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The Efficacy of Personal Initiative Training for Academic and Career Success as a Stress Management Intervention for University Students

By

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COMPULSORY DECLARATION

1. This dissertation has been submitted to Turnitin (or equivalent similarity and originality checking software) and I confirm that my supervisor has seen my report and any concerns revealed by such have been resolved with my supervisor.[1]
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[1] This dissertation was edited using Grammarly Pro.

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ٱلْحَمْدُ لِلَّهِ

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Abstract

University students face significant stress due to academic, financial, and personal pressures, particularly in South Africa, where socioeconomic instability and limited mental health resources exacerbate these challenges. While wellness programs exist, they often fail to equip students with proactive coping strategies for long-term stress management. This study explores Personal Initiative (PI) training as a potential intervention, arguing that fostering a self-starting, future-oriented mindset may enhance stress resilience. Grounded in Action Regulation Theory and the Transactional Model of Stress, this study examines whether PI training reduces perceived distress and increases self-efficacy among university students. A quantitative experimental time-series design was used, with N = 60 students initially recruited and N = 25 completing both time points. Participants were randomly assigned to an experimental group, which received a three-day PI training, or a waitlist control group. They completed the Situational Judgment Test for Personal Initiative (SJT-PI) and the Perceived Stress Scale (PSS-10) before and after training. Data were analysed using Spearman's rho correlations to examine relationships between variables, Wilcoxon Signed-Rank Tests to assess within-group changes, and moderation analysis to determine whether self-efficacy influenced the relationship between PI and perceived distress. Results indicated that PI training led to significant reductions in perceived distress and higher self-efficacy. Additionally, self-efficacy moderated the relationship between PI and stress reduction, with stronger effects observed in students with higher initial self-efficacy. These findings suggest that PI training fosters proactive coping strategies, equipping students with essential skills to navigate academic stressors. Study limitations and recommendations for future research are discussed, followed by outlining theoretical and practical implications for higher education interventions.

Keywords: personal initiative, stress management, self-efficacy, university students, action regulation theory

Table of Contents

Chapter 1: Introduction

Many university students face the overwhelming task of juggling academic demands, financial responsibilities, and personal obligations, which can affect their mental health (Hernández-Torrano et al., 2020). South Africa's challenging socioeconomic climate forces many students to work part-time while pursuing their studies to cover essential expenses such as food, accommodation, and other basic needs (Bantjes et al., 2023). Despite the availability of university wellness programs, many students may not acquire the proactive stress management and emotional regulation skills to effectively navigate academic and personal challenges (Hatcher et al., 2019). This study explores whether Personal Initiative (PI) training could assist students in managing stress more effectively. PI training can help students manage their stress levels and empower them with agency, autonomy, and resilience in their academic and professional lives (Fay & Frese, 2001)

1.1. Research problem and rationale

University students worldwide are facing increasing levels of stress, with South African students particularly vulnerable due to various academic, financial, and socio-environmental pressures (Hernández-Torrano et al., 2020). Recent studies indicate an increase in the prevalence and severity of mental health challenges, such as depression and anxiety, among students, emphasising the urgent need for preventative interventions (Bantjes et al., 2023; Petersen et al., 2012). In South Africa, these challenges are exacerbated by contextual factors, such as exposure to crime, trauma, and limited access to mental health services, which disproportionately affect students from disadvantaged backgrounds (Bantjes et al., 2023).

Despite improvements in university infrastructure, such as student wellness programmes and limited counselling services due to the high student-to-counsellor ratio (Hatcher et al., 2019), students' stress levels continue to rise. However, this can also be attributed to various factors, including lifestyle changes, the growing influence of social media and smartphones, and feelings of not belonging within academic environments (Keles et al., 2020). For instance, Keles et al. (2020) in their systematic review examining the impact of social media on psychological distress (e.g., anxiety and depression) in adolescents, found a consistent correlation between excessive social media use and heightened levels of psychological distress. Similarly, Vahedi and Saiphoo (2018) conducted a meta-analytic review that examined the

relationship between smartphone use, stress, and anxiety. Their findings revealed a significant association between excessive smartphone use and heightened levels of stress and anxiety, emphasising its potential negative impact on mental well-being.

Financial insecurity further exacerbates these challenges for South African students, as many struggle to meet basic needs such as food and accommodation. Although support is available through private and government funding, including the National Student Financial Aid Scheme (NSFAS), the reliability of these sources has become increasingly unstable. For instance, delays in funding disbursements from NSFAS, such as those encountered in 2024 when the scheme was placed under administration by the then Minister of Higher Education, add significant stress and uncertainty, further compromising students' mental well-being (South African Government, 2024).

Financial stress has severe implications for students' mental health and academic outcomes. A longitudinal study ($n = 482$) conducted with British undergraduate students found that financial difficulties were significantly associated with symptoms of depression and anxiety over time. The findings revealed that students experiencing ongoing financial stress reported worsening mental health, highlighting the long-term impact of financial instability on psychological well-being. Similarly, Jessop et al. (2019) conducted multiple regression analyses ($n = 337$) and indicated that financial concerns significantly predict declines in mental and physical health, including diminished social functioning and increased emotional challenges.

These pressures are heightened for South African students who supplement their income through precarious employment. The reliance on insecure jobs often worsens mental health challenges, as precarious employment contributes to chronic stress, reducing students' ability to manage their academic and personal responsibilities effectively. Additionally, financial instability creates a self-perpetuating cycle, where psychological distress negatively impacts individuals' capability to manage their finances effectively, which in turn exacerbates their financial and mental health difficulties (Hassan et al., 2019).

Moreover, South African students encounter unique socio-environmental challenges that exacerbate mental health concerns. A significant number of students report exposure to crime and trauma, with limited access to mental health services intensifying their vulnerability (Hatcher et al., 2019). The South African National Student Mental Health Survey (Bantjes et

al., 2023) revealed alarmingly high rates of mental health challenges among students, with 50% experiencing severe symptoms of mental disorders. While the survey highlighted the widespread prevalence of psychological distress, the low response rate (n = 28 516 out of 657 432 invited to participate) raises concerns about generalisability. This low response rate may have skewed the results, as students facing mental health challenges might have been more inclined to participate. However, the large sample size and representation from 17 different institutions provide a reliable view of the mental health challenges faced by students across the country. These methodological nuances strengthen the argument that mental health issues in South Africa's higher education sector are widespread and require attention.

Despite the clear need for preventative measures, South Africa remains considerably underdeveloped. Petersen et al. (2012) noted that most mental health resources in the country are focused on treatment rather than prevention, which leaves a critical gap in addressing the systemic causes of stress. International research has made significant progress in developing interventions; for example, Musiat et al.'s (2014) randomised controlled trial evaluated a transdiagnostic web-based programme designed to tackle multiple mental health disorders, including depression and anxiety. The study demonstrated substantial improvements in psychological outcomes among university students, highlighting the potential of digital mental health solutions (Musiat et al., 2014).

Given the increasing prevalence of distress and mental health challenges among university students, interventions that prepare students to handle academic, financial, and social pressures are essential. One such method, PI training for academic and career success, has demonstrated promise in encouraging proactive, self-regulatory behaviours that may assist students in managing stress more effectively. The potential of PI training as a stress management intervention is examined in detail below.

1.2. The Potential of PI Training as a Stress Intervention for University Students

A PI mindset is characterised by self-starting behaviours, future-oriented thinking and the ability to overcome challenges (Fay & Frese, 2001). Fay and Frese (2001) highlighted that these qualities are required to succeed in high-pressure environments such as universities, where students frequently experience significant academic and personal demands. The potential relationship between a PI mindset and stress lies in its capacity to foster self-efficacy,

resilience, and a sense of control over one's environment, which are key protective factors against stress. Empirical evidence suggests that students with a proactive or growth mindset have greater confidence in meeting academic demands and maintaining control over their commitment (Ogunyemi & Mabekoje, 2007; Sharma & Rani, 2013; Solesvik, 2017). These factors have been associated with lower levels of perceived stress, as they help mitigate feelings of uncertainty and being overwhelmed.

Sharma and Rani (2013) found that a PI mindset helps foster resilience and adaptability, equipping students to handle setbacks and adjust to circumstances effectively. This adaptability is critical in high-stress environments, as it enables students to reframe challenges as opportunities for growth rather than obstacles (Sharma & Rani, 2013). Their study concluded that a PI mindset contributes to a more balanced and fulfilling academic experience and prepares students for long-term success in their academic and professional endeavours.

Moreover, there is strong evidence that individuals can be trained to adopt a PI mindset through structured interventions, as demonstrated by Campos et al. (2017). Their study evaluated the impact of PI training on women-owned small businesses in Togo through a randomised controlled trial involving a large sample of entrepreneurs (n = 1500). Participants were randomly assigned to either a PI training group or a traditional business training group, with a control group receiving no intervention. The PI training sessions were designed to foster key aspects of the PI mindset, such as proactive behaviours, goal-setting, and problem-solving skills, emphasising the importance of self-starting actions and future-oriented thinking.

Women who underwent PI training experienced a 30% increase in business profits compared to the control group and outperformed those who received traditional business training. Additionally, these effects were sustained over time, demonstrating the long-term benefits of relatively short interventions. The randomised controlled trial design ensured that the observed outcomes were attributable to the PI training rather than external factors. The study also highlighted the cost-effectiveness of this approach, making it particularly suitable for resource-constrained contexts, where interventions must be impactful, efficient, and capable of reaching large groups.

Given its success in fostering long-term behavioural change, PI training is particularly well suited to South African universities. Many students face challenges requiring resilience, self-

regulation, and adaptive problem-solving. By equipping students with these skills, PI training has the potential to help them manage stress, improve their academic performance, and more effectively navigate the pressures of university life.

1.3. Research Question and Aims

This study asks the question: *What is the relationship between personal initiative behaviour, stress, and self-efficacy among university students?* Specifically, the study aims to explore how PI behaviour interacts with stress and self-efficacy and the potential of PI training as an intervention to enhance university students' capacity to manage stress. While theoretical arguments and initial empirical evidence suggest that PI behaviour and training may positively influence students' well-being by equipping them to handle stressors more effectively, this relationship has not yet been directly examined. Therefore, this research seeks to contribute to a broader understanding of how PI behaviour, stress, and self-efficacy intersect as stress management strategies in higher education contexts.

1.4. Dissertation Structure

To address the research question, Chapter 2 (Literature Review) provides an in-depth overview of the existing literature on the PI mindset, PI training, and its relationship to stress. Chapter 3 focuses on the research methodology, detailing the study's design, participant selection process, sample characteristics, instruments used to measure key variables, the procedure followed, ethical considerations, and the data analysis methods employed. The results are presented in Chapter 4, starting with an evaluation of the reliability and validity of the scales used. Descriptive statistics and the results of the hypothesis testing follow this. Finally, Chapter 5 (Discussion) interprets the results in the context of prior research, exploring potential explanations for the findings. The chapter also reflects on the study's limitations, offers suggestions for future research, and considers both the theoretical and practical implications of the findings before concluding with a summary of the overall study.

Chapter 2: Literature Review

This chapter begins with Sections 2.1 and 2.2, which explore the definition and origins of personal initiative. Section 2.3 focuses on the theoretical framework of this study, specifically the Action Regulation Theory. The chapter then moves to stress theories in Section 2.4, discussing the Transactional Model of Stress. This model highlights the significance of stress appraisal and coping mechanisms and closely aligns with PI's role in fostering proactive and adaptive behaviours for effectively managing stress. The chapter concludes by outlining the study's hypotheses and offering a summary.

2.1. The Origin of the PI Mindset Construct

Frese and Zapf (1994) developed the PI mindset as a psychological construct to explain observed differences in workplace initiative between East and West German employees following the German unification in 1990. Their research highlighted that employees from West Germany, whom a capitalist, market-driven economy had shaped, generally exhibited higher levels of self-starting initiative and proactive behaviour than their East German counterparts, who worked under the constraints of a socialist economic system (Frese & Zapf, 1994). Frese and Zapf (1994) attributed these differences to the contrasting socioeconomic and political environments prior to unification. West Germany's economic system encouraged individualism and innovation, fostering a culture that rewarded initiative and problem-solving. In contrast, East Germany's system offered fewer opportunities for independent decision-making and self-reliance (Frese & Zapf, 1994).

Based on these findings, Frese and Zapf (1994) proposed that the principles of the PI mindset could be applied beyond the specific contexts of East and West Germany. They argued that the core elements of a PI mindset, such as self-starting, proactive problem-solving, and persistence, are valuable for individuals facing structural challenges and socioeconomic hardships. Thus, they theorised that fostering PI behaviours could similarly benefit individuals in broader contexts of systemic disadvantage. Specifically, they posited that PI might be instrumental in addressing issues such as high unemployment and poverty, which were particularly prevalent in developing nations during the 1990s. These parallels between the struggles of East German employees and individuals in impoverished regions highlight the adaptability of the PI mindset to diverse and adverse circumstances (Frese & Zapf, 1994; Ladzani & Van Vuuren, 2002).

This distinction illustrates how external factors, such as socioeconomic conditions and workplace norms, shape individuals' ability to develop and demonstrate proactive behaviours. For this study, these insights are particularly relevant as they emphasise the necessity of creating environments that encourage personal initiative, especially in challenging situations. In South Africa, university students encounter significant challenges, as discussed above, making it difficult to take proactive steps in managing their stress. By exploring how a PI mindset assists individuals in navigating adversity, this study investigates whether PI training could be a practical tool for helping students better manage stress and enhance their overall well-being. The following sections define PI and the PI mindset.

2.2. A Definition of Personal Initiative

Frese and Fay (2001) conceptualised behaviour reflecting PI as a behavioural syndrome. This syndrome comprises an individual's action-oriented behaviour that is self-starting, future-oriented, and capable of overcoming barriers. Therefore, the level of analysis when considering personal initiative is the individual.

Self-starting involves initiating actions or pursuing goals autonomously and doing something unique or different (Frese & Fay, 2001). This behaviour is driven by personal motivation rather than external intervention (Mensmann & Frese, 2016). For example, a student demonstrating self-starting behaviour might begin working on an assignment well before its deadline, particularly if this represents a change from their usual habits.

Future-oriented behaviours indicate that upcoming opportunities or difficulties have been anticipated or planned for (Frese & Fay, 2001). Overcoming barriers refers to perseverance through internal or external obstacles. As PI is conceptualised as a behavioural syndrome, these three types of behaviour are interconnected and mutually reinforcing (Sih et al., 2004). Importantly, PI behaviour stems from a PI mindset, which shapes an individual's proactive orientation toward achieving their goals (Dweck, 2006). The following section explores the conceptualisation of the PI mindset.

2.2.1. Defining the PI Mindset

There is no universally accepted definition of what constitutes a mindset. While not explicitly adopting Gollwitzer's (1990) framework, Frese and Zapf's (1994) work aligns with Gollwitzer's emphasis on the role of mindsets in shaping goal-directed behaviour. Gollwitzer (1990) describes a mindset as comprising an individual's beliefs, attitudes, and assumptions that shape behaviour and decision-making. Thus, a mindset includes both cognitive and behavioural components.

Other researchers have provided complementary definitions of a mindset. For example, Dweck (2006) defined a mindset as a set of beliefs or assumptions about one's abilities and qualities, influencing how individuals approach challenges and achieve goals. Dweck (2006) distinguished between a fixed mindset (i.e., the belief that abilities are static) and a growth mindset (i.e., the belief that abilities can be developed through effort). Similarly, Bledow and Frese (2009) highlighted that a mindset evolves when individuals link specific cognitive and behavioural strategies, creating a feedback loop between thought and action. In this view, successful behaviours reinforce the underlying beliefs and drive similar actions in the future.

These definitions illustrate that a mindset combines cognitive frameworks (beliefs, attitudes, and assumptions) with behavioural strategies. It evolves dynamically through the interaction of thought and action, making it a critical factor in shaping decision-making and responses to challenges. Cognition based on beliefs, attitudes, and assumptions is translated into tangible actions. For example, individuals are more likely to explore new opportunities if they perceive challenges as opportunities rather than obstacles or threats (Frese et al., 2000; Zarei et al., 2010).

Cognition and behaviour form a feedback loop: behaviours that lead to successful outcomes reinforce the underlying cognition and trigger similar behaviours. This implies, for example, that individuals can transform self-limiting beliefs into constructive ones when they identify and address negative thought patterns. For example, a student who, when faced with a challenging assignment, initially thought, "*I cannot complete this in the time I have left*" and consequently did not complete the assignment at all could, through cognitive reframing, shift to asking themselves, "*How can I achieve the best possible result given the limited time*

remaining?" Thus, cognitive strategies can facilitate a transition towards a self-empowered mindset (Frese et al., 2016; Zarei et al., 2010).

The cognitive strategies underlying a PI mindset are specific attitudes, namely a strong sense of ownership, a commitment to continuous self-improvement, and the ability to catalyse change in their surrounding environment by pre-empting and addressing opportunities and challenges (Frese & Fay, 2001). The sense of ownership involves taking responsibility for one's actions and reflects a self-starting, self-determined approach to navigating life's complexities (Frese & Fay, 2001; Frese et al., 2000; Frese & Zapf, 1994).

Behavioural strategies enable individuals to act despite internal or external obstacles. These strategies are most effective when confronting specific external stressors, such as a university student facing multiple assignment deadlines who may be prone to procrastination and struggling with time management. Behavioural strategies may include creating a study schedule for upcoming exams or allocating specific time slots for research instead of reviewing lecture notes and drafting assignments. This structured approach could help students break down multiple deadlines into manageable segments and avoid last-minute rushes. Effective PI behaviour depends on the degree of synergy between the necessary cognitive and behavioural strategies and the strength of an individual's PI mindset. Therefore, to develop a PI mindset, it is essential to strengthen the cognitive and behavioural strategies.[2]

Frese and Zapf (1994) drew on Action Regulation Theory (Hacker, 1994) to explain the mechanism by which cognitive and behavioural strategies interact to create a PI mindset.

[2] Systemic factors, such as socioeconomic status and access to educational opportunities, significantly shape individuals' cognitive and behavioural strategies (Kessi et al.,2021). These disparities influence the degree of personal initiative individuals naturally develop through socialisation. While dismantling systemic barriers is essential for fostering equitable opportunities, there is an immediate need to equip individuals with tools, such as PI training, to navigate challenges within the current system. This study does not suggest that the onus of change should rest solely on individuals or absolve systems of the responsibility to address structural inequities. Rather, PI training empowers individuals to adapt and succeed while advocating for systemic reforms to reduce stressors and promote equity. As Fay and Frese (2001) highlighted, individuals retain a degree of agency and control over their behaviour, even in constraining circumstances.

Consequently, Action Regulation Theory serves as the theoretical framework for this study and is outlined in the following section.

2.3. Theoretical Framework: Action Regulation Theory

Hacker's (1994) Action Regulation Theory builds on the psychological concept of self-regulation, which gained prominence in scholarly discourse during the 1980s. It is founded on the belief that individuals can regulate their behaviour, allowing them to act as active agents capable of shaping their developmental paths (Lerner, 2021). Table 1 provides a concise historical summary of self-regulation and related theories that contributed to the development of Action Regulation Theory, emphasising the integration of key concepts such as goal-setting, feedback loops, and self-efficacy.

Table 1

Theories Influencing Hacker's Action Regulation Theory

Period	Theory or Concepts	Key Contributions and Development
1960s	Emergence of self-regulation concepts	• Mischel (1968) highlighted delayed gratification as a foundational aspect of self-regulation and self-control. • Bandura (1969) introduced the concept of self-efficacy as critical for initiating and sustaining self-directed behaviours.
1970s	Social Learning Theory	• Bandura (1977) demonstrated the importance of observation and imitation in learning, emphasising the role of self-regulation in aligning behaviours with observed standards. • Self-regulation plays a crucial role in this process by enabling individuals to monitor their behaviour, evaluate outcomes, and adjust their actions to align with learned standards or goals (Bandura, 1978).
1980s	Self-Regulation Theory	• Bandura (1986) defined self-regulation as a process involving goal-setting, behaviour monitoring, and feedback to align actions with goals • Established self-regulation as central to adapting actions to align with internal goals rather than external cues.

1990s	Goal-Setting Theory	• Locke and Latham (1990) connected self-regulation principles, such as self-monitoring and feedback, to effective goal achievement. • Locke and Latham (1990) emphasised setting specific, challenging goals to enhance motivation, focus, and performance.
1991	Feedback Loops in Self-Regulation	• Carver and Scheier (1991) proposed the importance of feedback loops in behaviour regulation and goal attainment
1992	Integration of Motivation and Regulation	• Kanfer (1992) linked motivational theories with self-regulation, emphasising cognitive control mechanisms in goal pursuit.
1993	Adaptation Through Self-Regulation	• Bandura (1993) highlighted the role of self-regulatory mechanisms in adapting to challenges and maintaining motivation.
1994	Action Regulation Theory	• Hacker (1994) synthesised concepts from self-regulation, goal-setting, and self-efficacy theories to explain goal-directed action.

