students to tolerate discomfort without resorting to avoidance behaviors such as procrastination (Sirois & Pychyl, 2013).

Conversely, for participants identified as low procrastinators, a significant increase in procrastination was observed, as illustrated in Figure 6 and confirmed by the results in Table 9. This result can be understood in light of several possible explanations.

One explanation for this unexpected outcome is the statistical phenomenon known as regression to the mean, where individuals with very low initial procrastination scores may naturally shift closer to the average over time, regardless of the intervention (Barnett et al., 2005). Additionally, the content of the meditation program might have been less relevant for those who already possessed effective self-regulation skills, resulting in reduced motivation or interest in continuing with the practice.

This moderate increase could also point to unintended effects of the intervention for this group. For example, the structured routine imposed by the meditation app might have disrupted their already effective time management habits, causing a slight rise in procrastination. Another possibility is that the change was due to normal academic fluctuations or external stressors that coincided with the study period and were unrelated to the intervention itself.

H2 : Partially Accepted. Mind-wandering is characterised by the drift of attention away from a task toward task-unrelated thoughts, and is often the result of compromised cognitive control (Kum et al., 2023). These findings suggest that excessive mind-wandering may serve as a core cognitive mechanism underlying procrastinatory behavior.

Specifically, high procrastinators consistently reported significantly greater levels of mind-wandering than low procrastinators across all three time points, confirming a main effect of the group. This pattern aligns with prior research suggesting that high procrastinators are more susceptible to cognitive distractions, likely due to self-regulatory difficulties that make it harder to maintain focus and resist off-task thoughts (Wiwatowska, 2024). Similarly, Kum et al. (2023) found a strong link between procrastination and the increased frequency of task-unrelated thoughts. Supporting this association, Seli et al. (2016) and Stawarczyk et al. (2011) reported that procrastination is positively associated with both the frequency and intensity of mind-wandering. These findings highlight mind-wandering as a potential pathway through which procrastination manifests and persists.

Procrastinators often experience difficulties with both attentional control and emotion regulation, which in turn amplify mind-wandering. Recent research suggests that mind-wandering may function as an avoidance strategy, helping individuals escape negative emotions such as task-related anxiety or self-doubt (Wiwatowska et al., 2025). This aligns with Sirois and Pychyl's (2013) argument that procrastination is often driven by the short-term desire to manage negative emotions. Further supporting this, Zacks and Hen (2018) found that chronic procrastinators struggle with sustained attention and task engagement, which makes them more susceptible to mind-wandering.

There was a significant change in mind-wandering over time across all participants, as indicated by the main effect of time in Table 11. This overall pattern is also visually depicted in Figure 7, which shows a noticeable decline in mind-wandering scores from T1 (Baseline) to T3 (Dealing

with Distractions), particularly in the high procrastination group. This may reflect the effects of repeated task exposure, time of the day influences, or increasing self-regulatory awareness. However, the absence of a significant interaction effect indicates that this pattern of change did not differ between high and low procrastinators - both groups followed a similar trajectory over time. This suggests that fluctuations in mind-wandering are not moderated by procrastination tendencies. Such stability aligns with longitudinal findings showing that while procrastination predicts overall levels of mind-wandering, the pattern of change over time remains consistent across groups (Kum et al., 2023). These findings are further supported by research showing that mind-wandering is a dynamic cognitive phenomenon, influenced by factors such as task difficulty, fatigue, and motivation, but not always differentially impacted by group-based interventions or conditions (Arabacı & Parris, 2018). This reinforces the idea that time-related variations in mind-wandering are likely shaped more by situational factors than by individual differences in procrastination.