2.3.1. Action Regulation Theory As A Theoretical Foundation For Personal Initiative Training

At the core of the PI mindset lies the premise that all actions are behaviours that individuals initiate after anticipating an ideal state, such as a specific goal (Hacker, 1994; Zacher & Frese, 2018). Theoretically, it is grounded in Hacker's (1994) action regulation theory, which provides a structured process model for understanding how individuals initiate, manage, and regulate their actions to achieve particular goals. Action regulation theory offers insights into the cognitive and motivational processes that underpin the PI mindset. It can, therefore, explain why some individuals are more proactive and goal-oriented than others (Hacker, 1994). The theory identifies factors that influence an individual's ability to regulate their actions effectively, including self-determination, self-efficacy, motivation, and environmental variables. Furthermore, it explores the relationship between self-regulation and individuals' capacity to manage their thoughts, emotions, and behaviours. It addresses the significance of self-regulation and how individuals can harness it to fulfil their objectives. The theory posits that individual goal-directed actions are governed by a hierarchical sequence of five distinct

stages: i) goal selection and development, ii) orientation to the environment, iii) plan development and selection, iv) execution, and v) feedback (Hacker, 1994).

This theoretical framework is particularly relevant to understanding stress in academic environments. It is suggested that students with a stronger PI mindset are likely to experience lower stress levels as they engage proactively in problem-solving and self-regulation, which helps them manage academic challenges more effectively and maintain a sense of control (Frese & Fay, 2001; Hacker, 1994; Lazarus & Folkman, 1984). Furthermore, a PI mindset enhances the ability to make autonomous decisions, enabling students to navigate challenges and pursue opportunities that contribute to a more fulfilling academic experience (Frese et al., 1997; Zacher & Frese, 2018). The first three phases focus on gathering the essential information required to regulate actions. This information includes understanding the task, available resources, and contextual aspects. As the process unfolds, these details are used to formulate, select, and fine-tune goals that align with the overarching intentions and objectives (Frese & Zapf, 1994; Hacker, 1994, 2003). The subsequent phases shift towards the execution of actions and the acquisition of feedback pertinent to the actions taken. This informative feedback helps individuals decide whether to refine existing goals, choose new goals, or disengage from goals that may no longer be relevant. The model acknowledges that situations may require skipping, repeating, or revisiting specific steps, thus allowing for flexibility (Frese & Zapf, 1994). Further details on each of the five phases are presented below.

Goal Selection and Development. Goals can be self-developed or determined by others (e.g., line managers or lecturers). According to DeShon and Gillespie (2005), individuals must redefine assigned tasks into personal goals, as self-set goals motivate behaviour. Individual and situational factors influence this redefinition process, such as personal motivation, perceived autonomy, and task relevance. Individuals are more likely to internalise and pursue goals when they find personal meaning in the assigned task or when the environment supports self-direction and engagement (DeShon & Gillespie, 2005; Zacher, 2017).

Goals can be pursued either consciously, where individuals are aware of and actively strive towards their objectives, or subconsciously, where underlying motivations of which they may not be fully aware guide individual action. Individuals often pursue several goals simultaneously. Research has shown that individuals understand how smaller, more immediate

goals contribute to achieving more extensive, long-term objectives (Ballard et al., 2016; Zacher, 2017). For example, attending an exam workshop might be regarded as directly supporting the larger aim of passing an exam. The effectiveness with which a person controls their actions determines how successfully they can coordinate their different goals (Zacher, 2017). Once goals have been selected and developed, individuals enter the environmental orientation phase, the next stage in the action regulation process.

Environmental Orientation. During this phase, individuals gather relevant information to support goal achievement from memory and their surroundings (Frese & Zapf, 1994). This search necessitates conscious effort and a subjective understanding of the situation (Zacher, 2017). Individuals' efficiency in finding and comprehending relevant information depends on their experience and the clarity of available signals or resources. For example, a student preparing for an exam might review their lecture notes, read their textbooks, and seek assistance from classmates or lecturers to ensure they thoroughly understand the material. This process demands focused effort and depends on how well the student grasps what they need to accomplish (Zacher, 2017). This information aids in regulating actions, as it predicts the likelihood of achieving a goal and coordinating efforts with others (Hacker, 2003; Zacher, 2017). Developing accurate mental representations of tasks, goals, and specific conditions, such as deadlines, resources, or environmental factors, leads to more efficient and practical actions. In contrast, inaccurate or irrelevant information, slow retrieval, or biased processing will likely result in poor performance (Zacher & Frese, 2018).

Planning and Selection. The third phase of action regulation theory is planning, which involves the development and selection of an action plan. According to Miller et al. (1960), plans serve as a bridge between thoughts and actions, representing a mental rehearsal of the steps necessary to achieve a goal. Plans can vary in detail; a basic plan might consist of a series of sub-goals (Napolitano & Freund, 2016). Ideally, an individual should have one or more alternative plans prepared in case the original plan fails (Frese & Zapf, 1994). While detailed planning often initiates effective goal-directed actions, adhering too rigidly to a plan can prove ineffective in complex situations with ever-changing requirements. Excessive cognitive effort can also result in inefficient planning (Napolitano & Freund, 2016).

Execution. In the fourth phase of action regulation, individuals carry out behaviours that ideally align with their goals and associated plans (Hacker, 2003). Individuals may need

to adapt these goals and plans during execution when unexpected barriers or new opportunities arise. Distracting thoughts, cognitive overload, and attention issues can hinder the monitoring of plans, potentially leading to reduced efficiency and effectiveness in achieving goals (Frese & Zapf, 1994).

Feedback. Feedback processing can occur both during and after behaviour execution. It includes anticipated feedback, also known as feedforward, which refers to individuals' expectations and ideas about the feedback they may receive and feedback received during execution that had not been anticipated. Feedback allows for the immediate correction of faulty actions (Hacker, 1994, 2003).

The following section offers an overview of how self-efficacy, action regulation, and goal-setting theories have been applied in training individuals to develop a greater PI mindset.

2.4. Training to strengthen a PI mindset

Frese and Fay (2001) view PI as a mindset that includes behavioural and cognitive loops. Therefore, training individuals to adopt a PI mindset should be possible by enhancing the necessary cognitive and behavioural strategies and the interplay between them. Frese and Zapf (1994) developed a training programme based on an adapted version of the five phases of goal-directed action outlined in Hacker's (1994) Action Regulation Theory: i) goal-setting or redefinition of tasks; ii) information collection and prognosis; iii) planning, and iv) feedback (Frese & Zapf, 1994). An action-orientated approach is essential as a PI mindset is characterised by being self-starting, future-oriented, and persistent in the face of barriers. Consequently, PI training requires participants to take action, supporting them with behavioural principles at each step. According to Glaub (2009), action principles play a crucial role in guiding individuals on the types of behaviours to adopt. Additionally, these principles bridge the gap between cognition and behaviour by linking actions to theoretical concepts (Hacker, 2003). They facilitate the transfer of knowledge into practice, which is significant given that theoretical understanding alone is often insufficient for behavioural change (Rousseau & McCarthy, 2007). By integrating action principles, PI training enhances its effectiveness, ensuring that participants can translate learning into meaningful, proactive behaviours (Glaub, 2009; Rousseau & McCarthy, 2007).

As a PI mindset involves a future orientation, PI training also encourages individuals to adopt a forward-thinking perspective and to express it in their goal-directed behaviour (Frese et al., 2007). PI trainers instruct trainees to formulate long-term, future-oriented goals. To achieve this, individuals must have the ability to recognise emerging opportunities and develop effective strategies to address potential obstacles. This necessitates an understanding of the broader environment and their ongoing progress towards the goal. Therefore, PI training strives to equip individuals with the skills to actively seek information from diverse sources, enabling trainees to identify new goals and revise plans based on newfound insights (Frese et al., 2007). To strengthen trainees' ability to persevere when faced with challenges, the training introduces strategies that foster proactive responses to difficulties and promote adaptability and flexibility. The specific aspects on which PI training focuses are summarised in Table 2 below, which demonstrates how the three facets of PI relate to each step in the action regulation process

Table 2

Steps in Hacker's (1994) Action Regulation Theory and Their Alignment with the Facets of Personal Initiative

	Steps in the action regulation process		
Steps in Hacker's (1994) Action Regulation Theory	**Facets of Personal Initiative**		
	Self-Starting	**Future Oriented**	**Persistence**
Goals/redefinition of tasks	Develop unique and creative goals rather than having goals developed by others.	Predict future opportunities and problems.	Maintain the pursuit of goals even when exhausted or feeling frustrated.
Information collection & prognosis	Actively search for information about goals whilst analysing the environment or circumstances.	Develop alternative plans in case of challenges that might arise. Participants should collect information about challenges.	If challenges emerge, individuals should continue to pursue their goals, building upon psychological capital and resilience
Planning & execution	Plans developed should demand an individuals' own action.	Plans should be explicit but not too in-depth to avoid anxiety and a contingency plan should be developed.	Realign as best possible after difficulties or obstacles.

Monitoring and feedback	Search for both positive and negative feedback.	Feedback should be used to make necessary adjustments.	Use feedback to maintain the goal and make necessary adjusts even if it consists of negative feedback

Note. Adapted from Frese et al. (2016) Personal initiative at work: An active performance concept. Routledge.

While PI training focuses on enhancing goal-directed actions and, consequently, achieving goals, Frese et al. (2016) outlined the potential for stress reduction as an additional benefit of a PI mindset. By freeing up cognitive resources, this could lead to increased productivity. For this reason, PI training may serve as an effective intervention to protect students from developing stress-related mental health issues. Before exploring the potential relationship between a PI mindset and stress, the following section outlines how stress is conceptualised in this dissertation.

2.5. Stress

This section provides a brief historical summary of the understanding of stress as a psychological concept. It outlines the rationale for selecting the Transactional Model of Stress as this dissertation's framework for examining stress. Following this, we explore the relationship between PI and stress.

2.5.1. A historical overview of stress

Table 3 provides an overview of how the conceptualisation of stress in psychological science has evolved since the early 20th century, transitioning from a psychodynamic perspective (Freud, 1920) and gradually shifting towards models that incorporate physiological processes (Selye, 1956), as well as more contemporary models that include cognitive and environmental interactions (Lazarus & Folkman, 1984; McEwen, 1998).

Numerous stress models have been developed over the years, and many share Lazarus and Folkman's (1984) emphasis on cognitive appraisal and the interplay between individual and environmental factors in shaping stress responses. For this reason, this dissertation adopts the Transactional Model of Stress as its framework for understanding stress, despite its age and the

availability of newer models. Gray et al. (2015) highlighted limitations in older stress models, including the transactional model, noting that they may oversimplify the interplay between biological, psychological, and social factors. Similarly, Ranjan et al. (2017) further argued for integrating elements of earlier models into modern frameworks to better account for cultural and contextual differences, which is particularly relevant in diverse settings like South Africa.

Despite these critiques, the Transactional Model of Stress remains a suitable framework for this study for several reasons. Its emphasis on cognitive appraisals and coping strategies aligns directly with the behavioural and cognitive processes central to the PI mindset. Unlike newer models such as the Job Demands-Resources (JD-R) Model (Demerouti et al., 2001), which is often context-specific and applied primarily in workplace settings, the Transactional Model provides a broad yet adaptable framework that is relevant across diverse environments, including the academic challenges faced by South African students. Research by Dickhäuser et al. (2024) continues to highlight the model's relevance in understanding coping mechanisms and stress appraisal in student populations. Since PI training fosters proactive coping and problem-solving, both of which are core components of the Transactional Model, the model remains a theoretically and practically sound choice for this research. A more detailed discussion of its application follows below.

Table 3

A Historical Overview of Stress Models and Their Contributions

Period	Concept / Model	Key contribution and developments
Early 1900s	Psychodynamic Lens	• Stress tied to internal conflicts and unconscious processes (Freud, 1920).
1950s	General Adaptation Syndrome (GAS)	• Stress is a physiological response pattern (Selye, 1950) • Stress as a defensive mechanism. • Three stages: alarm, resistance, and exhaustion. • Prolonged or severe stress leads to adaptation, disease or death.
1960s	Life Events Theory	• Stress seen as significant life events requiring adaptation or adjustment (Holmes & Rahe, 1967)

		• Introduction of the Social Readjustment Rating Scale (SRRS). • Stress as an independent variable causing experiences rather than being the experience itself.
1970s	Hardiness Concept	• Determined the extent to which personality characteristics such as commitment, control or challenges are related to stress resilience (Kobasa, 1979).
1980s	Transactional Model of Stress	• Introduction of the concept of cognitive appraisal into stress research (Lazarus & Folkman, 1984). • Recognition that change or life events could be interpreted as positive or negative based on cognitive and emotional factors . • Stress appraisal model with primary, secondary, and reappraisal components. • Personal and contextual factors influencing stress appraisal. • Coping strategies categorised as problem-focused or emotion-focused.
	Conservation of Resources Theory	• Stress involves the accumulation and protection of personal resources in the face of challenges (Hobfoll, 1989).
1990s	Allostatic Load Model	• McEwen (1998) linked chronic stress to physiological wear and tear, affecting long-term health (McEwen, 1998).
2000s	Job Demands-Resources (JDR) Model	• Proposed that stress occurs when job demands exceed available resources (Demerouti et al., 2001). • Job demands (e.g., workload, role conflict) create strain, while resources (e.g., autonomy, support) buffer stress and enhance engagement • Dual Pathways: High demands lead to burnout, while resources promote motivation and resilience. • Applicable across industries to develop stress-reduction strategies and improve employee productivity.

2.5.2. The Transactional Model of Stress

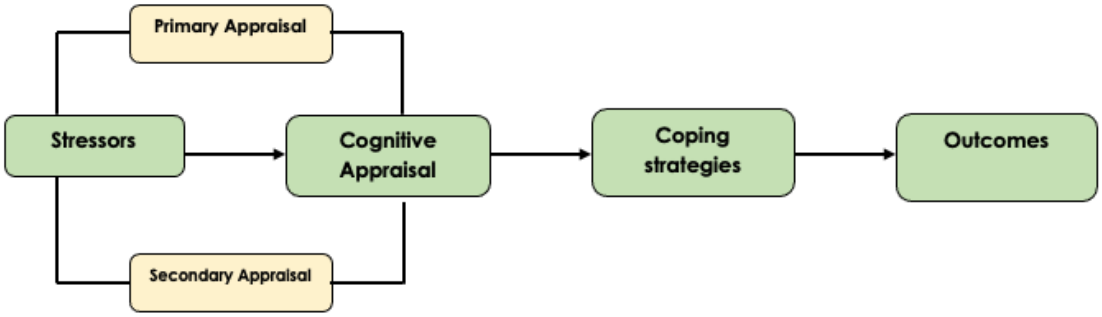
According to Lazarus and Folkman (1984), stress refers to the emotional, physical, and psychological reactions triggered by a situation that exceeds an individual's capabilities, resources, and coping capacity. The Transactional Model of Stress characterises stress as a result of interactions between an individual and the demands presented by their complex environment. When stress overwhelms personal resources, individuals resort to specific cognitive and behavioural responses to navigate the challenges of internal and external stressors (Lazarus & Folkman, 1984). Internal stressors arise from within and often include personal challenges such as self-doubt, perfectionism, or the fear of failure (Lazarus & Folkman, 1984). For example, a student might feel overwhelmed by the thought that they lack the ability to succeed academically. Conversely, external stressors stem from environmental pressures such as tight deadlines, financial difficulties, or social conflicts (Lazarus & Folkman, 1984). For example, a student balancing part-time work with a heavy academic load may feel stretched by time constraints and competing demands.

The model considers four distinct phases of the stress experience: a) stressors, b) appraisals, c) coping, and d) outcomes. Stressors represent the external or internal stimuli that provoke a stress response and are perceived as significant to an individual's well-being, potentially straining their resources. Appraisals involve an individual's cognitive assessment of the stressor, determining its significance and possible implications. This includes evaluating whether the stressor is threatening and whether it exceeds the individual’s resources to manage the demands. Coping mechanisms come into play as individuals employ cognitive and behavioural strategies to handle the stressors and regulate their negative emotional responses. The final phase, outcomes, encapsulates the tangible results or consequences stemming from the individual's interaction with the stressors and chosen coping strategies. These outcomes are often reflected in changes to an individual's well-being, such as reductions in negative effects or other emotional states. Through this framework, Lazarus and Folkman (1984) were able to explain the variability among individuals in their responses to the same external events and their choice of coping mechanisms for stress. They emphasised that a person might exhibit diverse responses depending on the nature of the stressor and the specific context in which it

arises. A graphic representation of the transactional model of stress is illustrated in Figure 1 below.

Figure 1

A Simplified Representation of The Transactional Model of Stress



Note. Adapted from Lai, A. Y., Sit, S. M., Lam, S. K., Choi, A. C., Yiu, D. Y., Lai, T. T., Ip, M. S., & Lam, T. H. (2021). A phenomenological study on the positive and negative experiences of Chinese international university students from Hong Kong studying in the UK and US in the early stage of the COVID-19 pandemic. *Frontiers in Psychiatry*, *12*(1), 1-10. https://doi.org/10.3389/fpsyt.2021.738474

2.5.3. Why a Personal Initiative Mindset Might Assist Students in Deal with Stress in Academic Environments: A Theoretical Argument

University students are often subjected to external stressors, such as heavy course loads, challenging assignments, and looming deadlines, which often trigger a stress response as outlined in the Transactional Model of Stress (Rummell, 2015; Smith, 2019). For example, multiple assessments for various courses occurring within a brief timeframe and the necessity to excel in all can be particularly burdensome for a student. Furthermore, competition for postgraduate programme placements (Nandamuri & Gowthami, 2011), given the limited number of available spots, intensifies the pressure to perform well academically, increasing stress levels. Moreover, Naylor et al. (2021) emphasise the importance of the psychological contract, where students' implicit expectations of fairness, support, and reciprocal efforts from academic staff are crucial. When these expectations are not met, whether through unclear communication or perceived unfair grading, students frequently experience elevated stress and dissatisfaction (Naylor et al., 2021). Internal stressors pertain to students' characteristics, including their perceptions and understandings of academic challenges, competence, or ability

to meet academic standards. For instance, a student's self-doubt regarding their academic performance, fear of poor grades, or low self-esteem can serve as internal stressors that impact the overall experience of stress within the academic environment (Chaudhary, 2017).

Students' appraisal of stressors is vital. Depending on their perception and evaluation, they may view a specific stressor as either a threat or an opportunity (Lazarus & Folkman, 1984). For example, a student might see a challenging assignment as an opportunity for growth or a threat to their academic career. Both types of appraisal influence the nature and intensity of the stress response in different ways. Consequently, students employ various coping mechanisms to alleviate the perceived stressors or challenges (Frazier et al., 2019; Lazarus & Folkman, 1984). Coping strategies may include time management, seeking social support from peers or family, adopting diverse study habits, or using relaxation techniques (Dyson & Renk, 2006).

As defined by Bandura (1977), self-efficacy refers to an individual's belief in their capability to accomplish specific tasks and achieve goals. Bandura argued that successful goal-setting and attainment reinforce individuals' confidence in their abilities, creating a positive feedback loop that strengthens the connection between self-regulation and goal-setting (Bandura, 1978; Locke & Latham, 2002). Self-efficacy perceptions influence decisions regarding which activities an individual pursues; individuals tend to select tasks they believe they can manage while avoiding those they consider beyond their capabilities (Bandura, 1978; Hackett & Betz, 1995). Consequently, an individual's self-efficacy perceptions affect their engagement in an activity, influencing their levels of effort and persistence (Bandura, 1978). High self-efficacy is associated with reduced anxiety and greater resilience in the face of challenges (Bandura et al., 1988; Schunk & DiBenedetto, 2020), whereas low self-efficacy is linked to increased emotional distress and avoidance behaviours (Schunk & DiBenedetto, 2020).

In PI training, students acquire the necessary skills and strategies to manage the challenges of their academic environment. Interventions that incorporate specific components of PI, such as self-regulation or goal-setting, have been demonstrated to enhance academic performance and reduce levels of anxiety (Duckworth & Seligman, 2005; Wolters & Brady, 2020). Table 4 illustrates how these interventions correspond with common sources of stress in academic settings and evidence-based strategies for stress management reduction.

Table 4

Addressing Academic Stress: Linking Stress Sources, Interventions, and PI Training

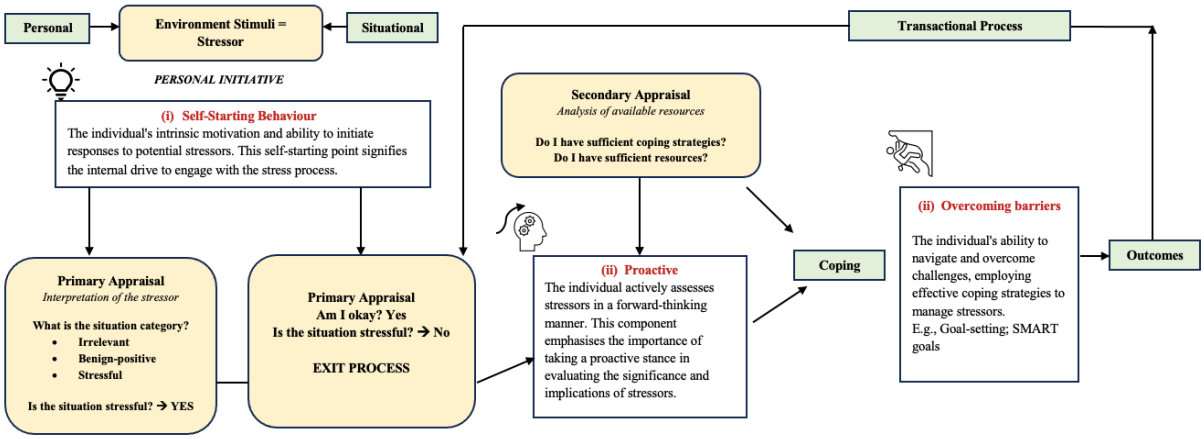
Source of Stress	Effective Evidence-Based Interventions	How PI Training Addresses This
Heavy workload and tight deadlines	Time management strategies (MacCann et al., 2012); Prioritisation techniques (Aeon & Aguinis, 2017).	PI training fosters proactive behaviours, teaching students to set realistic goals, prioritise tasks, and plan ahead.
Competition for academic opportunities	Peer support programmes (DeBerard et al., 2004); Building self-efficacy (Bandura, 1997).	PI training develops resilience and self-efficacy, equipping students to handle setbacks and navigate opportunities.
Financial stress	Financial literacy education (Fernandes et al., 2014); Stress coping mechanisms (Hudd et al., 2000).	Encourages problem-solving and goal-oriented strategies to manage financial responsibilities effectively.
Lack of social support	Social integration initiatives (Tinto, 1997); Peer mentoring schemes (Collings et al., 2014).	Enhances collaboration and peer connection, creating a sense of community among trainees.
Unclear academic expectations	Clear communication strategies (Braxton et al., 2000); Enhancing self-regulation skills (Zimmerman, 1998).	PI training improves self-regulation, helping students clarify expectations and take initiative to seek assistance

As illustrated in Figure 2, this process emphasises the significance of individual resources, such as self-efficacy, in determining the effectiveness of proactive coping strategies and highlights their potential role as a moderating variable in stress outcomes. Figure 2 visually depicts how personal and environmental stimuli are evaluated, leading to proactive coping strategies. It begins with personal and environmental stimuli, which prompt a primary assessment of the situation. If the individual considers the situation stressful, they proceed to a secondary appraisal to assess their coping resources. The model then diverges into proactive stress

management and coping strategies, emphasising personal initiative in initiating the process and overcoming barriers. The figure demonstrates how these components interact in a transactional process, ultimately resulting in outcomes.