H3 : Partially Accepted. Impulsivity was assessed through behavioral indicators derived from the Go/No-Go task - which together capture aspects of response initiation and inhibition. As shown in Table 17 and illustrated in Figure 8, reaction time did not differ significantly across time points or between high and low procrastination groups, suggesting uniformity in the speed of motor response initiation. Similarly, Go accuracy, a measure of the ability to execute appropriate responses (response initiation), demonstrated a significant main effect of time (Table 20), but no interaction with procrastination group, indicating that although accuracy improved over time, this pattern was consistent across both groups (Figure 9). No-Go accuracy, reflecting inhibitory control, remained statistically unchanged over time and across groups, as evidenced by

non-significant main and interaction effects (Table 32) and was visually stable across conditions (Figure 11). Omission Errors (failure to respond to a target stimulus that requires a response) indicates lapses in attention or failure to initiate responses, showed a significant effect of time (Table 26), pointing to an overall reduction in errors, although no group-level differences emerged (Figure 10). Lastly, commission errors (responding to a stimulus where one is supposed to withhold a response), reflective of impulsive responding or failed inhibition, remained stable across time and did not differ by group (Table 35 & 36) with visual data in Figure 12 supporting this stability.

Research evidence consistently demonstrates that Go accuracy in the Go/No-Go task significantly varies across different time points due to factors such as cognitive fatigue, learning effects, and fluctuations in attention. For instance, Simmonds et al. (2007) found that Go accuracy tends to improve with repeated task exposure, reflecting enhanced motor control and learning. Additionally, evidence suggests that omission errors can change significantly over time during cognitive tasks, often reflecting improvements in attention and response initiation as the session progresses. Study by Acosta-López et al. (2021) shows that individuals with attentional deficits, tend to commit more omission errors, which are closely linked to deficits in vigilance and sustained attention. These errors often indicate failures in stimulus detection or momentary lapses in attention and are sensitive to fluctuations in attentional state over time. Importantly, findings suggest that omission errors may decrease as participants become more engaged or attentive throughout the task, suggesting a reduction in attentional lapses or improved response initiation. Additionally, research by Beaver et al. (2017) on everyday task performance in individuals with cognitive impairments indicates that omission errors, vary across task stages. While primarily highlighting between-group differences, this study supports the idea that as

participants become more familiar with the task or as their cognitive engagement stabilizes, omission errors tend to decline.

Other insignificant findings suggest that, in this context, Go/ No-Go task may not be a reliable indicator of impulsivity differences related to procrastination. Additionally, several researchers have questioned the reliability of the task as a measure of impulsivity, noting a lack of consensus on whether it accurately reflects impulsive behavior (Rodrìguez-Fornells et al., 2002; Aichert et al., 2012; Weafer et al., 2013; Jauregi et al., 2018). The Go/No-Go task used in this study was brief and simple, with high accuracy rates across groups suggesting a ceiling effect, where the task was too easy for most participants. This likely limited its sensitivity to detect reaction time differences between high and low procrastinators. Research has shown that behavioral measures of impulsivity often require a greater number of trials or more complex decision-making components to reveal trait-level differences (Stevens, 2017). Both groups likely reflected habituation effects as participants became more familiar with the task demands leading to reduced error rates. It's also possible that both groups were equally motivated and attentive during testing, thus performed near their maximum capacity.Another consideration is that impulsivity in procrastinators may be context-dependent, emerging more strongly under emotionally charged settings (Sirois & Pychyl, 2013). The controlled lab based environment may not have elicited the kinds of emotional or motivational triggers that typically provoke impulsive tendencies in daily life.

CHAPTER 7 - CONCLUSION, IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH

7.1 Conclusion

This study aims to investigate the relationship between personality traits, resilience, and academic procrastination among college students by integrating traditional Ayurveda-based Triguna theory and the Big Five personality framework. It also seeks to assess the empirical alignment between these two personality systems and examine the effectiveness of app-based guided meditation in reducing academic procrastination, mind-wandering, and impulsivity, particularly by enhancing Sattva-related traits like focus.