Figure 2

A Model of the Stress and Coping Process Demonstrating the Role of a PI Mindset in Achieving Favourable Stress Outcomes



Note. The non-coloured rectangles represent the three facets of personal initiative when combined with the transactional model of stress.

2.6. Study Hypotheses

Based on the literature review presented in this chapter, the following hypotheses have been formulated:

- H_1: Higher levels of PI behaviours at T_1 are associated with greater reductions in perceived distress from pre-intervention (T_1) to (T_2) among university students.
- H_2: The relationship between PI and perceived distress is moderated by self-efficacy, such that the relationship is stronger when self-efficacy is high.
- H_{3a}: Participants exhibit a significant decrease in perceived distress scores from T_1 (pre-intervention) to T_2 (post-intervention).
- H_{3b}: Participants exhibit a significant increase in self-efficacy scores from T_1 (pre-intervention) to T_2 (post-intervention).

2.7. Chapter Summary

This chapter examines the key ideas and research underpinning this study, concentrating on PI, stress, and the interconnection of these concepts within the academic realm. Drawing on Action Regulation Theory (Hacker, 1994) as a basis, the PI mindset is explored as a mode of thinking and behaviour that fosters proactivity, self-regulation, and resilience among students. The Transactional Model of Stress is employed to comprehend how students evaluate and respond to their numerous challenges, such as juggling demanding workloads and confronting personal uncertainties. As mentioned earlier, university students in South Africa frequently face a variety of stressors, including tight deadlines, financial pressures, and restricted avenues for postgraduate study. These challenges can be particularly daunting, especially when combined with internal struggles like self-doubt or diminished confidence. PI training may provide practical tools to assist students in addressing these issues by promoting goal-setting, self-reflection, and problem-solving. The chapter also highlighted the significance of self-efficacy, which pertains to a student's belief in their capabilities and its influence on determining whether PI training effectively alleviates stress.

Chapter 3: Methods

This chapter outlines the methods used to empirically test the study hypotheses. It is divided into six sections: research design (Section 3.1), sampling strategies and participant description (Section 3.2), measuring tools (Section 3.3), procedural methods (Section 3.4), ethical issues (Section 3.5), and a description of the data analysis techniques (Section 3.6).

3.1. The Research Approach and Design

This study employed a quantitative research approach rooted in the positivist paradigm, which emphasises the systematic collection and analysis of numerical data to answer research questions and test hypotheses (Krauss, 2005). The positivist paradigm asserts that knowledge and predictions can be acquired through scientific observation (Rubin & Babbie, 2007). Using this approach, the study implemented a true experimental time series design (Campbell & Stanley, 2015; Cook et al., 2002) to investigate how PI training impacts stress levels by assessing the stress levels of students who participated in a three-day PI training (comprising full-day sessions spaced over a week) at three points: before the training commenced (T_1), immediately following the training (T_2), and during a follow-up three months later (T_3). A true experimental design was utilised because it involves the random assignment of participants to experimental and control groups, manipulation of an independent variable (PI training), and control over extraneous variables, thus enabling causal inferences to be made (Campbell & Stanley, 2015; Cook et al., 2002). The decision to gather follow-up data three months after the training was informed by literature suggesting that behavioural change typically occurs within three to six months (Oettingen, 2012). At T_1 and T_3, the same data was collected from a group of students who had not participated in the training and who served as a control group. The comparison between the training and control groups allowed for any observed differences to be attributed to the intervention, thereby establishing a causal relationship between the variables (Campbell & Stanley, 2015; Cook et al., 2002)

3.2. Sampling and Participants

Students at the University of Cape Town (UCT) were invited to participate in personal initiative (PI) training via email and campus announcement platforms such as Vula and Amathuba. Given that developing a PI mindset requires active engagement, it was essential that

participants voluntarily attended all three training days and applied the thinking-behaviour loop in their daily lives. Thus, convenience sampling was used to recruit students who were willing and motivated to engage with the training. However, to enhance the study's validity and ensure comparability between groups, participants were randomly assigned to either an experimental group, which underwent PI training, or a waitlist control group, which received the training after the study was completed. Further details are provided in the study procedure section (Section 3.5).

A total of 60 students enrolled in the study and began participation by completing the initial questionnaire. Participants ranged in age from 18 to 27 years, with an average age of 20, reflecting the typical demographic of first- to third-year university students. Most of the sample (n = 20, 33%) comprised first-year students, followed by third-year (n = 15, 25%), fourth-year (n = 12, 20%) students, and second-year (n = 10, 17%). A smaller proportion of students (n = 3, 5%) were in their fifth year of study.

The study's participant pool was predominantly female, with females constituting 65% (n = 39) of the total sample, males comprising 32% (n = 19), and 3% (n = 2) choosing not to disclose their gender. This gender distribution mirrors the broader trend observed in university populations, where female enrolment often exceeds male enrolment, particularly in the social sciences and humanities (Naidu, 2018).

The sample included 45% (n = 27) of students pursuing a Bachelor of Business Science (BBusSc) in the Faculty of Commerce and 43% (n = 26) enrolled in the Faculty of Humanities, primarily pursuing a Bachelor of Social Sciences Degree, while one student was pursuing a Bachelor of Arts Degree (2%), and three were enrolled in the Bachelor of Social Sciences Honours programme (5%). Additionally, 5% (n = 3) of participants were from the Faculty of Science, studying towards a Bachelor of Science. These figures indicate a diverse academic representation, though students from commerce and humanities faculties formed the majority, which aligns with national enrolment trends in social science disciplines (Naidu, 2018).

Regarding employment status, 85% (n = 51) of students were not employed, while 15% (n = 9) were employed in part-time or full-time roles. Table 4 provides a comprehensive overview of the sample demographics.

Table 4

Demographic descriptive data of the study participants (*N* = 60)

Participant Characteristic		**Frequency**	**Percentage (%)**
Age	18-20	32	53
	21-23	20	33
	24-27	8	14
	28-30	-	-
	31-33	-	-
Gender	Male	19	31
	Female	39	65
	Other	2	3
Level of Study	1st	20	33
	2nd	10	17
	3rd	15	25
	4th	12	20
	5th	3	5
Employment (Number of years in current job)	Employed (including part-time employment)	9	15
	Not employed	51	85
Degree (Field of study)	Commerce Faculty:		
	Bachelor of Business Sciences	27	45
	Humanities Faculty:		
	Bachelor of Social Sciences	26	43
	Bachelor of Arts	1	2
	Bachelor of Social Sciences Honours	3	5
	Science Faculty:		
	Bachelor of Science	3	5

3.3. Procedure

Prior to commencing any research activities, the research team adhered to the UCT policies, which require that all researchers, whether staff or students, obtain formal ethics clearance from a relevant UCT Research Ethics Committee (REC) before involving participants.

In alignment with this policy, the research supervisor submitted an ethics application through the electronic research administration (eRA) platform to the Commerce Faculty Ethics in Research Committee. This submission included the full research proposal and protocol, participant materials, and signed declarations required.

The REC granted conditional ethical approval, pending the fulfilment of specific requirements. These included submitting signed declarations from all researchers involved, providing detailed information on the procedures for data anonymisation and confidentiality, and obtaining official permission from UCT's Department of Student Affairs (DSA) to recruit and interact with students.

The research team complied with all stipulated conditions, including completing and submitting the DSA100a "Research Access to Students" application form, the DSA100b "Research Access Checklist," the full research proposal, the approved Faculty Research Ethics Committee (FREC) clearance letter (REF: COM/02131/2023), the informed consent document, and the draft invitation to students. These documents were submitted to the Department of Student Affairs (DSA) following UCT's research access protocols for approval to engage the student population.

Once all conditions were met and verified, full ethics approval was granted, permitting the team to proceed with participant recruitment and data collection (see Appendix A).

Recruitment was thereafter undertaken by a group of four Honours and two Master's students researching personal initiative (PI) training as part of their academic requirements, under supervision. The Google Form was shared as a link via the university's official digital learning platforms, Vula and Amathuba, across both undergraduate and postgraduate courses to ensure that students from various academic disciplines and levels of study could access the training (see Appendix B). The form outlined the training's relevant dates, times, and location and informed participants that lunch would be provided. Additionally, it required students to provide their student number and email address and confirm their willingness and availability to attend all three training days. Students were invited to sign up for the training to broaden their understanding of where their degree could lead them, not only within their chosen field of study but also beyond. The Personal Initiative Training was designed to equip participants

with proactive skills to support academic and career success. It fosters a mindset that encourages them to identify and confidently pursue their goals and opportunities.

Data was collected using an online survey via the Qualtrics^{XM} platform. The survey began with a cover letter outlining the study's purpose, procedures, and any ethical considerations (see Appendix C for a copy of the cover letter). Participants were required to indicate their consent to participate by ticking a box next to the statement "I consent to participate" and specifying whether they consented to provide or withhold their UCT student identification number (UCT EMPL ID). This number matched the data participants provided across the three waves of data collection. Participants who felt uncomfortable sharing their UCT EMPL ID could create a random four-digit code. In addition to the variables of interest to this study, the survey measured several additional constructs. It took participants approximately 25 minutes to complete. Additional details regarding the variables included in this study are provided in the subsequent sections. Appendix D includes a copy of the survey.

Participants were provided with daily lunches on each of the three training days. While Blanche et al. (2006) might argue that this could incentivise participation, it is important to note that participants were unaware of the research study beforehand. However, the provision of lunches and awarding a certificate of participation upon completion of all three training days may have inadvertently incentivised some individuals to express interest in the training. These measures were intended primarily to support participants during the training and acknowledge their engagement and efforts rather than to serve as recruitment incentives.

Using Microsoft Excel (v.16.76), all students who submitted their information via Google Forms were randomly assigned to either the experimental or waitlist control group. Random assignment was conducted by allocating each participant a unique identification number and employing Excel's random number generator function (RAND) to produce random values for each participant. These values were subsequently sorted, and participants were sequentially assigned to the experimental or control groups to ensure randomisation. Participants were informed of their group allocation via email, with some assigned to the first training session (experimental group) held in April and May, while others were designated for the second session scheduled in August.

The experimental group attended training on 29th April, 1st May, and 6th May 2023, whereas the control group attended on 6th August, 13th August, and 20th August 2023.

Professor Ines Meyer, who was trained by Michael Frese and served as the research supervisor for this study, facilitated the training. The sessions were organised in collaboration with the UCT Organisational Psychology Student Society (OPSS).

On the first day of training, the experimental group was briefed about the research study and accessed the survey via a QR code and link displayed on two projector screens in the lecture venue. Similarly, the control group attended an introductory session where they were informed about the study and accessed the T_1 questionnaire.

The survey link directed students to a preliminary page outlining the study's objectives, methodology, and ethical guidelines. At the end of this page, students indicated their consent to participate in the study as mentioned above. Upon advancing to the next section, participants provided their demographic information and completed the scales. It is important to note that participants were not required to complete the survey to attend training.

The second data collection for the experimental group took place on the final training day (T_2), 6th May 2023. Follow-up data for the control group were collected at the start of their first training day on 6th August 2023. Due to low response rates in the control group, the survey remained open for three weeks, from 8th May to 26th May 2023. To maximise participation, three follow-up reminders were sent via early morning emails, as research suggests that emails sent in the morning yield higher response rates due to increased attention and focus during those hours (Rao & Pennington, 2013).

Throughout the survey, researchers were present during the pre-test and post-test for the experimental group (EG) to ensure that participants completed their questionnaires individually. Similarly, researchers were available during the follow-up for the control group (CG) to assist with completing the surveys. Devices were provided to participants in both groups who lacked the means to complete the surveys independently, fostering inclusivity and equal opportunity participation.

3.4. Measures

3.4.1. Perceived Stress Scale (PSS-10)

The Perceived Stress Scale (PSS; Cohen et al., 1983) is among the most widely utilised tools for measuring perceived stress. There are three versions of the scale, consisting of fourteen, ten, and four items, respectively. The 10-item scale was selected for this study due to its extensive use and robust psychometric properties compared to the other versions. Since its inception, the scale has been cited over 30,000 times (Harris et al., 2023). The PSS-10 assesses the degree to which individuals perceive their lives as uncontrollable, unpredictable, and overwhelming relative to their ability to cope with stressors. Notably, the scale features two subscales: perceived distress, which reflects feelings of stress, nervousness, and being overwhelmed, and lack of self-efficacy, which assesses an individual's confidence in their ability to manage stress effectively (Cohen et al., 1983). Participants rated each item on a five-point Likert scale, indicating how frequently they experienced specific feelings and thoughts over the past month, with options ranging from *0 = never* to *4 = very often*. Four of the items were negatively worded, necessitating reverse coding. The PSS-10 can be scored by calculating an overall average score, with higher scores indicating elevated levels of perceived stress.

Sample items include those from the perceived distress subscale, such as, "*In the last month, how often have you felt nervous and stressed*?" Similarly, the perceived self-efficacy subscale includes items like, "*In the last month, how often have you felt confident about your ability to handle personal problems*?" Cohen et al. (1983) developed the PSS model based on Lazarus's Transactional Model of Stress, emphasising the interaction between the appraised stressor and the individual's perceived coping mechanisms (Lazarus & Folkman, 1984). Notably, the widespread availability of the PSS-10 in over 25 languages beyond English enhances its applicability and relevance across diverse cultural and linguistic contexts (Lee, 2012). Furthermore, this measurement instrument was chosen for its validation and reliability across multiple studies (Hamad et al., 2008; Makhubela, 2022), confirming its suitability for the South African university student population. In a South African study, Makhubela (2022) found that the PSS-10 demonstrated good internal consistency ($N = 862$, $\alpha = .79$).

3.4.2. Situational Judgement Test-Personal Initiative (SJT-PI)

In this study, the Situational Judgement Test for Personal Initiative (SJT-PI), developed by Bledow and Frese (2005), was adapted, with permission from the authors, to assess PI within university settings. The SJT-PI was initially designed for application in workplace contexts and scenarios. In the SJT-PI, students select which behaviour among a set of possible options in a hypothetical academic scenario they would most likely adopt. Examples of two original scenarios and their adapted versions are presented in Table 6 below. The complete list of 12 original and adapted scenarios is available in Appendix E.

Table 6

Example of Original and New Items Adapted for University Student Population.

Original Version [a]	Adapted Version
A new computer program was installed in your department. No detailed training was provided to save time and money. Some of your colleagues and you feel insecure in dealing with this new program. Errors frequently happen which leads to a loss of time. What would you do?	You are expected to work with new software for one of your courses. No detailed training was provided due to time and resource constraints. Some of your classmates and you feel insecure about how to deal with this new programme. You frequently make errors which leads to a loss of time. What would you do?
You are working in an open-plan office. The workstations are badly arranged. You do not have sufficient space to store everything you need on your desk. Furthermore, you have to walk far. The problem will be resolved for you in a couple of months because you will change the job in your company. What would you do?	You are working in an open-plan library on campus. The workstations are poorly arranged. You do not have sufficient space to store everything you need on your desk. The problem will be resolved for you in a couple of months because you will get access to a section of the library reserved for postgraduate students. What would you do?

[a] This column represents the English version of the SJT-PI (Bledow & Frese, 2005).

The scoring procedure for respondents' answers was based on the method recommended by Bledow and Frese (2005). Respondents were asked to indicate which of the four or five response options presented for each item they would be most and least likely to perform. For the most likely ratings, respondents received +1 if they selected the response option that indicated a high level of personal initiative, 0 for a medium level of personal initiative, and -1 for a low level of personal initiative. The responses to the question regarding what respondents

would do least likely were scored inversely: if a response option low in personal initiative was chosen as least likely, the score was +1; for medium levels of personal initiative, the score was 0; and for high levels of personal initiative, the score was -1. The most and least likely ratings were combined for each item, resulting in a score that could vary on a four or five-point scale between -2 (low initiative) and +2 (high initiative).

To concentrate on the differences between pre- and post-intervention scores and to enhance the interpretation of results, the scoring system was amended to eliminate negative values. In the revised system, each score was raised by one point. For the most likely ratings, respondents received +2 for high personal initiative, +1 for medium personal initiative, and 0 for low personal initiative. Similarly, for least likely ratings, low personal initiative responses scored +2, medium responses scored +1, and high personal initiative responses scored 0. The most and least likely ratings were combined for each item, resulting in a score range between 0 (low initiative) and 4 (high initiative). Respondents' overall scale score on the SJT-PI was calculated from the mean of item scores, consistent with the scoring methodology commonly employed in SJTs (Cabrera & Nguyen, 2001; McDaniel & Whetzel, 2016).

Table 7

A Hypothetical Scenario: Likely and Unlikely Participant Responses

Scenario		
You are new to a challenging course, and you have to work very hard to meet the assignment due dates. You are skilled in working with MS Word. However, you observe classmates in the computer labs who use other programmes for their assignments which you do not know. What would you do?		
Least likely		**Most likely**
○	I will make an effort to learn these programmes as soon as I think that I need them.	○
○	I do not doubt myself and concentrate on my current tasks.	○
○	I ask other students if I should learn these programmes.	○
○	I try to find out what the programmes are useful for. If they seem useful, I will learn to use the programmes in my spare time.	○

Note. Adapted from Bledow, R., & Frese, M. (2005). Situational-judgment-test on personal initiative. University of Giessen. https://www.researchgate.net/profile/Michael-Frese/publication/271843247_Situational_Judgment_Test_on_Personal_Initiative/links/54d430ec0cf25013d0291e45/Situational-Judgment-Test-on-Personal-Initiative.pdf

While Bledow and Frese (2005) validated the German version of the SJT-PI, the English version has remained unvalidated since its development. The German version was validated in a sample of German employees and supervisors (N = 203). Although the internal consistency was slightly below the typical standards for questionnaire scales (α = .61), it was higher than the consistency often observed in SJTs. The retest reliability was adequate (r = .73). An example of a hypothetical scenario given to participants, along with the least likely and most likely options, can be seen in Table 6 below.

The decision to utilise the SJT-PI in this research was motivated by its alignment with the conceptualisation of PI as situated action (Bledow & Frese, 2005). Traditional approaches to measuring personal initiative, predominantly reliant on self-report scales, have faced criticism due to their disconnection from theory and inability to capture natural behavioural manifestations (Griffin et al., 2007). Frese et al. (2007) advocated for a situational approach, cautioning against sole reliance on self-reports, as these tend to reflect individuals' perceptions of personal initiative rather than their actual behaviours in specific situations. The SJT-PI addresses this concern by presenting hypothetical academic scenarios that assess how individuals would respond or act, providing a more observable and contextualised evaluation of PI that is consistent with situated action (Frese et al., 1997)

3.4.3. Demographic Information

Participants were requested to provide their age, gender (which includes inclusive options such as "prefer not to answer" and non-binary categories), educational level, and employment status. This demographic information was collected solely during the first round of the survey to provide a comprehensive overview and description of the study sample.

3.5. Ethical Considerations

Several aspects were considered to ensure ethical research conduct. Participants must engage in research of their own free will. For this reason, participants were informed of the voluntary

nature of their participation, granting them the freedom to withdraw at any point without any repercussions (refer to Appendix C). Additionally, the researcher assured participants that their involvement entailed no direct risks or benefits, and there was no pressure to participate. The research supervisor, who cross-referenced and matched the data across all three time periods, removed participants' EMPL ID before making the dataset accessible to the researchers. This ensured that student researchers did not have access to the EMPL ID numbers, safeguarding participant anonymity (Ethicist, 2015; Kaiser, 2009). To protect confidentiality, only the researcher and supervisor had access to the data. Participants were provided with the contact details and information for UCT Student Wellness Services (SWS) to ensure they had access to professional support should they experience any feelings or symptoms of distress. These services included counselling, mental health resources, and crisis intervention, all aimed at promoting student well-being during and after their participation in the study. This measure was implemented as part of the study's commitment to ethical research practices.

3.6. Statistical Analyses

The data were analysed using IBM SPSS (version 29.20). The four negatively worded PSS-10 scale items were reverse-coded to prepare the data for analysis. Reverse coding was essential to ensure that all items aligned in their measurement of the same underlying construct, as inconsistent coding can distort factor structures and reduce the reliability of the analysis (Field, 2018). The SJT-PI responses were coded according to the procedure outlined in Section 3.4.2, and a new variable was created to represent the average SJT-PI score across all items.

The statistical analyses were conducted using data from participants who completed at least 75% of the survey, ensuring adequate data was available for analysis. Data was matched between participants who completed the PSS-10 and SJT-PI measures to facilitate valid comparisons. This matching process was critical for controlling individual differences and ensuring the comparability of pre- and post-intervention measures (Dimitrov & Rumrill, 2003). By including only participants with sufficient and complete data, the analysis preserved the study's internal validity and minimised potential biases associated with missing data (Little & Rubin, 2019; Smith, 2019; Tabachnick & Fidell, 2019). Participants who did not meet the completion threshold for the required surveys or intervention were excluded from the final analysis dataset.

Follow-up data was not utilised in the analysis, as only 10 participants completed the training intervention and the follow-up surveys for the PSS-10 and SJT-PI. Including this data would have reduced the sample size across the pre- and post-intervention groups, further compromising the statistical power of the analyses and the ability to generalise findings. Furthermore, none of the hypotheses outlined in Chapter 2 required follow-up data to be tested, which further justifies its exclusion. Babbie (2020) emphasises that excluding incomplete or unmatched datasets is a standard practice in experimental research to maintain the robustness and interpretability of results. Moreover, ensuring a significant completion rate respects participants' time and effort (Smith et al., 2022), enhancing the ethical rigour and credibility of the study findings.

Descriptive statistics were calculated to offer a comprehensive summary of the data, incorporating the means, variability, and overall distribution. This approach provided an overview of the study's participants, highlighting key demographic information and the primary variables of interest. Various statistical analyses, such as Spearman's rank correlation analyses, were employed to test the hypothesis and investigate the relationships between PI and perceived distress. Moderation analyses using the PROCESS macro (Hayes, 2022) were subsequently employed to determine whether self-efficacy affects the strength of the relationship between PI and perceived distress. Furthermore, paired samples t-tests were performed to assess changes in perceived distress from T_1 (pre-intervention) to T_2 (post-intervention). The findings from these analyses are presented in Chapter 4.

Chapter 4: Results

This chapter presents the findings of the study, detailing both descriptive and inferential statistical analyses conducted on the dataset. The aim of this chapter is to systematically assess the validity and reliability of the measurement tools, describe the central tendencies and dispersion of key variables, and test the study's hypotheses through appropriate statistical methods.

4.1. PSS-10: Construct Validity

To determine whether the PSS-10 items loaded as anticipated, exploratory factor analysis (EFA) was employed. EFA is a multivariate statistical technique that examines the underlying structure of a set of items (Fabrigar & Wegener, 2011; Fabrigar et al., 1999). It clusters scale items to identify the number of theoretical constructs that represent the responses within a given sample (Field, 2018). The purpose of factor analysis is to quantify the strength of association between each item and these dimensions, referred to as factor loadings (Field, 2018; Roberts et al., 2006). When items show coherent associations with expected dimensions, it suggests construct validity for the scale under investigation (Field, 2018).

There are various approaches to conducting EFA, with the choice depending on the nature of the data and the research objectives. Common methods include Principal Components Analysis (PCA) and Principal Axis Factoring (PAF). PCA reduces the data into components that explain the maximum variance in the dataset. However, PCA does not differentiate between shared variance and error variance, making it more suitable for data reduction rather than for uncovering latent constructs (Osborne, 2015). In contrast, PAF focuses on shared variance among items, excluding measurement error, and is more appropriate when the goal is to explore the theoretical structure of a scale (Fabrigar et al., 1999).

For this study, PAF was employed as it better aligns with the objective of identifying the latent constructs underlying the PSS-10. To aid interpretation, a varimax rotation was applied. Varimax is an orthogonal rotation method that maximises the variance of factor loadings within each factor, ensuring that items load strongly onto one factor while minimising loadings on others (Field, 2018). This method facilitates a clearer allocation of items to distinct factors (Field, 2018; Osborne, 2015). The analysis aimed to determine whether the PSS-10 items

corresponded with the expected factor structure and assess the scale's construct validity within the study sample.

A crucial consideration when conducting EFA is the sample size. For this study, validity was assessed at T_1, where the sample size ($N = 60$) was the largest. Scholars have provided varying recommendations for the minimum acceptable sample size for factor analysis. For instance, guidelines suggest ratios ranging from three to six participants per item (Catell, 1978), a participant-to-item ratio of 10:1 (Gorsuch, 1990; Nunnally, 1978; Pett et al., 2003), or even a more conservative 20:1 ratio (Hair et al., 1979). For the PSS-10, a ten-item scale, these recommendations imply a sample size requirement ranging from $N = 30$ to $N = 200$, depending on the guideline followed.

Despite these traditional guidelines, De Winter et al. (2009) conducted Monte Carlo simulations to explore the feasibility of obtaining stable factor solutions with smaller sample sizes under specific conditions. Their study systematically generated synthetic datasets that varied in sample size, number of items, number of factors, and strength of factor loadings. By applying exploratory factor analysis to these datasets, they evaluated the stability and reliability of factor solutions across a range of conditions. De Winter et al. demonstrated that stable factor solutions could still be achieved with smaller sample sizes, such as $N = 50$, provided that certain conditions were met: factor loadings were high ($\geq .80$), the number of factors was low (e.g., one or two factors), and there were sufficient items per factor.

The findings from De Winter et al.'s simulations are particularly pertinent to this study. The PSS-10 has been consistently reported in the literature as having strong factor loadings (e.g., Cohen et al., 1983; Lee, 2012). Furthermore, the scale is designed to evaluate a two-factor structure with multiple items loading onto each factor. These characteristics closely align with the conditions identified by De Winter et al. as conducive to stable factor solutions, even with relatively small samples. Their research highlights the importance of prioritising data quality, such as strong factor loadings and clear theoretical dimensions, over rigid adherence to conventional sample size guidelines. Given this evidence, it was concluded that a sample size of $N = 60$ in this study was adequate for conducting PAF. The methodological decisions in this study were shaped not only by traditional sample size guidelines but also by empirical support from De Winter et al.'s findings. Consequently, the EFA conducted here offers meaningful

insights into the factor structure of the PSS-10 within the sample, ensuring the validity of the scale under the given conditions.

This was supported by an adequate Kaiser-Meyer-Olkin (KMO) value of .72. The KMO measure indicates sampling adequacy by assessing the proportion of variance among items that may be shared (Field, 2018). It is possible to identify underlying common dimensions only when there is shared variance. The KMO statistic ranges from zero to one, with values closer to one indicating suitable conditions for factor analysis (Field, 2018). Generally, a KMO value above .60 is deemed acceptable, and values above .70 are regarded as good (Field, 2018). However, some experts recommend a KMO value above .80 for robust factor analysis (Kaiser, 1958; Osborne, 2015).

Another criterion is Bartlett's Test of Sphericity, which determines the likelihood that the correlation matrix reveals significant correlations among at least some items in a dataset, a prerequisite for effective factor analysis (Bartlett, 1950; Fabrigar & Wegener, 2011). A significant result from Bartlett's test implies that the correlations among the items are adequate for conducting PAF (Bartlett, 1950). If the result is non-significant, the items are not correlated and cannot be grouped into the same factor (Bartlett, 1950; Kline, 2013). Bartlett's test of sphericity was significant, χ^2 (45) = 214.94, $p < .001$, confirming that the correlations among the items were sufficient.

Since the data met the required assumptions, a PAF with Varimax rotation was performed on the PSS-10 data. Kaiser's criterion was used to determine which factors to retain, considering only those with eigenvalues greater than 1.00 as significant (Samuels, 2017; Tabachnick & Fidell, 2019). Additionally, factors needed to include at least three items with loadings exceeding .40 and without significant cross-loadings on other factors. An item was deemed to cross-load if its loading on a different factor was at least 75% of the primary factor loading (Samuels, 2017; Tabachnick & Fidell, 2019).

The PAF extracted three factors with eigenvalues above 1 (see Appendix F, Table F1, for all eigenvalues and explained variances). Only two items loaded on the third factor with item loadings above .40: "*How often have you been angered because of things that happened that were outside of your control*?" and "*How often have you felt difficulties were piling up so high*

that you could not overcome them?". Appendix F, Table F2, presents the factor loadings for all 10 scale items.

The two items were, therefore, removed, and a second PAF was conducted. Prior to the analysis, the suitability of the data for factor analysis was evaluated using the KMO measure of sampling adequacy and Bartlett's test of sphericity. The KMO value was .64, which meets the minimum threshold of 0.6 (Field, 2018), indicating that the sample size was adequate for factor analysis. Bartlett's test of sphericity was significant, χ^2 (28) = 138.55, $p < .001$, suggesting that the correlation matrix was not an identity matrix and that the data were suitable for factor extraction. The eight remaining items clearly loaded on the two factors, which had eigenvalues above 1, as indicated in Table 7. One of the factors described the positively worded items and was labelled "perceived distress." The second factor summarised the negatively worded items and was given the label "lack of self-efficacy."

Table 7

Factor loadings of the eight PSS items on the two factors with eigenvalues above 1 ($N = 60$).

	Factors	
	Lack of Self-Efficacy	**Perceived Distress**
In the last month, how often have you…		
been upset because of something that happened unexpectedly?	.191	**.681**
felt that you were unable to control the important things in your life?	-.177	**.772**
felt nervous and stressed?	-.047	**.837**
found that you could not cope with all the things that you had to do?	-.428	**.629**
felt confident about your ability to handle your personal problems?	**.812**	-.025
felt that things were going your way?	**.777**	-.147
been able to control irritations in your life?	**.625**	.056
felt that you were on top of things?	**.755**	-.131
Eigenvalue	**2.478**	2.198
% of Variance	**30.972**	27.477

Note. Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalisation.

4.2. PSS-10: Reliability Analysis

Reliability pertains to the degree to which a measurement scale yields consistent outcomes or information in diverse situations. One way to assess this is by examining a scale's internal consistency. Internal consistency refers to the extent to which participants' responses to various items on the scale, gathered during a single administration, are related. However, the reliability of these analyses is heavily contingent upon sample size. For instance, Tabachnick and Fidell (2019), suggest that a minimum sample size of 100 participants is often necessary for reliability analysis. Therefore, the small sample in this study must be considered when interpreting the reliability results.

As the factor analysis revealed two dimensions, namely lack of self-efficacy and perceived distress, all subsequent analyses were conducted separately for these two four-item subscales. Using Nunnally's (1978) guidelines of a minimally acceptable score of .70, Cronbach's alpha revealed adequate reliabilities of $\alpha = .70$ and $\alpha = .71$ for lack of self-efficacy and perceived distress scale, respectively. Table 12 presents the corrected item-total correlations for the PSS items. All were greater than .40 and thus considered significant (Cho, 2016; Thanasegaran, 2009).

Table 8

Corrected item-total correlations for the PSS items with two dimensions

Item No		Corrected Item-Total Correlation	Cronbach's Alpha if item Deleted
In the last month, how often have you…			
	Perceived Distress ($\alpha = .71$)		
1	been upset because of something that happened unexpectedly?	.446	.675
2	felt that you were unable to control the important things in your life?	.409	.700
3	felt nervous and stressed?	.663	.555
6	found that you could not cope with all the things that you had to do?	.596	.646
	Perceived Self-Efficacy ($\alpha = .70$)		
4	felt confident about your ability to handle your personal problems?	.682	.500

5	felt that things were going your way?	.629	.543
7	been able to control irritations in your life?	.499	.640
8	felt that you were on top of things?	.485	.794

The PAF and reliability analyses thus supported a two-dimensional PSS scale after removing two of the original items. Consequently, two new variables, lack of self-esteem and perceived distress, were determined by averaging the corresponding item scores for each participant

4.3. Reliability and Validity Issues: SJT-PI

4.3.1. Reliability Issues for SJT-PI

The inherent nature of SJTs, designed to measure behavioural traits and decision-making processes by presenting respondents with hypothetical scenarios and asking them to choose the best response that reflects their subjective choice, further complicates such analyses. Conventional reliability evaluations rely on internal consistency analyses, such as Cronbach's Alpha, assessing the consistency and stability of scores over time and across multiple administrations (Lievens & Sackett, 2012). However, SJTs are characterised by their dynamic nature and the inclusion of diverse item pools, each capturing different aspects of the intended construct. This variation reflects the complexity of real-life scenarios. The tests' reliance on specific contexts implies that respondents' answers can vary significantly based on the presented scenarios (Lievens et al., 2008). This could result in lower internal consistency, as the items are not necessarily inter-correlated like those in a standard survey (Weekley & Ployhart, 2013). Thus, calculating a single reliability coefficient becomes impractical and potentially misleading (Lievens & Patterson, 2011; Lievens & Sackett, 2012; Weekley & Ployhart, 2013).

In addition to challenges regarding reliability, validity assessments for SJTs also face significant obstacles due to their multifaceted and context-dependent nature. Criterion-related validity, which examines the relationship between test scores and outcomes such as academic performance or stress management, is highly relevant for SJTs (Field, 2018). However, the capacity of SJTs to predict outcomes can be influenced by the scenarios presented and how respondents interpret them (McDaniel et al., 2007; McDaniel & Whetzel, 2016). Construct validity, often established through EFA, is less applicable to SJTs since each item is designed

to stand independently, representing distinct behaviours rather than forming a cohesive latent construct (Schmitt & Chan, 2013). Similarly, content validity presents challenges, as the scenarios must adequately represent the full range of stress-inducing situations relevant to university students (Weekley & Ployhart, 2013). While the SJT-PI was designed to assess behaviours broadly associated with PI, its hypothetical nature may not always capture the nuances of real-life stress management, potentially limiting its ability to fully reflect the complexities of PI in practice (Weekley & Ployhart, 2013).

4.4. Descriptive Statistics and Inferential Statistics

This section presents the descriptive statistics for all 60 participants at T_1, including means, standard deviations, minimum and maximum scores, as well as skewness and kurtosis values for the study variables (see Table 13). Each variable's average score was interpreted in relation to its midpoint; mean scores above this midpoint indicate higher levels of the variable of interest. Skewness (the symmetry of the distribution) and kurtosis (the peakedness of the distribution) were assessed to determine the normality of the data. Values that are significantly different from zero suggest a deviation from normality (Field, 2018; Tabachnick & Fidell, 2019).

Although normality is typically required for reliable parametric analyses, Pallant (2020) noted that the statistical methods in SPSS are robust enough to handle non-normally distributed data. Consequently, deviations from normality, as indicated by skewness and kurtosis values, were not a significant concern.

To compare pre- and post-intervention scores if they had completed at least 75% of the T_1 (pre-intervention) and T_2 (post-intervention) assessments. This threshold was applied to ensure data quality and minimise the impact of incomplete responses. This matching process resulted in a final sample of 25 participants drawn from the original 60, ensuring that comparisons were conducted only among those with sufficient data for meaningful analysis.

4.4.1. Pre-Test (T_1)

At the pre-test, participants ($N = 60$) reported moderate levels of perceived distress ($M = 2.58$, $SD = 0.72$), indicating that they experienced distress between "*occasionally*" and "*fairly often*."

The mean score for lack of self-efficacy was 1.82 (*SD* = 0.73, *N* = 60), suggesting moderate difficulty in managing personal challenges prior to the intervention. Meanwhile, PI (SJT-PI; *N* = 67) had a mean of 2.37 (*SD* = 0.65), indicating that participants occasionally demonstrated proactive behaviours in the scenarios presented. Skewness and kurtosis values displayed slight deviations from normality, particularly for perceived distress (skewness = - 0.50, kurtosis = 1.60), although none were extreme.

4.4.2. Post-Test (T_2)

At the post-test (*N* = 25), perceived distress declined (*M* = 1.69, *SD* = 0.74), reflecting generally lower levels of distress (ranging from "rarely" to "sometimes"). The mean score for lack of self-efficacy decreased to 1.36 (*SD* = 0.57), implying that participants felt somewhat more confident managing personal challenges than at T_1. In contrast, PI (SJT-PI) increased slightly (*M* = 2.60, *SD* = 0.57), suggesting a greater frequency of proactive behaviours. The skewness and kurtosis values at T_2 were generally closer to normality; for instance, perceived distress had a skewness of 0.08 and a kurtosis of 0.51, though small deviations remained.

Table 13

Descriptive Statistics for Study Variables at Pre- and Post-Intervention.

		N	Min	Max	M	SD	Skewness	Kurtosis
T_1	Perceived distress	60	0	4	2.58	.72	-.50	1.60
	Lack of SE	60	.25	4	1.82	.73	.43	.30
	PI_PRE	67	0	3.58	2.37	.65	-.76	1.44
T_2	Perceived distress	25	.25	3.00	1.68	.74	.07	-.51
	Lack of SE	25	.50	2.50	1.36	.57	.17	.32
	PI_POST	25	1.33	3.42	2.60	.56	-.94	-1.04

Note. T_1= Pre-Test; T_2= Post-Test; N = Sample size; M = Mean; SD = Standard Deviation.

The descriptive statistics highlighted changes in distress and self-efficacy over time and patterns in PI behaviours. The next section focuses on inferential statistics to test the hypotheses outlined in Chapter 2.

4.5. Inferential Statistics: Testing the Hypotheses

In Chapter 2, the following hypotheses were formulated:

- H_1: Higher levels of PI behaviours at T_1 are associated with greater reductions in perceived distress from pre-intervention (T_1) to (T_2) among university students.
- H_2: The relationship between PI and perceived distress is moderated by self-efficacy, such that the relationship is stronger when self-efficacy is high.
- H_{3a}: Participants exhibit a significant decrease in perceived distress scores from T_1 (pre-intervention) to T_2 (post-intervention).
- H_{3b}: Participants exhibit a significant increase in self-efficacy scores from T_1 (pre-intervention) to T_2 (post-intervention).

The following sections present the results of the hypothesis testing, organised by each hypothesis.

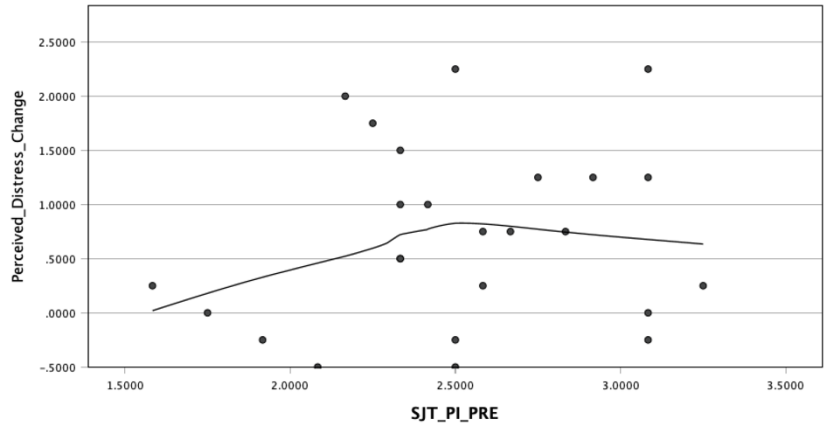
4.5.1. Hypothesis 1: The Impact of Personal Initiative on Pre-to-Post Distress Reduction

A scatterplot was created to visually represent the data by plotting post-training PI scores against the change in perceived distress. A locally estimated scatterplot smoothing (LOESS) curve was applied to identify the potentially underlying relationship between the two variables. LOESS is an exploratory technique that fits a flexible line to the data without assuming a specific form for the relationship (Carr et al., 2018). Given the small sample size, no outliers were removed (Cousineau & Chartier, 2010).

The LOESS curve, depicted in Figure 3 below, illustrates a non-linear relationship between the two variables. The analysis demonstrated an initial positive trend for PI_PRE scores ranging from 1.5 to approximately 2.5, followed by a peak at PI_PRE scores between 2.5 and 2.7. Beyond this peak, the relationship exhibited a slight negative trend. Perceived Distress Change values varied from -0.5 to 2.5 (based on visual inspection of the distribution). The considerable scatter of data points around the LOESS curve suggests significant individual variability in responses, indicating that PI_PRE scores may hold limited predictive value for Perceived Distress Change. This pattern indicates that, while there is a systematic relationship between these variables, other factors are likely to contribute to changes in perceived distress.

Figure 3

LOESS Curve Depicting the Relationship Between Change in Perceived Distress and PI Levels Amongst University Students



4.5.2. Correlational Analysis

To examine Hypothesis H_1, a Spearman's rho correlation analysis was conducted. This method was preferred over the Pearson correlation because it does not require a strictly linear relationship (Rebekić et al., 2015). Spearman's rho assesses monotonic relationships, wherein one variable consistently increases or decreases in relation to the other, though not necessarily at a constant rate. Furthermore, it measures the strength and direction of association between ranked variables, making it more robust to deviations from normality and outliers, and suitable for smaller samples sizes.

The Spearman's rho results indicate a weak, non-significant positive correlation between the change in perceived distress from pre-training to post-training (r_s (23) = .13, p = .53). This suggests that higher levels of PI post-training were associated with somewhat greater reductions in perceived distress; however, the effect was not statistically significant. To validate the results, a 95% confidence interval for Spearman's rho was also estimated using the method proposed by Bonett and Wright (2000), due to its robustness, particularly with smaller sample sizes or non-normally distributed data. This approach provides more accurate interval estimates, making it a suitable choice for the characteristics of the current dataset. The 95% confidence interval revealed that in 1,000 random samples bootstrapped from the overall sample, the correlation coefficient (r_s) fell within the range of [-0.29 to 0.52] 95% of the time.