The results of the study supported several of the proposed hypotheses. Specifically, Sattva Guna was found to be a significant negative predictor of academic procrastination, indicating that individuals high in Sattvic traits - such as clarity, discipline, and self-regulation were less likely to delay academic tasks. Conversely, both rajas and tamas gunas were positively associated with academic procrastination. Rajas, marked by impulsivity and restlessness, and Tamas, characterized by inertia and passivity, both contributed to higher levels of task avoidance and delay. Similarly, Conscientiousness, one of the Big Five traits, was found to be a significant negative predictor of academic procrastination. These findings align well with the theoretical assumptions underlying both Vedic and Big Five personality frameworks.

Moreover, the study confirmed a significant convergence between the Big Five Personality traits and the Triguna typology. Sattva showed positive correlations with conscientiousness, while

Rajas and Tamas were linked to neuroticism. These results provide empirical support for the concurrent validity of the Vedic Personality Inventory in contemporary psychological research.

However, not all hypotheses were supported. Notably, resilience did not emerge as a significant predictor of academic procrastination when examined alongside personality variables. Although it showed a negative correlation with procrastination independently, its unique contribution became statistically insignificant in regression analysis. This may be due to conceptual overlap between resilience and Sattva traits, as both emphasize inner strength and adaptive functioning.

The final segment of the study examined the impact of app-based guided meditation on procrastination. The intervention led to a significant reduction in procrastination and mind-wandering, particularly among high procrastinators, and modest improvements in impulsivity were observed. This work suggests that guided meditation is a promising, accessible intervention for enhancing self-regulatory behaviors among students.

7.2 Implications

The first study makes a theoretical contribution by linking Triguna with academic procrastination. By highlighting the influence of Sattva in promoting self-regulatory behaviors. This research offers a culturally rooted yet scientifically relevant lens to understand academic behavior. This study is particularly valuable for the field of educational psychology - which calls for a need to incorporate indigenous models into practical interventions. Triguna must be continuously developed, empirically tested, and refined so they can serve as robust contributors to evidence-based practices in education. This study acts as a foundational piece for future

research that aims to develop culturally rooted frameworks to better support student and engagement.

The second study moves beyond theoretical exploration to empirical validation, to assess the applicability of the Vedic Personality Inventory. By establishing significant correlations between the three Gunas and the Big Five personality traits, this research offers empirical support for the Vedic Personality Inventory; by revealing patterns consistent with established personality structures. These findings pave a way for integrating the Triguna framework into applied psychological disciplines, particularly in counseling contexts. Counseling practice, grounded in structured, theory-driven approaches stands to benefit from integrating empirically validated indigenous tools like the VPI. This study reinforces the need for continued validation to firmly establish Triguna as a credible and culturally resonant framework in counseling; positioning it as complementary - not alternative to Western models. This would not only strengthen culturally relevant assessment tools but also broaden the scope of psychological support systems that resonate with Indian contexts.

The third study offers practical implications for behavioral intervention, particularly through mindfulness strategies, highlighting the efficacy of guided meditation via Headspace application in reducing procrastination, mind-wandering and impulsivity. The intervention proved especially beneficial for students who initially reported higher levels of procrastination, suggesting that such tools can serve as low-barrier entry points for positive change.

However, a crucial takeaway from this study is the acknowledgment that meditation is not for everybody. Its effectiveness depends on individual differences, including motivation, personality, and openness to introspective practices. Thus, meditation should be seen as a customizable tool rather than a universal solution.

The integration of app-based meditation tools into counseling frameworks opens new avenues for digital wellness. Counselors can strategically use such resources to complement therapeutic goals, especially when working with clients who prefer autonomous, tech-assisted approach. This hybrid model of support - where digital tools complement traditional therapeutic models can enhance engagement and accessibility while still maintaining a personalized, client-centered approach. For students, once they've completed an intervention, they can evaluate if meditation is a valuable tool for them moving forward. Using meditation apps provides an unique opportunity to improve academic behaviors at their own pace. They can explore mindfulness practices on the app, tailored to their individual needs, to enhance focus, reduce stress, and improve emotional regulation, all without the pressure of a structured environment. This self-guided approach helps them assess whether meditation aligns with their needs and goals.