As this interval includes zero, the finding reinforces the conclusion that the relationship is statistically non-significant.

These findings do not support the hypothesis that higher PI behaviours at T_1 would correlate with greater reductions in perceived distress. Consequently, we retain the null hypothesis. This suggests that other factors, such as social support, self-efficacy, or broader contextual influences, might significantly influence changes in perceived distress.

4.5.3. Hypothesis 2: The Role of Self-Efficacy as a Moderator

To examine whether perceived self-efficacy moderates the relationship between PI (independent variable) and changes in perceived distress (dependent variable), hierarchical multiple regression analyses were conducted using the PROCESS macro for SPSS (version 4.2), specifically Model 1, which tests for the interaction effect between a predictor and a moderator on an outcome variable. According to Field (2018), moderation analysis investigates how the interaction between two or more predictor variables influences an outcome. A moderator variable can shape this relationship by increasing, decreasing, or altering the direction of the effect between the predictors and the outcome (Field, 2018). In this study, perceived self-efficacy served as the moderator variable. The interaction term was automatically created by the PROCESS macro, which multiplies the mean-centred predictor (PI_Post) and moderator (SE_Pre) variables (Hayes, 2022). Mean-centering reduces multicollinearity between the interaction term and its constituent variables and enables more meaningful interpretation of the main effects, specifically, how the predictor influences the outcome at the average level of the moderator (Aiken & West, 1991). Before conducting the analyses, several assumptions were assessed to ensure that the data were suitable for moderation analysis.

4.5.1.1. Level of Measurement. Moderation analysis assumes that the outcome variable is continuous, while the predictor and moderator variables may be either continuous or dichotomous (Field, 2018). This assumption ensures the appropriateness of parametric statistical procedures used in the model. In this study, all variables (PI_Post, SE_Pre, and PD_T_1) were continuous, thereby satisfying this assumption.

4.5.1.2. Sufficient Sample Size. Although the sample size of 60 participants fell slightly below the recommended threshold of 74 participants, as determined by the formula $N > 50 + 8m$ (where m represents the number of predictors in the regression model), the decision was made to proceed with the regression analysis for several reasons. The sample size was only marginally smaller than the recommended value, suggesting that while there may be a slight reduction in statistical power, the analysis would still be sufficiently robust to detect moderate to large effects (Tabachnick & Fidell, 2019). Furthermore, contemporary research in organisational psychology often encounters practical constraints, such as participant availability and recruitment difficulties, especially in specialised populations like university students. These constraints sometimes necessitate proceeding with slightly smaller samples, provided that the study design and data quality remain strong (Field, 2018).

Several measures were implemented to ensure the validity and trustworthiness of the results despite the smaller sample size. Firstly, the data were thoroughly screened for violations of key assumptions, such as normality, linearity, and homoscedasticity, with adjustments made where necessary to guarantee robust analysis. Secondly, nonparametric methods were utilised alongside parametric tests where appropriate, given their capacity to manage deviations from normality and small sample sizes effectively. Lastly, the study employed bootstrapping techniques to generate confidence intervals for key statistics, which is particularly beneficial in enhancing the reliability of results when working with smaller samples (Efron & Tibshirani, 1994). Bootstrapping is a non-parametric resampling method that produces robust confidence intervals and p-values. It is especially useful when sample sizes are moderate or when distributional assumptions are not perfectly met. As the PROCESS macro uses bootstrapped confidence intervals by default, this further increased the trustworthiness of the findings in the context of the present sample.

While recognising the limitations of statistical power, the study aimed to provide preliminary insights into the relationship between PI, self-efficacy, and perceived distress post-intervention. This approach aligns with the recommendations of those who emphasise the significance of exploratory research in establishing a foundation for future studies, even when sample sizes are not adequate and optimal.

4.5.1.3. Independence of Residuals. The Durbin-Watson statistic was calculated to assess the independence of residuals, specifically, whether the errors associated with one

observation are correlated with those of another. This assumption is essential because autocorrelated residuals can distort standard errors and bias significance testing, potentially leading to invalid inferences (Field, 2018). A Durbin-Watson value of 2.45 was obtained, indicating no autocorrelation. Field (2018) states that Durbin-Watson values close to 2 suggest that the residuals are independent, while values between 1.5 and 2.5 are generally deemed acceptable. This value falls within the acceptable range, permitting the continuation of the analysis.

Table 14

Durbin-Watson Statistic, Tolerance, and Variance Inflation Factor (VIF) Values

Analysis	Predictor Variables	Average Tolerance	Average VIF	Durban Watson Statistic
1	Lack of SE	.937	1.067	
	PI_Post	.984	1.017	2.45
	Lack of SE x PI	.979	1.051	

4.5.1.4. Multicollinearity. According to Daoud (2017), multicollinearity arises when independent variables are highly correlated ($r > .90$). To evaluate the presence of multicollinearity in the moderation analysis, the VIF and tolerance values for each predictor were examined. Regression results can be biased if the VIF value exceeds one and the tolerance value falls below .02 (Field, 2018; Pallant, 2020). However, as shown in Table 14, none of the VIF values significantly exceeded 1, and all tolerance values remained above .02, which indicates no multicollinearity.

4.5.1.5. Homoscedasticity and Linearity. The assumption of homoscedasticity suggests that the residuals maintain consistent variance across all levels of the predictor variables. In contrast, linearity indicates that the relationship between predictors and the outcome follows a straight-line pattern (Field, 2018). Scatterplots of standardised predicted residuals were created and compared with standardised observed residuals for the moderation

model to evaluate homoscedasticity. The assumption was considered satisfied if these scatterplots did not display funnel-shaped or cone-shaped patterns (Field, 2018). As shown in Appendix G, Figure G1, the data points were evenly and randomly dispersed, indicating that the assumption of homoscedasticity was met. Partial regression plots also confirmed that each predictor maintained a linear relationship with the outcome variable (PD_T1), satisfying the linearity assumption (Appendix G, Figures G2 and G3). When linearity is assumed, it implies additivity, the idea that predictor variables combine additively to explain variance in the outcome. However, the presence of a significant interaction term (PI_Post × SE_Pre) indicates that the effect of PI on distress depends on self-efficacy, thus modelling a non-additive relationship. This is conceptually appropriate and statistically expected in moderation analyses (Hayes, 2022).

4.5.1.6. Normally Distributed Residuals. To determine whether the residuals in each moderation model were normally distributed, histograms and PP plots were employed. In Appendix G, Figure G4 illustrates a bell-shaped curve for the histogram, and the points on the P-Plot closely align with the diagonal line, indicating perfect normality and thus satisfying the assumption of normal distribution residuals. Additionally, skewness and kurtosis statistics were examined and found to fall within acceptable bounds (±1), confirming normality. This assumption is particularly important for ensuring the accuracy of confidence intervals and p-values in OLS regression.

4.5.1.7. Assumption of Non-Zero Variance. To satisfy the assumption of non-zero variance, all dependent and independent variables must exhibit non-zero variances (Field, 2018). In this study, the descriptive statistics confirm that all variables have standard deviations greater than zero, demonstrating that the assumption of non-zero variance is met. Table 12 presents summary statistics for perceived distress and self-efficacy measures before and after the intervention. The standard deviations for all variables remain above zero, thus validating the non-zero variance assumption.

4.5.1.8. Model Inaccuracies, Outliers or Biases. Model bias is assessed by checking for outliers and influential cases within the data. Outliers are generally flagged if standardised residuals exceed 3.30 or fall below -3.30 (Field, 2018). In this study, standardised residuals remained within this range, indicating the absence of outliers (see Table 15). Additionally, the Cook's distance values suggest that no cases exerted an undue influence on the data, as the

value was below 1. Consequently, the assumption of no outliers or influential cases was upheld for the analyses, thereby supporting the reliability of the model results.

Table 15

Standardised Residual and Cooks distance for each Moderation Analysis

Analysis	Predictor Variables	Standardised Residual (Max)	Cooks Distance (Max)
1	Lack of SE, PI_Post, Lack_of_SE x PI_Post	2.482	.103

4.5.1.9. Moderation Analysis Results. The overall model accounted for a significant variance in post-intervention perceived distress, $R^2 = .257$, F (3, 56) = 6.46, $p < .001$. This indicates that the predictors in the model, along with their interaction, accounted for approximately 25.71% of the variance in post-intervention perceived distress, which represents a moderate effect size (Cohen, 2013). For the main effects, PI_Post was a significant predictor of post-intervention perceived distress (b = 1.417, t (56) = -3.35, p = .0015). This negative coefficient indicates that higher PI scores were associated with lower perceived distress at an average level of self-efficacy. Similarly, self-efficacy significantly predicted post-intervention perceived distress (b = -1.438, t (56) = -3.13, p = .0027), suggesting that individuals reporting higher self-efficacy generally experienced lower perceived distress. Moreover, the interaction term was statistically significant (b = 0.705, t (56) = 3.80, p = .0004), indicating that self-efficacy moderated the relationship between PI and perceived distress.

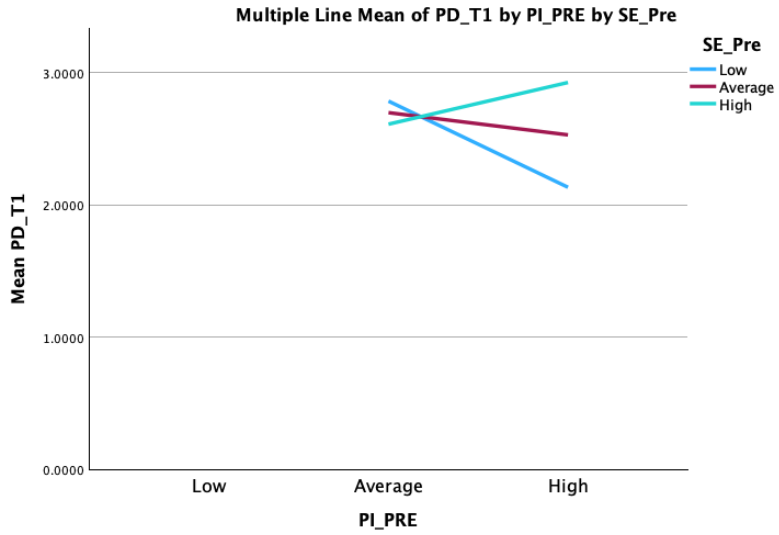
A conditional effects analysis further clarified this relationship. Given that self-efficacy was reverse-scored, higher scores indicate a greater lack of self-efficacy, while lower scores reflect higher self-efficacy. At low levels of SE_Pre (indicating high actual self-efficacy), PI was negatively associated with distress (b = -0.7124, p = .0078, 95% CI [-1.23, -0.20]). At moderate levels of self-efficacy, the effect was not significant (b = -0.1839, p = .2710, 95% CI [-0.52, 0.15]). At high levels of SE_Pre (indicating low actual self-efficacy), PI was positively associated with distress (b = 0.3477, p = .040, 95% CI [0.02, 0.67]). This pattern indicates a crossover interaction effect: individuals with higher actual self-efficacy (low SE_Pre

scores)benefited from higher PI, experiencing less distress. In contrast, individuals with lower actual self-efficacy (high SE_Pre scores) experienced more distress as PI increased. This suggests that PI may be a protective factor when individuals believe in their own capabilities but could be counterproductive when individuals lack such belief.

To further explore the significant interaction between PI and self-efficacy (SE_Pre) in predicting perceived distress (PD_T_1), a simple slope analysis was conducted to examine the conditional effects of PI at low, moderate, and high levels of self-efficacy. The results are visually represented in Figure 4, which illustrates how the lines for different levels of self-efficacy intersect, confirming the significant moderation effect.

Figure 4

Simple Slopes Analysis of PI and SE on Perceived Distress



The simple slopes analysis demonstrated that higher levels of PI were associated with lower perceived distress among participants with high actual self-efficacy (low SE_Pre). In contrast, among those with low actual self-efficacy (high SE_Pre), higher PI was associated with higher distress. For participants with moderate self-efficacy, the relationship between PI and distress was relatively flat, indicating minimal change across PI levels. This interaction supports the moderating role of self-efficacy: the beneficial impact of PI is most pronounced when self-efficacy is high, but may be counterproductive when self-efficacy is low.

4.5.4. Hypothesis 3: Assessing Pre-Post Changes in Distress and Self-Efficacy.

To test H_3, the Wilcoxon Signed-Rank Test was conducted to compare changes in perceived distress and self-efficacy scores from pre-intervention to post-intervention. Due to violations of the normality assumption, the data did not meet the requirements for conducting parametric tests such as the paired samples t-test. A paired samples t-test assumes that the data follows a normal distribution, which is essential for the validity of its results (Field, 2018; Gravetter & Wallnau, 2017). In cases where normality cannot be assumed, non-parametric tests, such as the Wilcoxon Signed-Rank Test, are recommended because they do not rely on this assumption. The Wilcoxon Signed-Rank Test is also more robust to deviations from normality and is better equipped to handle outliers (Pallant, 2020). Consequently, non-parametric methods were utilised to ensure the robustness and reliability of the statistical analyses. Prior to conducting these analyses, several assumptions were reviewed.

4.5.4.1. Paired Data. One of the key assumptions of the Wilcoxon Signed-Rank Test is that the data consists of matched pairs. This implies that the test requires two categorical groups in which the same subjects are present in both groups, ensuring that the samples are related rather than independent (Field, 2018). For the current analysis, this assumption is satisfied, as the study involves pre-test and post-test scores from the same participants. Specifically, perceived distress and lack of self-efficacy scores were measured before and after the intervention, creating two related samples for comparison. Thus, the data structure conforms to the requirement of having paired samples, which is essential for this test analysis.

4.5.4.2. Level of Measurement. The Wilcoxon Signed-Rank Test requires that the dependent variable be measured at the ordinal or continuous level. Ordinal variables, such as Likert scale items, are suitable for this test as they reflect ordered categories without assuming equal intervals between points (Field, 2018). Similarly, continuous variables, which can assume infinite values within a range, are also appropriate for analysis using this non-parametric test (Field, 2018). In the current study, the dependent variable, the perceived level of distress, is measured on a scale that reflects varying degrees of distress. This scale, considered a continuous variable, meets the requirement of being measured at the appropriate level for the Wilcoxon Signed-Rank Test, thus fulfilling this assumption.

4.5.4.3. Symmetrical Distribution. Another important assumption of the Wilcoxon Signed-Rank Test is that the distribution of differences between the two related groups should be symmetrical. This implies that the differences in scores from the two related measures, in this case, the pre-intervention and post-intervention levels of perceived distress, should ideally be distributed symmetrically around the median difference (Field, 2018). To evaluate this assumption, a one-dimensional box plot was used to examine the distribution of differences between pre-intervention and post-intervention levels of perceived distress. This visual tool facilitates a straightforward assessment of the data distribution's symmetry. In Appendix H, the box plot analysis indicated that the median line within the box was approximately symmetrical in relation to the distribution of differences. Specifically, the median line was centred within the box, and the whiskers extending from the box were relatively balanced in length, suggesting that the distribution of differences does not significantly deviate from symmetry. This finding supports the assumption that the data meets the necessary conditions for the Wilcoxon Signed-Rank Test, ensuring the validity of the analysis.

4.5.4.4. Results of Wilcoxon Signed-Rank Test. As demonstrated in Appendix I, Table I1, out of 25 participants, 18 reported a decrease in perceived distress levels after the intervention (i.e., negative ranks), with a mean rank of 13.81. In contrast, 5 participants reported increased perceived distress levels post-intervention (i.e., positive ranks), with a mean rank of 5.50. Two participants reported no change in perceived distress levels (i.e., ties). The mean score for perceived distress was 1.69 after the intervention compared with 2.40 before. The results indicated that students' perceived levels of distress were significantly lower after the intervention than before, $z = -3.372$, $p < .001$.

For the lack of self-efficacy variable, as demonstrated in Appendix I, Table I2, out of 25 participants, 17 reported a decrease in lack of self-efficacy after the intervention (i.e., negative ranks, indicating improved self-efficacy), with a mean rank of 11.68. In contrast, 7 participants reported an increase in lack of self-efficacy post-intervention (i.e., positive ranks, indicating reduced self-efficacy), with a mean rank of 14.50. One participant reported no change (i.e., a tie). While more participants improved their self-efficacy, the average size of their improvement was smaller than the magnitude of decline reported by participants whose self-efficacy worsened. This suggests greater variability in the magnitude of changes among those whose self-efficacy decreased compared to those who improved. Unlike perceived distress, the

change in lack of self-efficacy from pre- to post-intervention was not statistically significant, $z = -1.394$, $p = .163$.

Chapter 5: Discussion

This study examined the efficacy of personal initiative training as a stress management intervention for university students. It aims to answer the research question: *What is the relationship between personal initiative behaviour, stress, and self-efficacy among university students?* This chapter discusses the results in relation to the study's hypotheses, evaluates the implications of PI training, and concludes with the study's limitations and recommendations for future research.

5.1. The relationship between personal initiative and perceived distress (H_1)

The first hypothesis suggested that students with higher baseline PI would experience more significant reductions in distress following the intervention. Contrary to expectations, correlation analyses revealed no significant relationship between baseline PI and changes in distress. This finding indicates that pre-existing initiative alone was insufficient to explain individual differences in stress reduction, necessitating a closer examination of the developmental and temporal dynamics of PI.

Understanding PI as a developmental construct offers a valuable perspective from which to interpret this finding. PI is inherently a developmental process, shaped through repeated practice, reflection, and refinement, rather than being a static personality trait (Frese & Fay, 2001). Action Regulation Theory (Hacker, 2003) highlights the iterative nature of proactive capacities, which are refined through cycles of goal-setting, execution, and feedback. Similarly, the Goal-Setting Theory (Locke & Latham, 1990) emphasises the importance of sustained effort and consistent reinforcement in embedding behavioural change. These theoretical frameworks provide valuable insights into why the limited timeframe between T_1 (pre-intervention) and T_2 (post-intervention) may have constrained participants' ability to fully internalise and habituate the proactive strategies introduced during training. Furthermore, short-term interventions often heighten initial awareness of strategies but offer insufficient opportunities for these strategies to translate into measurable behavioural changes.

Moreover, the concept of delayed effects further contextualises these findings, particularly concerning the timeline of observable outcomes. PI encourages anticipatory behaviours, such as managing tasks proactively or seeking academic resources in advance. However, these behaviours require sustained application before they lead to tangible reductions in stress. During the brief intervention period, participants may have begun to recognise the value of

proactive behaviours but lacked sufficient time to fully integrate them into their daily routines. This aligns with findings by Kelloway and Francis (2012), who demonstrated that significant improvements in stress-coping behaviours often arise weeks or months post-intervention, after habits have been reinforced through repetition. Similarly, the broaden-and-build theory (Fredrickson, 2001) suggests that proactive behaviours engender positive emotions that cultivate personal resources such as resilience and adaptability. These resources necessitate time to develop and contribute to long-term stress reduction, further explaining why immediate changes in distress were not uniformly associated with the baseline PI.

In addition to these temporal dynamics, contextual factors such as burnout likely played a role in mediating the intervention's impact. Burnout, a widespread challenge in higher education, may have intensified the effects of the limited timeframe. It is characterised by emotional exhaustion, depersonalisation, and a diminished sense of accomplishment, hindering individuals' ability to adopt new behaviours even when they recognise their potential benefits (Ross et al., 1999). Students entering the intervention with elevated levels of burnout may have lacked the cognitive and emotional resources needed to effectively implement PI strategies, further limiting the intervention's immediate impact. Cognitive Load Theory (Sweller, 1988) supports this view, asserting that individuals experiencing substantial mental strain have a reduced capacity to process and apply new coping strategies.

These findings must also be understood within the unique complexities of the South African higher education context. Systemic inequities, deeply rooted in the country's historical, racial, and socio-economic disparities, continue to restrict students' access to resources essential for proactive coping despite post-apartheid efforts to address these challenges (Mdepa & Tshiwula, 2012; Chiramba & Ndofirepi, 2023). Conservation of Resources Theory (Hobfoll, 1989) highlights the importance of having adequate material and social resources to support proactive coping efforts. Nevertheless, many South African universities remain underfunded, facing overstretched counselling services, high student-to-lecturer ratios, and inadequate mental health support, all of which create significant barriers to institutional assistance (Naidoo, 2017). Even students with high levels of initiative may find their efforts thwarted by these systemic challenges, limiting the immediate benefits of their efforts.

Overall, these considerations highlight that while PI can promote proactive coping, the broader context in which it is applied often determines its effectiveness. The findings emphasise the need for sustained practice, institutional support, and individual resilience, leading to the

second hypothesis regarding how self-efficacy moderates the relationship between PI and stress.

5.2. Self-Efficacy as a Moderator Between Personal Initiative and Stress Reduction

Building on the findings of H_1, which indicated that baseline PI alone exhibited limited predictive power in alleviating distress, H_2 examined whether self-efficacy moderated the relationship between PI and perceived distress. Specifically, it was anticipated that students with higher self-efficacy would demonstrate a stronger association between PI and stress reduction. In contrast, those with lower self-efficacy might find translating proactive behaviours into meaningful outcomes challenging. Self-efficacy, defined as an individual's belief in their ability to carry out the actions necessary to achieve specific goals (Bandura, 1977), emerged as a central factor in effective stress management. This moderating role of self-efficacy is grounded in theoretical frameworks such as the Transactional Model of Stress (Lazarus & Folkman, 1984), which explains how cognitive appraisals shape coping responses.

According to the transactional model of stress (Lazarus & Folkman, 1984), the outcomes of stress depend on how individuals evaluate stressful situations, whether they perceive them as challenges or threats, and their perceived ability to cope. Students with high self-efficacy are more likely to adopt problem-focused coping strategies, utilising PI behaviours to address stressors directly (Causey & Dubow, 1993). In contrast, students with low self-efficacy may depend more on emotion-focused coping strategies, such as avoidance or seeking emotional support, which can hinder the effectiveness of PI strategies in alleviating stress. However, the effectiveness of these appraisals can be limited by psychological and cognitive barriers, such as burnout and cognitive overload (Sweller, 1988), which diminish the capacity to implement proactive behaviours effectively. High cognitive demands can impair students' ability to integrate new proactive behaviours, even when self-efficacy is substantial (Sweller, 1988). Burnout (Ross et al., 1999), characterised by emotional and cognitive depletion, may also undermine the capacity of students with high PI to utilise their self-efficacy effectively. These barriers are particularly pronounced in South Africa, where systemic inequalities exacerbate students' cognitive and emotional burdens (Mdepa & Tshiwula, 2012).

Moreover, psychosocial factors further contextualise these findings. Stereotype threat, the anxiety associated with confirming negative stereotypes about one's social group, is especially relevant in South Africa's diverse academic landscape (Steele & Aronson, 1995). Marginalised

students, including Black students and first-generation university attendees, often endure additional pressure to disprove societal biases concerning their academic abilities. This pressure can undermine confidence and diminish perseverance in proactive behaviours, even when students are motivated by PI (Steele & Aronson, 1995). Similarly, the impostor phenomenon, characterised by persistent self-doubt and the belief that success is unearned, exacerbates this challenge (Wells, 2011). Students experiencing impostor syndrome may attribute their achievements to external factors, such as luck, which reduces their likelihood of continuing proactive strategies when facing setbacks (Clance & Imes, 1978; Wells, 2011). These anxieties heighten the psychological burden of stress and limit the ability to translate PI into effective outcomes, particularly for students with low self-efficacy. While these factors undermine confidence and persistence, emotional intelligence (EI) offers a potential buffer, enabling students to manage their responses to such challenges constructively stressors.

EI, defined as the ability to perceive, regulate, and effectively use emotions (Mayer et al., 2016), enhances students' capacity to manage stress adaptively. Students with high EI are more skilled at recognising stress signals, regulating their emotional responses, and engaging constructively with challenges, thereby optimising their PI strategies. Conversely, students with low EI may feel overwhelmed by emotional distress, which undermines their ability to persist with proactive efforts and exacerbates their stress levels (Di Fabio & Kenny, 2016). These findings suggest that interventions aimed at enhancing PI and self-efficacy should incorporate training in emotional regulation to address these challenges comprehensively. The role of EI is particularly significant within South African cultural contexts, where collectivist values such as ubuntu shape how students navigate challenges through communal support systems.

Ubuntu, which emphasises communal support and shared responsibility, further shapes the dynamics of stress and self-efficacy in South African higher education. While collectivist values may enhance stress reduction through social support structures, they may also diffuse individual attributions of success (King & McInerney, 2014). For students with low self-efficacy, this cultural orientation may limit their belief in their ability to manage stressors independently, weakening the moderating effect of self-efficacy on the relationship between PI and stress reduction. In parallel with cultural orientations, systemic barriers in higher education may encourage reliance on proxy agencies, where students depend on external support rather than developing their own sense of responsibility and efficacy.

Proxy agency refers to relying on others to achieve desired outcomes when individuals feel they lack the resources, capacity, or authority to act independently (Bandura, 1997). In resource-limited contexts such as South African higher education, students may depend on external support, including institutional services, peer networks, or family assistance, to navigate academic and personal challenges. Although this reliance can be beneficial in alleviating immediate stress, it may inadvertently hinder the development of self-efficacy by diminishing opportunities for students to engage directly in problem-solving and decision-making processes. Proxy agency highlights the importance of balancing providing external support and encouraging students to take ownership of their challenges, ensuring that dependence on external resources complements rather than replaces the development of PI and self-belief.

In summary, these findings reinforce the significance of self-efficacy as a moderating factor in the relationship between PI and stress outcomes. While PI training equips students with strategies for proactive coping, its success depends on their belief in their ability to apply these behaviours successfully. To maximise the benefits of PI, interventions within South African higher education should focus on enhancing self-efficacy, promoting emotional regulation, and incorporating culturally sensitive strategies tailored to the local context. The following section explores the broader impact of the intervention itself. Hypotheses 3a and 3b investigate whether PI training directly alleviates perceived distress and enhances self-efficacy among participants, providing insight into the programme's overall effectiveness.

5.3. Evaluating the Impact of PI Training on Perceived Distress and Self-Efficacy

Hypotheses 3_a and 3_b aimed to evaluate whether the intervention would produce lower levels of perceived distress while simultaneously enhancing self-efficacy among university students. These hypotheses drew on prior research suggesting that structured, proactive behaviour training can help students navigate the demanding contexts of higher education, characterised by financial pressures, heavy workloads, and systemic disparities, by both alleviating short-term stress and fostering more enduring psychological resources (Frese & Fay, 2001; Mdepa & Tshiwula, 2012).

The reduction in distress aligns with the Transactional Model of Stress (Lazarus & Folkman, 1984), which posits that stress levels are influenced by how individuals assess the demands of their external environment and their internal resources to cope with these demands. The

intervention likely enhanced students' secondary appraisals by equipping them with practical tools such as structured goal-setting and relaxation techniques, enabling them to reframe academic and personal pressures as more manageable. Research supports the idea that even small shifts in how individuals perceive their ability to handle stressors can lead to meaningful reductions in perceived stress (Mensmann & Frese, 2016). This emphasises the value of targeted interventions in alleviating acute emotional strain by altering students' appraisals of their stressors.

Further insights from the literature on creative problem-solving (Osborn, 1953) suggest that the intervention's focus on fostering divergent thinking may have contributed to these outcomes. By encouraging students to explore multiple approaches to challenges, the training likely improved their sense of agency and control, which are key in reducing perceived distress. The broaden-and-build theory (Fredrickson, 2001) provides additional context, emphasising how positive emotions foster exploration and problem-solving behaviours. These behaviours address immediate stressors and help build lasting personal resources such as resilience and adaptability.

The intervention's immediate impact on reducing perceived distress demonstrates how targeted strategies can assist students in reframing their stressors and managing pressures more effectively. However, the findings also revealed that improvements in self-efficacy were less pronounced. This outcome highlights the distinct mechanisms involved in alleviating emotional strain versus fostering more profound beliefs about personal competence. While the reduction in distress highlights the short-term effectiveness of PI training, the limited group-level changes in self-efficacy draw attention to the complexity of internalising proactive behaviours and self-belief within a restricted timeframe.

The principles of PI training, as conceptualised by Frese and Fay (2001), provide insight into the observed reduction in distress and the less evident improvements in self-efficacy. PI training fosters proactive behaviours, including goal-setting, anticipating obstacles, taking ownership of problem-solving, and adapting through iterative learning. These elements empower individuals to feel more in control of their circumstances, enabling them to respond more effectively to external pressures and reduce acute stress. However, as Action Regulation Theory (Hacker, 2003) highlights, embedding these behaviours into one's self-concept requires repeated cycles of goal-setting, action, and feedback. While the intervention likely provided students with tools to manage immediate challenges, the absence of sustained practice,

mentorship, and opportunities for iterative reinforcement may have limited the extent to which these behaviours became ingrained in their sense of personal competence.

This interpretation also reflects broader systemic and cultural dynamics relevant to South African students. As discussed in earlier hypotheses, communal or collectivist values can bolster social support structures, helping to reduce distress, but may also diffuse individual attributions of success (King & McInerney, 2014). This dynamic could partially explain the disparity between the observed reduction in distress and the less definitive changes in self-efficacy, as students may credit improvements to collective efforts rather than personal capabilities. Furthermore, systemic inequalities and historical educational disparities continue exacerbating stress levels while limiting access to the sustained resources necessary to reinforce self-belief (Mdepa & Tshiwula, 2012). Even effective short-term interventions may struggle to produce lasting transformations in self-efficacy without addressing these structural barriers.

Additional theoretical perspectives further contextualise these findings. Social Cognitive Theory (Bandura, 1986) emphasises that self-efficacy develops through mastery experiences, social modelling, and ongoing reinforcement, all of which require time and iterative feedback to solidify. Similarly, cognitive load theory (Sweller, 1988) highlights how students juggling academic demands, financial constraints, and personal responsibilities may lack the cognitive capacity to internalise new behaviours during a short intervention period. While the programme likely temporarily reduced their overall cognitive load, the more profound restructuring of self-efficacy necessitates manageable conditions and consistent practice. This aligns with the Job Demands-Resources (JD-R) Model (Bakker & Demerouti, 2007), which suggests that while short-term interventions can increase resources such as coping strategies, sustained gains in self-efficacy depend on ongoing access to institutional and social supports that balance academic demands over time.

These findings suggest that future interventions should adopt multi-phase approaches that integrate initial stress-relief strategies with longer-term reinforcement of proactive behaviours. By embedding PI training into regular academic routines, universities can enable students to manage immediate challenges and develop the confidence and self-belief required for sustained success. This approach is critical in the South African higher education context, where systemic challenges and resource constraints necessitate comprehensive, culturally sensitive strategies to ensure the enduring effectiveness of such intervention programmes.

5.4. Limitations and Recommendations for Future Research

While this study offers valuable insights into the impact of PI training on perceived distress and self-efficacy among university students, several limitations must be considered. These limitations provide a foundation for recommendations to enhance future research in this area.

Firstly, while the time-series experimental design allowed for observing changes over time, extraneous variables may have influenced the results. Academic deadlines, financial constraints, personal health challenges, and broader socio-political events may have affected students' stress levels independently of the intervention (O'Connell et al., 2021). Although this design was practical given the study's timeframe, it cannot definitively establish causality. Future research should adopt longitudinal designs with multiple follow-up assessments to address this limitation. Such an approach would enable researchers to evaluate the sustained impact of PI training over time, determine whether students maintain their proactive behaviours, and identify the need for additional support or refresher sessions (Kelloway & Francis, 2021).

Secondly, the use of convenience sampling presents a limitation. This approach was chosen because it was cost-effective and logistically feasible, given the constraints of the study. However, convenience sampling may have introduced selection bias, leading to a participant group not fully representative of the broader student population (Sedgwick, 2013). In particular, participants were selected based on their willingness to attend, which may have further introduced self-selection bias. Students who volunteered to participate may have been more motivated, proactive, or interested in the topic than the general student body, thereby affecting the study outcomes. For instance, the sample was predominantly female, which may have skewed the findings and limited their generalisability (Emerson, 2021). To overcome this, future studies should prioritise random sampling techniques and include a more diverse cohort of students. Recruiting participants from multiple universities across South Africa would enhance the inclusivity of the sample and facilitate comparative analyses that explore the influence of cultural, regional, and socio-economic differences on the effectiveness of PI training (Naidoo, 2017). This approach would also help contextualise the findings within South Africa's diverse higher education landscape.

Thirdly, the small sample size may not have been sufficient to detect meaningful outcome differences between groups. A larger sample size would increase statistical power and improve

the reliability and generalisability of the findings, particularly in assessing the nuanced relationships between PI, perceived distress, and self-efficacy. Future research should aim to recruit a more extensive and diverse pool of participants to ensure robust conclusions and broader applicability within South Africa's student population.

Moreover, the reliance on self-report measures for assessing perceived stress and self-efficacy presents challenges. Self-reported data were used in this study because they are cost-effective, easy to administer, and capable of capturing subjective experiences. However, self-reports are inherently subjective and susceptible to biases such as social desirability, where participants may provide responses they believe are more socially acceptable rather than entirely accurate. While efforts were made to minimise these biases by ensuring anonymity and confidentiality, future studies should incorporate objective measures such as physiological indicators (e.g., cortisol levels, heart rate variability) and behavioural metrics (e.g., academic performance and attendance records). Additionally, qualitative approaches such as interviews or focus groups could provide richer, more nuanced insights into students' experiences and their perceptions of PI training. These methods would be particularly valuable in capturing students' voices from marginalised communities, whose experiences may differ significantly due to systemic inequalities.

Additionally, future studies should consider potential concerns related to control group conditions more carefully. In particular, the possibility of contamination or bias arising from extraneous incentives such as free lunches during the workshop or the certification of completion should be explicitly acknowledged. These factors may unintentionally influence participants' motivation and engagement levels or sense of reward, leading to a heightened perceived value of the intervention unrelated to the objectives of the PI training (Boot et al., 2013). This introduces the risk of expectancy effects or placebo-like responses (i.e., improvements based on participants' expectations rather than the intervention itself), potentially confounding outcome measures such as perceived self-efficacy or distress. To address this, researchers are encouraged to ensure that both control and intervention groups receive equivalent non-intervention-related benefits (Shadish et al., 2002) or to transparently report and control for discrepancies in their design and analysis (Torgerson & Torgerson, 2008).

Lastly, the non-significant interaction effect between PI and self-efficacy highlights the need for further exploration. This relationship may be influenced by additional moderators or

mediators, such as resilience, emotional intelligence, or social support, which were not the primary focus of this study. Future research should investigate how these factors interact with PI and self-efficacy to influence stress outcomes, providing a more comprehensive understanding of the mechanisms underlying these relationships (van Zyl et al., 2021).

5.5. Theoretical and Practical Contributions

The findings of this study yield several theoretical contributions and practical implications, outlined in the following two sections.

5.5.1. Theoretical Contributions

This research offers significant theoretical contributions that enhance the understanding of stress management and personal initiative (PI) within the context of university students. It addresses a critical gap in the literature on stress management interventions (SMIs), which has primarily focused on techniques such as cognitive behavioural therapy, mindfulness, and relaxation methods (Bledow & Frese, 2009; Kabat-Zinn, 2003; Zarei et al., 2010). PI training as a stress management intervention remains underexplored, with limited studies investigating its potential, such as Searle's (2008) work. By focusing on PI training, this study broadens the scope of SMIs. It contributes to an emerging body of evidence that positions PI as a viable and impactful approach to reducing stress.

Moreover, this study advances the literature on PI as a psychological construct, emphasising self-starting behaviours toward achieving goals (Frese & Fay, 2001). While PI has been extensively studied as a predictor of job performance, entrepreneurial success, and innovation (Campos et al., 2017; Glaub, 2009; Solomon et al., 2014), its application to stress management remains underexamined. This research highlights how PI training can enhance proactive coping mechanisms and reduce perceived distress, particularly in high-stress academic environments. Subsequently, bridging the gap between PI and its potential role in stress management offers a new perspective on how proactive behaviours can positively impact well-being.

Additionally, the study contributes to the broader discourse on student well-being, an increasingly urgent topic given university students' mental health challenges. High rates of psychological distress have been linked to adverse academic outcomes and increased dropout rates. By demonstrating the potential of PI training to mitigate stress and foster resilience, this research provides valuable insights into how psychological interventions can be designed to

promote academic success and personal growth. It underscores the importance of addressing students' immediate stressors and building their capacity to navigate future challenges effectively.

5.5.2. Practical Contributions

The study also offers valuable practical implications for educational institutions and employers, particularly in South Africa.

For higher education institutions, PI training represents a low-cost and easily implementable intervention to address student stress. Its adaptability and broad applicability make it a feasible strategy for improving student outcomes, including academic performance, well-being, and retention rates. By incorporating PI training into orientation programmes or ongoing student development initiatives, universities can proactively equip students with the skills to manage academic and personal pressures.

Employers can also benefit from integrating PI training into their professional development programmes. Employees with strong PI skills are better equipped to handle workplace stress and are less dependent on constant supervision. These individuals demonstrate greater resilience, adaptability, and problem-solving abilities, which can enhance productivity and job performance. Moreover, fostering PI among employees can lead to higher job satisfaction, reduced burnout, and improved retention, as workers feel more empowered and engaged in their roles. Organisations prioritising PI training as part of their talent development strategies may also foster a culture of innovation and self-reliance, contributing to long-term organisational success. Beyond higher education and the workplace, the findings suggest broader applications of PI training in other high-stress environments, such as entrepreneurship or community-based initiatives. PI training equips individuals with proactive coping skills that can be applied across various contexts, making it a versatile tool for fostering resilience and adaptability.

Finally, the study highlights the importance of multi-phase intervention approaches. Short-term PI training can serve as an initial stress-relief strategy. However, sustained support through follow-up sessions or integrated academic practices is crucial for fostering long-term behavioural change. Institutions should consider developing holistic well-being programmes that combine PI training with other interventions, such as emotional intelligence development or mindfulness, to create comprehensive strategies for stress management.

5.5. Conclusion

In conclusion, this study provides important insights into the role of personal initiative in managing perceived distress and enhancing self-efficacy among university students. The findings demonstrate that PI training can reduce stress and improve well-being, extending our understanding of effective stress management interventions. By filling a gap in the existing literature on stress management and PI, this research contributes both theoretically and practically to the field. As previously noted, people are not merely reactors or constructors of their life circumstances but active producers of their experiences. This perspective aligns with the core principles of PI, which emphasises self-starting, proactive behaviour whilst overcoming barriers. The study highlights that individuals actively engaging in PI can shape their stress responses and overall well-being rather than passively responding to external pressures. This proactive approach is crucial in academic and professional settings where stress and performance pressures are prevalent. By recognising that individuals can actively influence their stress levels and outcomes, educational institutions and employers can implement interventions that empower individuals to take control of their circumstances. As demonstrated in this study, PI training provides a practical and effective approach to fostering autonomy and independence, enhancing academic and professional performance, and enabling students to manage their obligations more efficiently. Future studies should further investigate the mechanisms through which PI impacts stress management, using diverse methodologies and populations to expand on these results and deepen our understanding of PI as a stress intervention tool. By advancing our understanding of how proactive behaviours can shape life circumstances, we can better support individuals in navigating the challenges of modern life and achieving their full potential.

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Appendix A: Ethics Approval Letters

2023/04/24

COM/02131/2023

RE: Research Ethics Committee Project Approved with Condition(s) Letter

Dear Ines Marianne Meyer,

Your application for ethics review of your project titled

Personal initiative training for career success - exploring the outcomes of a personal initiative training for student wellbeing and academic performance

has been reviewed and evaluated by the

Organisational Psychology Research Ethics Committee (REC).

Based on the information supplied your application has been conditionally approved.

Please note the following additional conditions associated with this approval:

(i) Reviewer's comments below:
* Declarations by applicant to be signed
* More detail required on the linking / anonymisation to be provided
* DSA approval required before the project can commence

Proof that you have met these conditions, in the form of letters of permission or other relevant documentation, should be supplied to the REC, via the eRA system.
Once you have met with the above condition(s), you may proceed with your research project titled:

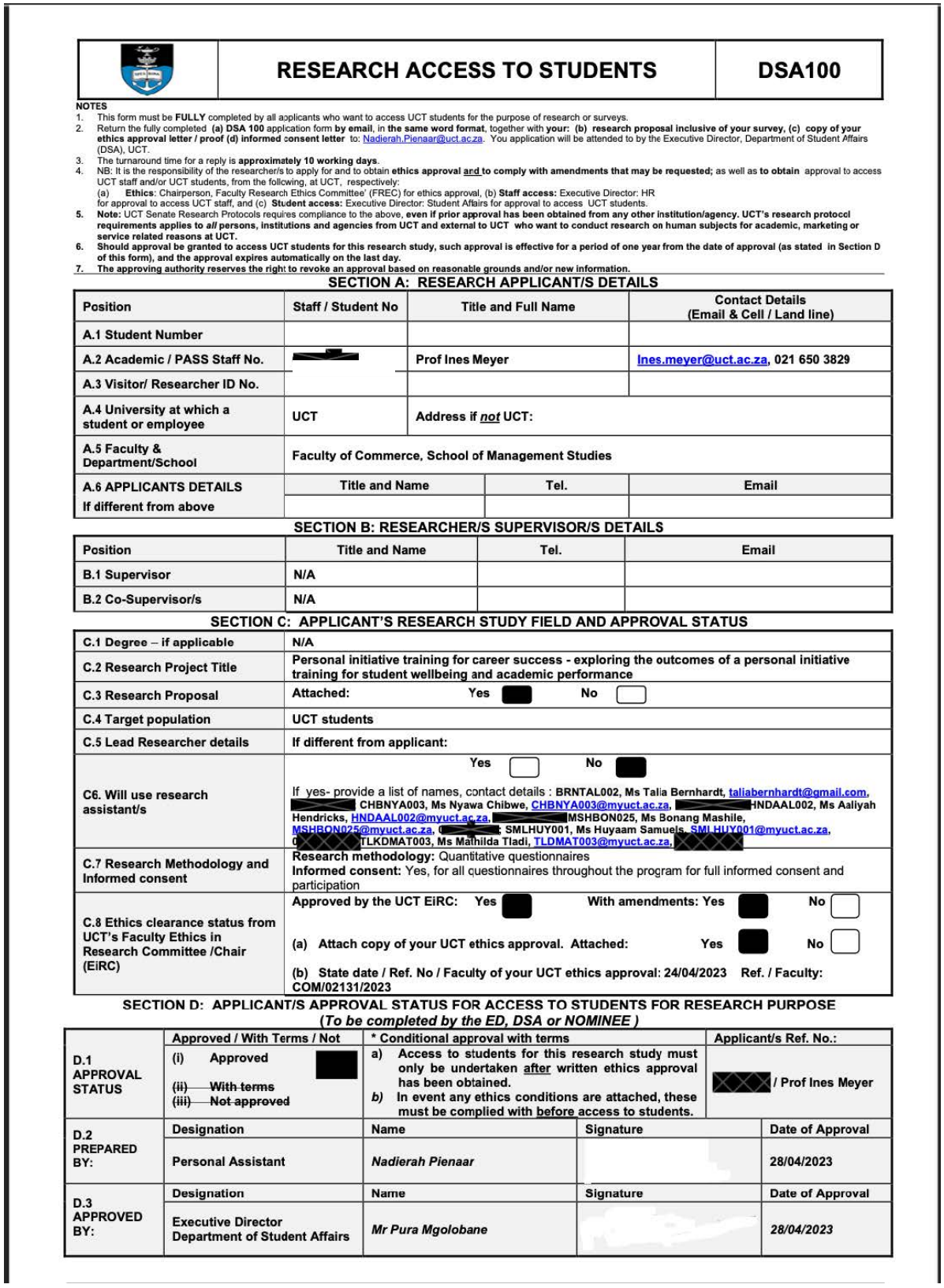
Personal initiative training for career success - exploring the outcomes of a personal initiative training for student wellbeing and academic performance

Please note that should:
(i) any serious or adverse effects to participants occur and/or,
(ii) aspect(s) of your current project change and/or
(iii) any unforeseen events that might affect continued ethical acceptability of the project occur then you should immediately report this to the approving REC. You may be required to submit an amendment to this application, in order to determine whether the changed aspects increase the ethical risks of your project.