In conclusion, by bridging theory, empirical validation, and practical application, this research highlights the value of indigenous frameworks in enhancing student well-being and academic functioning, while also promoting the development of inclusive, personalized support systems.

7.3 Limitations and Future Research

Studies 1 and 2 employed a correlational research design, which limits the ability to establish causal relationships between personality, resilience, and academic procrastination. Additionally, both studies captured data at a single point in time, restricting insight into how these relationships may evolve. This approach limits the understanding of how procrastination patterns fluctuate in response to varying academic demands and situational pressures - such as before and after exams or during high-stress academic periods.

To address these limitations, future research should adopt longitudinal and experimental designs that track changes in academic procrastination and associated traits over time. Such approaches would establish causal relationships and allow for the examination of traits in dynamic academic contexts. Incorporating ecological momentary assessment (EMA) or daily diary methods could offer real-time insights into how procrastination fluctuates and interacts with personality traits and external stressors. Additionally, qualitative methods - such as interviews or focus groups could deepen our understanding of student's subjective experiences, adding contextual richness to the findings.

The participant pool across all the studies consisted solely of college students, primarily undergraduates. This homogeneity restricts the generalizability of the findings to other age groups, professionals, educational levels, and non-academic populations. Expanding future samples to include participants from multiple universities, various cultural backgrounds, and broader age ranges would enhance external validity. Including working professionals and individuals from non-academic settings would also allow for exploration of how personality and procrastination manifest beyond educational environments.

Moreover, the studies were conducted at a single institution, results may be influenced by institution-specific variables, like academic structure, faculty-student dynamics, or campus culture. This further limits generalization to other educational settings. Future research should aim to replicate and extend these findings across different types of institutions - including schools - as well as across younger learners and older adult learners.

A further limitation involves the reliance on self-reported data, which may be subject to response biases like social desirability, lack of introspective accuracy, or inaccurate self-assessment. Participants may have unintentionally over or under-reported their levels of procrastination or personality traits, leading to potential inaccuracies in the data. Future research could benefit from incorporating multi-method assessments, including behavioral data or peer-reports, to improve measurement accuracy.

In addition to examining direct relationships, future studies should also explore mediating and moderating variables that may influence the associations. Although Study 1 hypothesized that resilience would predict lower levels of procrastination, it was not a significant predictor in the regression model. This suggests that resilience's role may be context-dependent or indirectly mediated by unmeasured variables. Similarly, in Study 3, further exploration is needed to understand the mechanisms linking procrastination and mind-wandering, as underlying factors such as motivation (Ryan & Deci, 2000), grit and urgency (Rebetez et al., 2018) may play a mediating or moderating role in this relationship.

Finally, future research could investigate the relevance and applicability of the Triguna framework in professional and workplace settings. Exploring how Triguna traits influence task initiation, time management, and adherence to deadlines could lead to culturally informed

interventions that enhance productivity and well-being beyond academic life. The correlation between Tamas and neuroticism further highlights the practical relevance of Ayurvedic frameworks in understanding emotional and cognitive vulnerabilities. Interventions aimed at reducing Tamas - through practices such as yoga, mindfulness, or Ayurvedic dietary modifications - may help mitigate neurotic tendencies by fostering greater clarity, emotional stability, and intrinsic motivation. Future studies could examine the effectiveness of such integrative interventions across both academic and professional environments, thereby extending the utility of Triguna beyond theoretical constructs to practical, mental health-enhancing strategies.