Regards,

Organisational Psychology

Research Ethics Committee



	RESEARCH ACCESS TO STUDENTS	DSA100

NOTES

1. This form must be **FULLY** completed by all applicants who want to access UCT students for the purpose of research or surveys.
2. Return the fully completed **(a) DSA 100** application form **by email**, in **the same word format**, together with **your: (b) research proposal inclusive of your survey, (c) copy of your ethics approval letter / proof (d) informed consent letter** to: Nadierah.Pienaar@uct.ac.za. You application will be attended to by the Executive Director, Department of Student Affairs (DSA), UCT.
3. The turnaround time for a reply is **approximately 10 working days**.
4. NB: It is the responsibility of the researcher/s to apply for and to obtain **ethics approval and to comply with amendments that may be requested;** as well as **to obtain** approval to access UCT staff and/or UCT students, from the follcwing, at UCT, respectively:
   (a) **Ethics**: Chairperson, Faculty Research Ethics Committee' (FREC) for ethics approval, (b) **Staff access:** Executive Director: HR for approval to access UCT staff, and (c) **Student access:** Executive Director: Student Affairs for approval to access UCT students.
5. **Note:** UCT Senate Research Protocols requires compliance to the above, **even if prior approval has been obtained from any other institution/agency. UCT's research protocol requirements applies to *all* persons, institutions and agencies from UCT and external to UCT who want to conduct research on human subjects for academic, marketing or service related reasons at UCT.**
6. **Should approval be granted to access UCT students for this research study, such approval is effective for a period of one year from the date of approval (as stated in Section D of this form), and the approval expires automatically on the last day.**
7. **The approving authority reserves the right to revoke an approval based on reasonable grounds and/or new information.**

SECTION A: RESEARCH APPLICANT/S DETAILS

Position	Staff / Student No	Title and Full Name	Contact Details (Email & Cell / Land line)
A.1 Student Number			
A.2 Academic / PASS Staff No.	[redacted]	Prof Ines Meyer	Ines.meyer@uct.ac.za, 021 650 3829
A.3 Visitor/ Researcher ID No.			
A.4 University at which a student or employee	UCT	Address if *not* UCT:	
A.5 Faculty & Department/School	Faculty of Commerce, School of Management Studies		
A.6 APPLICANTS DETAILS If different from above	Title and Name	Tel.	Email

SECTION B: RESEARCHER/S SUPERVISOR/S DETAILS

Position	Title and Name	Tel.	Email
B.1 Supervisor	N/A		
B.2 Co-Supervisor/s	N/A		

SECTION C: APPLICANT'S RESEARCH STUDY FIELD AND APPROVAL STATUS

C.1 Degree – if applicable	N/A
C.2 Research Project Title	Personal initiative training for career success - exploring the outcomes of a personal initiative training for student wellbeing and academic performance
C.3 Research Proposal	Attached: Yes [redacted] No ☐
C.4 Target population	UCT students
C.5 Lead Researcher details	If different from applicant:
C6. Will use research assistant/s	Yes ☐ No [redacted] If yes- provide a list of names, contact details : BRNTAL002, Ms Talia Bernhardt, taliabernhardt@gmail.com, [redacted] CHBNYA003, Ms Nyawa Chibwe, CHBNYA003@myuct.ac.za, [redacted] HNDAAL002, Ms Aaliyah Hendricks, HNDAAL002@myuct.ac.za, [redacted] MSHBON025, Ms Bonang Mashile, MSHBON025@myuct.ac.za, [redacted] SMLHUY001, Ms Huyaam Samuels, SMLHUY001@myuct.ac.za, [redacted] TLKDMAT003, Ms Mahilda Tladi, TLDMAT003@myuct.ac.za, [redacted]
C.7 Research Methodology and Informed consent	**Research methodology:** Quantitative questionnaires **Informed consent:** Yes, for all questionnaires throughout the program for full informed consent and participation
C.8 Ethics clearance status from UCT's Faculty Ethics in Research Committee /Chair (EiRC)	Approved by the UCT EiRC: Yes [redacted] With amendments: Yes [redacted] No ☐ (a) Attach copy of your UCT ethics approval. Attached: Yes [redacted] No ☐ (b) State date / Ref. No / Faculty of your UCT ethics approval: 24/04/2023 Ref. / Faculty: COM/02131/2023

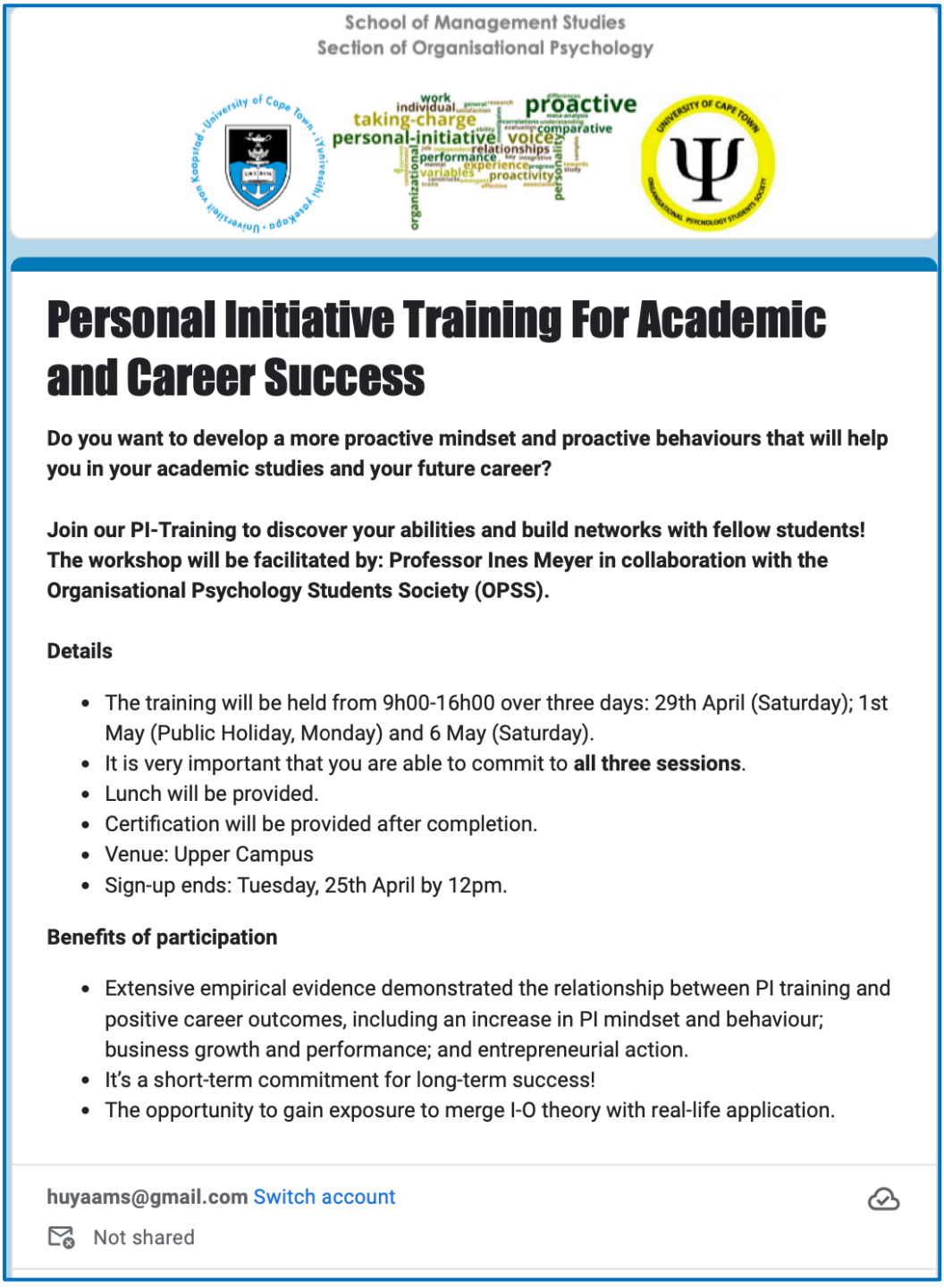
SECTION D: APPLICANT/S APPROVAL STATUS FOR ACCESS TO STUDENTS FOR RESEARCH PURPOSE
(To be completed by the ED, DSA or NOMINEE)

	Approved / With Terms / Not	* Conditional approval with terms	Applicant/s Ref. No.:
D.1 APPROVAL STATUS	(i) Approved [redacted] ~~(ii) With terms~~ ~~(iii) Not approved~~	a) Access to students for this research study must only be undertaken after written ethics approval has been obtained. *b)* In event any ethics conditions are attached, these must be complied with before access to students.	[redacted] / Prof Ines Meyer

	Designation	Name	Signature	Date of Approval
D.2 PREPARED BY:	Personal Assistant	*Nadierah Pienaar*		28/04/2023
D.3 APPROVED BY:	Executive Director Department of Student Affairs	*Mr Pura Mgolobane*		*28/04/2023*

Note. Personal and sensitive information has been redacted.

Appendix B: Google Forms Used During Data Collection



Appendix C: Cover Letter for Participants

UNIVERSITY OF CAPE TOWN
FACULTY OF COMMERCE
Igniting Knowledge and Opportunity

Dear Participant,

We cordially invite you to participate in our *Personal Initiative Training Programme for Academic and Career Success*, where you will learn how to develop a proactive mindset.

As students enrolled in the Organisational Psychology Honours and Master's programme at the University of Cape Town, we are seeking to collect data from individuals who are interested in the training. Our aim is to evaluate the efficacy of the training programme, and any information gathered will be used solely for educational purposes.

As researchers, your participation would assist us greatly to improve the programme and make a meaningful contribution to the academic community's knowledge base. Please note, you are more than welcome to participate in the training programme without participating in the research project and your participation is entirely voluntary. If you feel the need to withdraw at any stage whilst completing the questionnaire after providing consent, you are able to do so without any repercussions or consequences.

Procedure
EG: The questionnaire should take approximately 30-40 minutes to complete. As a participant, you will be requested to complete the questionnaire a total of three times: before the training commences, after you have completed the training and at the beginning of second semester in late July/August.

CG: As a participant, you will be requested to complete the questionnaire twice. Once before the first training programme commences and once more on the first day of the second training programme.

Privacy and Confidentiality
Any information you provide is strictly confidential and anonymity is guaranteed throughout the research process. If you consent to participate in the research project, you will be asked to provide your UCT EMPL ID. The EMPL ID will be used solely by our research supervisor, Professor Ines Meyer, to review your grade point average (GPA) on the UCT Oracle PeopleSoft System, which will be added to any responses provided. Throughout the questionnaire, you will remain completely anonymous as you will be given a unique identification code (e.g., a random number). If you are not comfortable with providing your EMPL ID, please provide a made-up four digit code which can be used to match your responses throughout the duration of the research process. The researchers will only receive a copy of the data after the EMPL ID has been removed and GPA has been added to the dataset by the research supervisor.

If at any stage you would like withdraw any information you have provided, it is your right to do so. Please send a request via email.

Risks, Discomforts, and Inconveniences
There are no known risks associated with participation in the research study. You may experience an inconvenience in the form of time commitment. If you feel any discomfort whilst completing the questionnaire, please refer to UCT Student Wellness Services and utilise their services provided. Their contact information will be distributed during the training programme.

***Note*: Self-reflection is an important aspect of Personal Initiative Training. If you do not wish to participate in the research, please still complete the questionnaire which follows. Any answers provided will not be visible to us as researchers.**

If you have any questions or concerns regarding this study, please feel free to contact the research group via email: personalinitiativetraining@gmail.com

Thank you for your time and effort

I have been informed about the nature of this training and research and comprehend the purpose. I consent to taking part in this research project. I am aware that I can withdraw from this study at any time, without any adverse effects or consequences.

- ○ I consent to participate
- ○ I do not consent to participate, therefore my data should be removed.

Do you consent to provide your UCT EMPL ID to the research supervisor so the data could be matched appropriately?

- ○ I consent to provide my UCT EMPL ID
- ○ I do not consent to provide my UCT EMPL ID and will provide a made-up code instead

---

Appendix D: Qualtrics Survey

Demographic Information

1. Please indicate your age in years

   [ ]

2. Please indicate your preferred gender
   - ○ Male
   - ○ Female
   - ○ Non-binary
   - ○ Other
   - ○ Prefer not to say
3. I am in my _____level of study.
   - ○ 1st
   - ○ 2nd
   - ○ 3rd
   - ○ 4th
   - ○ 5th
4. I am currently enrolled for a degree in_____.
   - ○ Bachelor of Social Sciences
   - ○ Bachelor of Business Sciences
   - ○ Bachelor of Arts
   - ○ Bachelor of Science
   - ○ Bachelor of Social Science Honours
   - ○ Bachelor of Arts Honours
   - ○ Master of Organisational Psychology
5. I am currently _____.
   - ○ Employed (including part-time employment)
   - ○ Unemployed.

Perceived Stress Scale					
Please examine the statements below and select a response that accurately reflects how you feel.					
Statement	**Never**	**Almost Never**	**Sometimes**	**Fairly Often**	**Very Often**
In the last month, how often have you been upset because of something that happened unexpectedly?	○	○	○	○	○
In the last month, how often have you felt that you were unable to control the important things in your life?	○	○	○	○	○
In the last month, how often have you felt nervous and stressed?	○	○	○	○	○
In the last month, how often have you felt confident about your ability to handle your personal problems?*	○	○	○	○	○
In the last month, how often have you felt that things were going your way?*	○	○	○	○	○
In the last month, how often have you found that you could not cope with all the things that you had to do?	○	○	○	○	○
In the last month, how often have you been able to control irritations in your life?*	○	○	○	○	○
In the last month, how often have you felt that you were on top of things?*	○	○	○	○	○
In the last month, how often have you been angered because of things that happened that were outside of your control?	○	○	○	○	○

Note. Items with an asterisk were reversed scored.

Situational Judgement Test – Personal Initiative (SJT-PI)		
For each of the following questions, please indicate which of the response options you would be most likely and least likely to perform.		
Question 1		
Scenario You are expected to work with new software for one of your courses. No detailed training was provided due to time and resource constraints. Some of your classmates and you feel insecure about how to deal with this new programme. You frequently make errors which leads to a loss of time. What would you do?		
Least likely (1)		Most likely (2)
-1	I organise an internal training in which more experienced students share their knowledge	1
1	I accept working extra hours after class if I have to correct some errors here and there.	-1
0	To avoid time-consuming errors, I read books to understand the software in my free time.	0
1	I don't get upset about it because with more practice I will stop making errors.	-1
Question 2		
Scenario You are working in an open-plan library on campus. The workstations are poorly arranged. You do not have sufficient space to store everything you need on your desk. The problem will be resolved for you in a couple of months because you will get access to a section of the library reserved for postgraduate students. What would you do?		
Least likely		Most likely
0	I change the way my desk is organised to store more things on my desk.	0
1	I can live with this situation until I change libraries.	-1
0	- I call the library manager's attention to the fact that something needs to be changed.	0
-1	I rearrange the library desks together with those students sitting around me to have more space.	1

Question 3		
Scenario You are a tutor for a fast-paced course. To be able to provide good advice to your students, you need to stay up-to-date. However, your course convenor does little to keep tutors informed. Your studies keep you completely busy and you do not have the time to keep yourself informed of the latest developments. What would you do?		
Least likely		Most likely
1	I rely on my fellow tutors to keep me well informed and concentrate on my day-to-day work.	-1
-1	I take the time necessary to keep my knowledge up-to date. If necessary other tasks have to wait.	1
1	I remain calm and confident that I can meet all demands.	-1
0	I update my knowledge during times with less workload.	0
Question 4		
Scenario You work for your department as a tutor and have your own office. The laser printer of your department is located right next to the door of your office. The printer is used frequently and makes a lot of noise. You feel disturbed by the noise and find it hard to concentrate. Your fellow tutors appreciate the convenient position of the printer and are reluctant to have it moved. You could close the door to your office. However, you appreciate your department's practice of leaving doors open. What would you do?		
Least likely		Most likely
-1	I address the problem repeatedly and seek ways to have the printer moved.	1
0	I try to switch offices.	0
1	I try to get used to the noise of the printer.	-1
0	I close the door of my office when there is a lot of printing.	0
Question 5		
Scenario You are new to a challenging course and you have to work very hard to meet the assignment due dates. You are skilled in working with MS Word. However, you observe classmates in the computer labs who use other programmes for their assignments which you do not know. What do you do?		
Least likely		Most likely

0	I will make an effort to learn these programmes as soon as I think that I need them.	0
1	I do not doubt myself and concentrate on my current tasks.	-1
0	I ask other students if I should learn these programmes.	0
-1	I try to find out what the programmes are useful for. If they seem useful, I will learn to use the programmes in my spare time.	1
Question 6		
Scenario As a tutor, it is part of your job to forward challenging student queries to the Head Tutor. Again and again, you receive complaints from students because the Head Tutor has not dealt with the queries on time. This issue has already been discussed in a team meeting and you were assured that the Head Tutor is doing their best to attend to all students. However, you still receive complaints from students. What would you do?		
Least likely		Most likely
-1	I approach the Head Tutor and try to convince them to respond to student queries faster.	1
0	I compensate for the Head Tutor's shortfalls by responding myself.	0
0	I will bring up this issue again at the next team meeting.	0
1	I try to remain calm and not get upset.	-1
Question 7		
Scenario You are working on a team assignment. Due to a conflict among the team members, the climate in your team is rather tense. You are not involved in the conflict. However, you feel that it disturbs your work. The attempt of one of your peers to reconcile the conflict was not appreciated by the other team members. What would you do?		
Least likely		Most likely
0	I try not to take sides and ask my peers to be considerate of the team.	0

-1	I take charge of mediating among my peers even if they react negatively in the beginning.	1
1	I stay calm and do not let myself be bothered by the conflict.	-1
0	I ask the course convenor to intervene.	0
Question 8		
Scenario You are part of a team of tutors and your course convenor regularly organizes team meetings. You are dissatisfied with how they are going. A lot of time is lost because the meetings are poorly structured and because there are digressions from the main topic. You know, however, that your course convenor does not see any reason for change and is irritated when criticised. What would you do?		
Least likely		Most likely
-1	I take the matter into my own hands and organize team meetings more effectively.	1
0	I ask other students who know my course convenor best how to address the issue at an opportune moment.	0
1	As far as possible I try to stay away from team meetings and use the time for more important things.	-1
1	I try not to get upset and to make the best of the team meetings.	-1
Question 9		
Scenario For the past few years, you have been working in the same position as a library assistant. Now you are seeking new challenges. However, your supervisor seems to have little interest in developing their student staff. If you talk about opportunities for a promotion, they evade the issue. What do you do?		
Least likely		Most likely
-1	I ask my supervisor for a meeting to find out under which conditions I will get a promotion.	1
-1	I approach the heads of other departments and	1

	apply for interesting positions.	
1	I do not worry. Since I do a good job, I am confident that I will be promoted soon.	-1
0	I make an extra effort in order to obtain a promotion.	0

Question 10

Scenario

You are part of a team of tutors for a course. You notice that you and the other tutors receive news about the course very late. Tutors for other courses are much better informed. Your Head Tutor thinks, however, that it is sufficient if they receive information about changes in the course from the course convenor. What would you do?

Least likely		Most likely
1	I count on my Head Tutor to inform me if there is something really important.	-1
-1	I organise an exchange of information among the tutor team on a regular basis so that I am always well informed.	1
1	I do not worry. I do not always need to be the first one to know everything.	-1
0	I ask a friend from within the course to keep me informed about new developments.	0

Question 11

Scenario

You are working on an important group project for a course. Your team coordinates its work in meetings on a regular basis. However, again and again, some of your team members do not stick to the decisions. This makes it difficult for you to do your work. However, your team insists on being able to be flexible and to sometimes deviate from the agreements. What would you do?