For Study 3, although the results showed promising effects - particularly for high procrastinators the study faced limitations due to its small sample size, which reduced statistical power and generalizability. Additionally, the intervention was limited to 20 sessions over four weeks, which may have been insufficient to induce long-lasting trait changes in mindfulness. While the Headspace app provided structured guidance, individual adherence was difficult to monitor outside of the supervised sessions. Future research should address these issues by incorporating larger and more diverse samples, considering the extension of the intervention duration, and including follow-up assessments to examine the sustainability of the effects. Incorporating behavioral measures would also enrich the data

Additionally, the mindfulness intervention sessions were conducted in a group setting using a single premium account of the Headspace app. While this approach ensured uniform delivery of the sessions, it introduced potential group-level confounds that may have influenced the efficacy of the intervention. Specifically, the shared setting increased the likelihood of social distractions, wherein disengagement by one participant affected the experience and concentration of others -

possibility of a domino effect, In contrast, prior studies employing Headspace typically provided individual access to participants, allowing for personalized engagement with the app. Future studies may benefit from offering individual access to the app, allowing participants to engage at their own pace and in distraction-free environments. This would not only improve adherence but also enable better tracking of individual usage patterns and their effects.

The findings from this study highlight the nuanced role of baseline behavior in determining intervention outcomes. Specifically, the utility of the intervention for individuals with already low levels of procrastination may be limited and may require a different implementation strategy. For low procrastinators, intervention fatigue or a loss of novelty could have played a role. Participants who did not feel a strong need to change might have gradually lost interest or stopped engaging fully with the app, leading to a potential rebound in procrastination behaviors. It is also possible that the increase in procrastination observed among low procrastinators reflects an improvement in self-awareness, rather than an actual rise in procrastination. The mindfulness practices may have helped participants become more conscious of their procrastination habits, leading to more accurate self-reports, even if their behavior had not changed significantly.

The present study utilized a general self-report measure of mind-wandering to examine its relationship with procrastination. However, future research would benefit from employing additional assessment methods such as observer-reports (Neigel et al., 2019) or experimental paradigms like probe-caught sampling (Seli et al., 2013). These methods could capture mind-wandering episodes in real time and their relationship with procrastinatory behaviors. The findings indicate that individuals who tend to procrastinate exhibit persistently higher levels of mind-wandering. This suggests that interventions targeting mind-wandering particularly among high procrastinators should focus on strengthening self-regulation and attentional control, as their

baseline tendency remains elevated, regardless of time or intervention. Furthermore, mind-wandering can be both intentional and unintentional (Seli et al., 2016), and future studies could explore how these subtypes differentially relate to procrastination behaviors. Notably, the consistent differences in subjective attentional states suggest that mind-wandering may serve as a more sensitive indicator of procrastination than objective measures, such as basic reaction time in simple tasks.

Future research could also implement longer versions of the Go/No-Go task or introduce tasks with greater executive control and emotional demands to capture differences related to procrastination. It may also be valuable to study procrastination-related differences in more naturalistic or stress-inducing settings, where attentional lapses and inhibitory failures are more likely to manifest.

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APPENDIX A : CONSENT FORM FOR STUDY 1

Greetings,

I am inviting you to participate in a research study exploring your personality as a student and our tendency to delay work as a part of my MA Psychology dissertation.

Please read the following instructions properly before filling out your responses -

The participation in the research is voluntary and unconditional. The data collected as well as information of the participants will be treated confidentially, and will purely be used for academic purposes. Participant's identity will not be associated with any of the findings of this research and will remain anonymous. There is no strict time limit but this study should take 10 to 12 minutes to complete since it consists of 87 questions divided into 3 different sections.

Eligibility Criteria -

1) You are between 17 to 24 years of age

2) You are currently enrolled in undergraduate, postgraduate or doctorate program in Thapar Institute of Engineering and Technology, Patiala

Kindly participate by accepting the following - You are making an informed decision; by having read all the aforementioned information about the study. By proceeding with this, you are agreeing to all the necessary requirements and have all the questions answered by the researchers. If the participant has any further questions/queries, they may feel free to contact the primary investigators.