Least likely		Most likely
0	I consistently get information about the work of my team to avoid having problems with my own work.	0
1	I won't let the behavior of my team bother me.	-1

-1	I ask my team to sit down with me to think of a long-term solution.	1
1	I accept my team's wish to be flexible. However, I make it clear that I am not responsible for any problems that may occur in my work as a result of the flexible decision-making.	-1

Question 12

Scenario

You are working as a research assistant. You are under enormous pressure to accomplish your tasks on time. Yesterday, new trainees started working on the project and they are unfamiliar with the workflow. You must interrupt your work to answer trainees' questions and to correct their mistakes. You are expected to do both: to finish your work on time and to take care of the trainees. What would you do?

Least likely		Most likely
0	I tell the trainees that I am available after work to answer their questions.	0
-1	I openly say that I cannot take care of the trainees and try to convince the project Lead that it's necessary to have better initial training of the trainees.	1
1	I send the trainees to other research assistants when they have questions.	-1
1	I try to get by without becoming stressed and worn out.	-1

Appendix E: Complete Adapted Version of SJT-PI

Item Number	Old Version	New Version
1	A new computer program was installed in your department. No detailed training was provided to save time and money. Some of your colleagues and you feel insecure in dealing with this new program. Errors frequently happen which leads to a loss of time. What would you do?	You are expected to work with new software for one of your courses. No detailed training was provided due to time and resource constraints. Some of your classmates and you feel insecure about how to deal with this new programme. You frequently make errors which leads to a loss of time. What would you do?
2	You are working in an open-plan office. The workstations are badly arranged. You do not have sufficient space to store everything you need on your desk. Furthermore, you have to walk far. The problem will be resolved for you in a couple of months because you will change the job in your company. What would you do?	You are working in an open-plan library on campus. The workstations are poorly arranged. You do not have sufficient space to store everything you need on your desk. The problem will be resolved for you in a couple of months because you will get access to a section of the library reserved for postgraduate students. What would you do?
3	You are working in a fast moving industry. To be able to provide good advice to your clients, you need to stay up-to-date. However, your company does little to keep employees up-to-date. Day-to-day business keeps you busy at full capacity and you do not have the time to get information on latest developments. What would you do?	You are a tutor for a fast-paced course. To be able to provide good advice to your students, you need to stay up-to-date. However, your course convenor does little to keep tutors informed. Your studies keep you completely busy and you do not have the time to keep yourself informed of the latest developments. What would you do?
4	The laser printer of your department is located right next to the door of your office. The printer is used frequently and makes a lot of noise. You feel disturbed by the noise and find it hard to concentrate. Your colleagues appreciate the convenient position of the printer and are reluctant to have it moved. You could close the door to your office. However, you appreciate your department's practice of leaving doors open. What would you do?	You work for your department as a tutor and have your own office. The laser printer of your department is located right next to the door of your office. The printer is used frequently and makes a lot of noise. You feel disturbed by the noise and find it hard to concentrate. Your fellow tutors appreciate the convenient position of the printer and are reluctant to have it moved. You could close the door to your office. However, you appreciate your department's practice of leaving doors open. What would you do?
5	You are new in your department and you have to work very hard given your present tasks. You are skilled in working with the software you need for the tasks you are working on at the moment. However, there are additional programs available on the computers which you do not know yet. You observe that some of your colleagues use these programs. What would you do?	You are new to a challenging course and you have to work very hard to meet the assignment due dates. You are skilled in working with MS Word. However, you observe classmates in the computer labs who use other programmes for their assignments which you do not know. What would you do?

6	It is part of your job to forward customer requests to a different department. Again and again, you receive customer complaints because employees in the other department have not dealt with customer requests on time. This issue has already been discussed in a team meeting and you were assured that the employees of the other department are working at full capacity. However, you still receive customer complaints. What would you do?	As a tutor, it is part of your job to forward challenging student queries to the Head Tutor. Again and again, you receive complaints from students because the Head Tutor has not dealt with the queries on time. This issue has already been discussed in a team meeting and you were assured that the Head Tutor is doing their best to attend to all students. However, you still receive complaints from students. What would you do?
7	Due to a conflict among your colleagues, the climate in your department is rather tense. You are not involved in the conflict. However, you feel disturbed in your work. The attempt of one of your colleagues to reconcile the conflict was not appreciated. What would you do?	You are working on a team assignment. Due to a conflict among the team members, the climate in your team is rather tense. You are not involved in the conflict. However, you feel that it disturbs your work. The attempt of one of your peers to reconcile the conflict was not appreciated by the other team members. What would you do?
8	Your supervisor regularly organizes team meetings. You are dissatisfied with how they are going. A lot of time is lost because the meetings are poorly structured and because there are digressions from the main topic. You know, however, that your supervisor does not see any reason for change and is irritated when criticized. What would you do?	You are part of a team of tutors and your course convenor regularly organizes team meetings. You are dissatisfied with how they are going. A lot of time is lost because the meetings are poorly structured and because there are digressions from the main topic. You know, however, that your course convenor does not see any reason for change and is irritated when criticised. What would you do?
9	Since a few years you are working in the same position. Now you want new challenges. However, your supervisor seems to have little interest in developing his employees. If you talk about opportunities for promotions, he evades the issue. What would you do?	For the past few years, you have been working in the same position as a library assistant. Now you are seeking new challenges. However, your supervisor seems to have little interest in developing their student staff. If you talk about opportunities for a promotion, they evade the issue. What do you do?
10	You notice that your colleagues and you receive news about your company very late. Colleagues of other department are much better informed. Your supervisor thinks, however, that it is sufficient if he receives information about changes in the company. What would you do?	You are part of a team of tutors for a course. You notice that you and the other tutors receive news about the course very late. Tutors for other courses are much better informed. Your Head Tutor thinks, however, that it is sufficient if they receive information about changes in the course from the course convenor. What would you do?
11	Your team coordinates its work in meetings on a regular basis. However, again and again, some of your colleagues do not stick to the decisions. This makes your work difficult. However, your colleagues insist on being able to be flexible and to sometimes deviate from the agreements. What would you do?	You are working on an important group project for a course. Your team coordinates its work in meetings on a regular basis. However, again and again, some of your team members do not stick to the decisions. This makes it difficult for you to do your work. However, your team insists on being able to be flexible and to sometimes deviate from the agreements. What would you do?

12	You are under enormous pressure to accomplish your tasks on time. Yesterday, new trainees started in your department. They are unfamiliar with the workflow in your department. You have to interrupt your work to answer trainees' questions and to correct their mistakes. You are expected to do both, to finish your work on time and to take care of the trainees. What would you do?	You are working as a research assistant. You are under enormous pressure to accomplish your tasks on time. Yesterday, new trainees started working on the project and they are unfamiliar with the workflow. You must interrupt your work to answer trainees' questions and to correct their mistakes. You are expected to do both: to finish your work on time and to take care of the trainees. What would you do?

Appendix F: Eigenvalues and Total Variance for Complete PSS-10 Scale

Table F1

Eigenvalues and Total Variance Explained for Complete PSS-10 Scale

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	.608	36.079	36.079	3.172	31.720	31.720	2.184	21.842	21.842
2	2.081	20.812	56.890	1.604	16.036	47.756	1.777	17.774	39.616
3	1.082	10.819	67.709	.574	5.740	53.495	1.388	13.879	53.495
4	.803	8.033	75.743						
5	.582	5.824	81.567						
6	.550	5.505	87.072						
7	.419	4.192	91.264						
8	.350	3.501	94.765						
9	.324	3.243	98.008						
10	.199	1.992	100.000						

Extraction Method: Principal Axis Factoring.

Table F2

First Principal Axis Factoring (PAF) with Complete PSS-10 Scale: Rotated Factor Matrix

	Factor		
	1	2	3
In the last month, how often have you…			
been upset because of something that happened unexpectedly?	.737		.261
felt that you were unable to control the important things in your life?	.686		
felt nervous and stressed?	.643		.273
felt confident about your ability to handle your personal problems?	.601		.312
felt that things were going your way?		.715	
found that you could not cope with all the things that you had to do?		.661	
been able to control irritations in your life?		.618	
felt that you were on top of things?		.538	
been angered because of things that happened that were outside of your control			.734
felt difficulties were piling up so high that you could not overcome them	.241		.603

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 8 iterations.

Appendix G: Assumption Testing for Moderation Analysis

Figure G1

Scatterplot between the Predicted Residuals and the Standardized Observed Residuals when Predicting Personal Initiative Levels Post Training, Perceived Self-Efficacy Levels Post Training, and the Interaction between both.

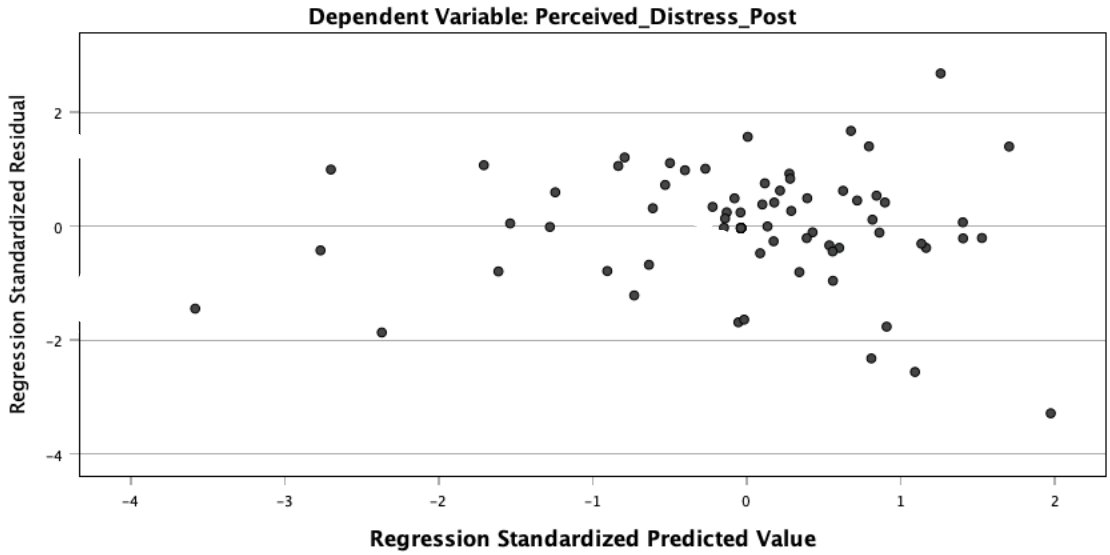


Figure G2

Partial Regression Plot depicting the Relationship between PI_Post and Perceived_Distress_Post

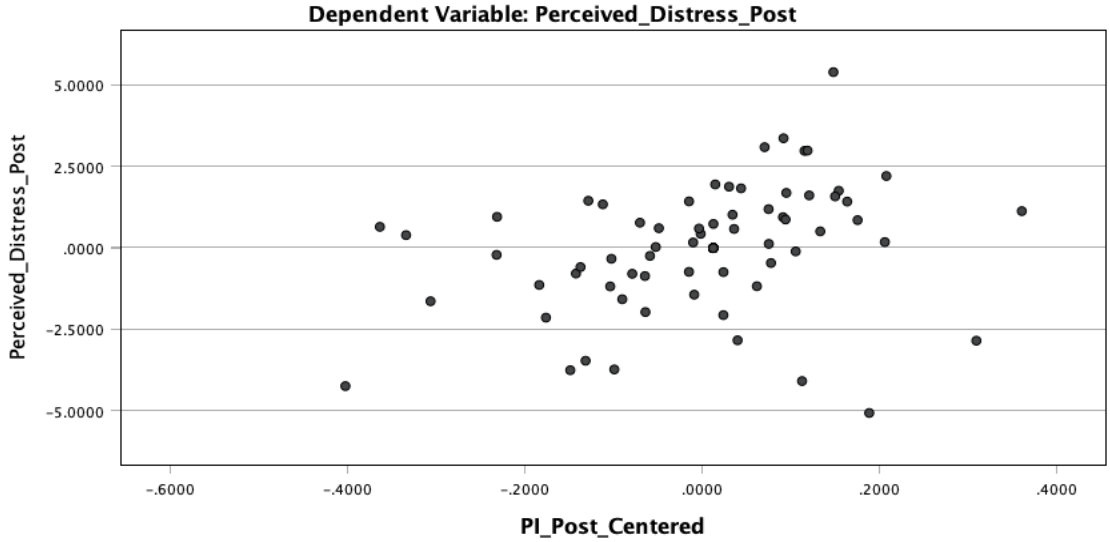


Figure G3

Partial Regression Plot depicting the Relationship between SE_Post and Perceived_Distress_Post

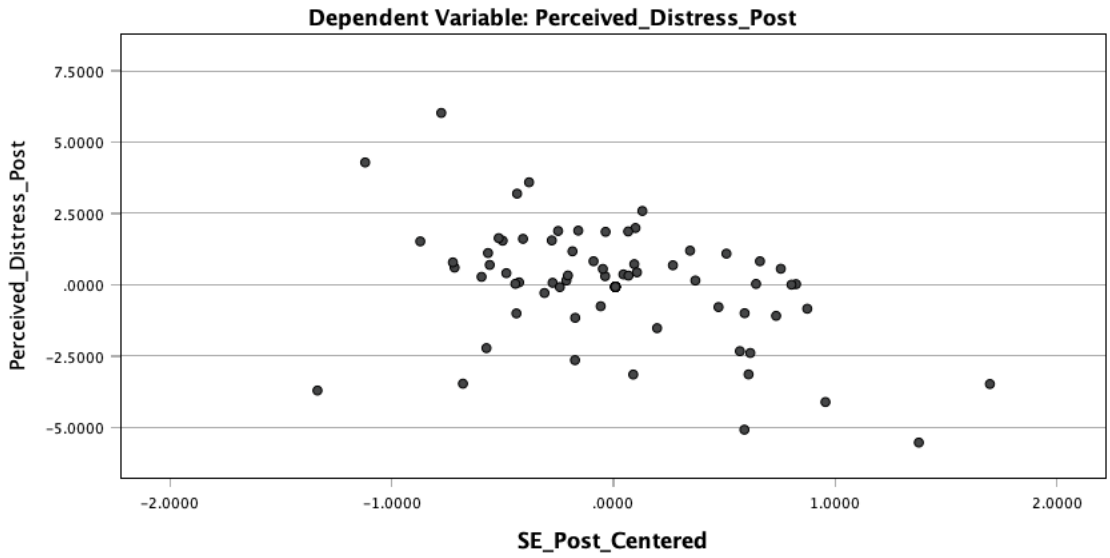
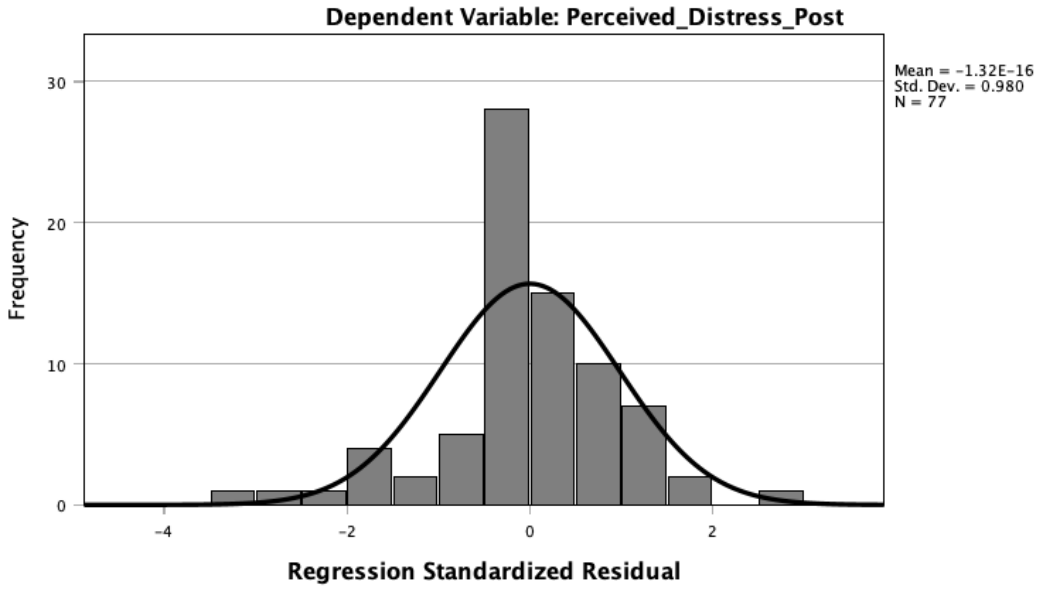
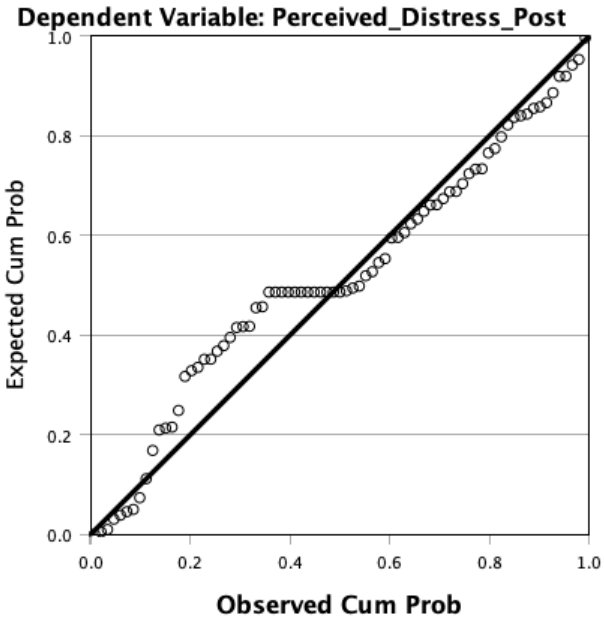


Figure G4

Histogram and Normal P-P Plot depicting the Distribution of Residuals for Moderation Model

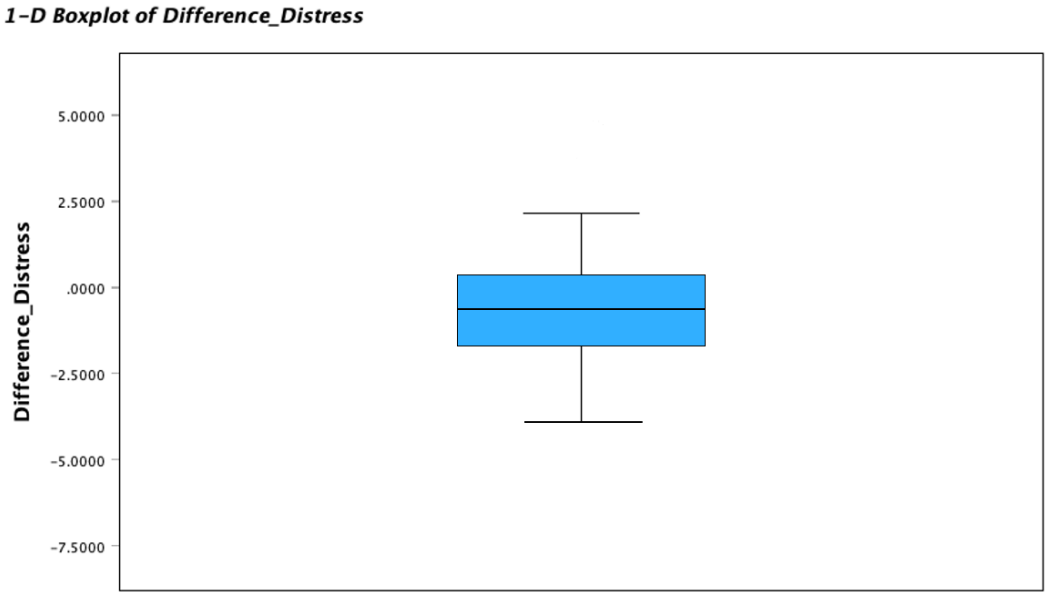



Dependent Variable: Perceived_Distress_Post
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

Appendix H: Symmetrical Distribution of Difference in Perceived Distress

Figure H1

One Dimensional Boxplot Reflecting the Symmetrical Distribution of the Difference in Perceived Distress.



Appendix I: Wilcoxon Signed Rank Results

Table I1

Results of Wilcoxon Signed-Rank Test for Perceived Distress and Lack of Self-Efficacy

		N	Mean Rank	Sum of Ranks
Perceived_Distress_Post - Perceived_Distress_Pre	Negative Ranks	18[a]	13.81	2312.00
	Positive Ranks	5[b]	5.50	526.00
	Ties	2[c]		
Lack_of_SE_PostTest - Lack_of_SE_Pretest	Negative Ranks	17[d]	11.68	198.50
	Positive Ranks	7[e]	14.50	101.50
	Ties	1[f]		
	Total	**25**		

[a.] Perceived_Distress_Post < Perceived_Distress_Pre

[b.] Perceived_Distress_Post > Perceived_Distress_Pre

[c.] Perceived_Distress_Post = Perceived_Distress_Pre

[d.] Lack_of_SE_PostTest < Lack_of_SE_Pretest

[e.] Lack_of_SE_PostTest > Lack_of_SE_Pretest

[f.] Lack_of_SE_PostTest = Lack_of_SE_Pretest

Table I2

Test Statistics of Wilcoxon Signed-Rank Test

	Perceived_Distress_Post - Perceived_Distress_Pre	Lack_of_SE_PostTest - Lack_of_SE_Pretest
Z	-3.372[b]	-1.394[b]
Asymp. Sig. (2-tailed)	<.001	.163

[a.] Wilcoxon Signed Ranks Test

[b.] Based on positive ranks.