THE IMPACT OF MINDFULNESS ON INDIVIDUAL AND TEAM PERFORMANCE

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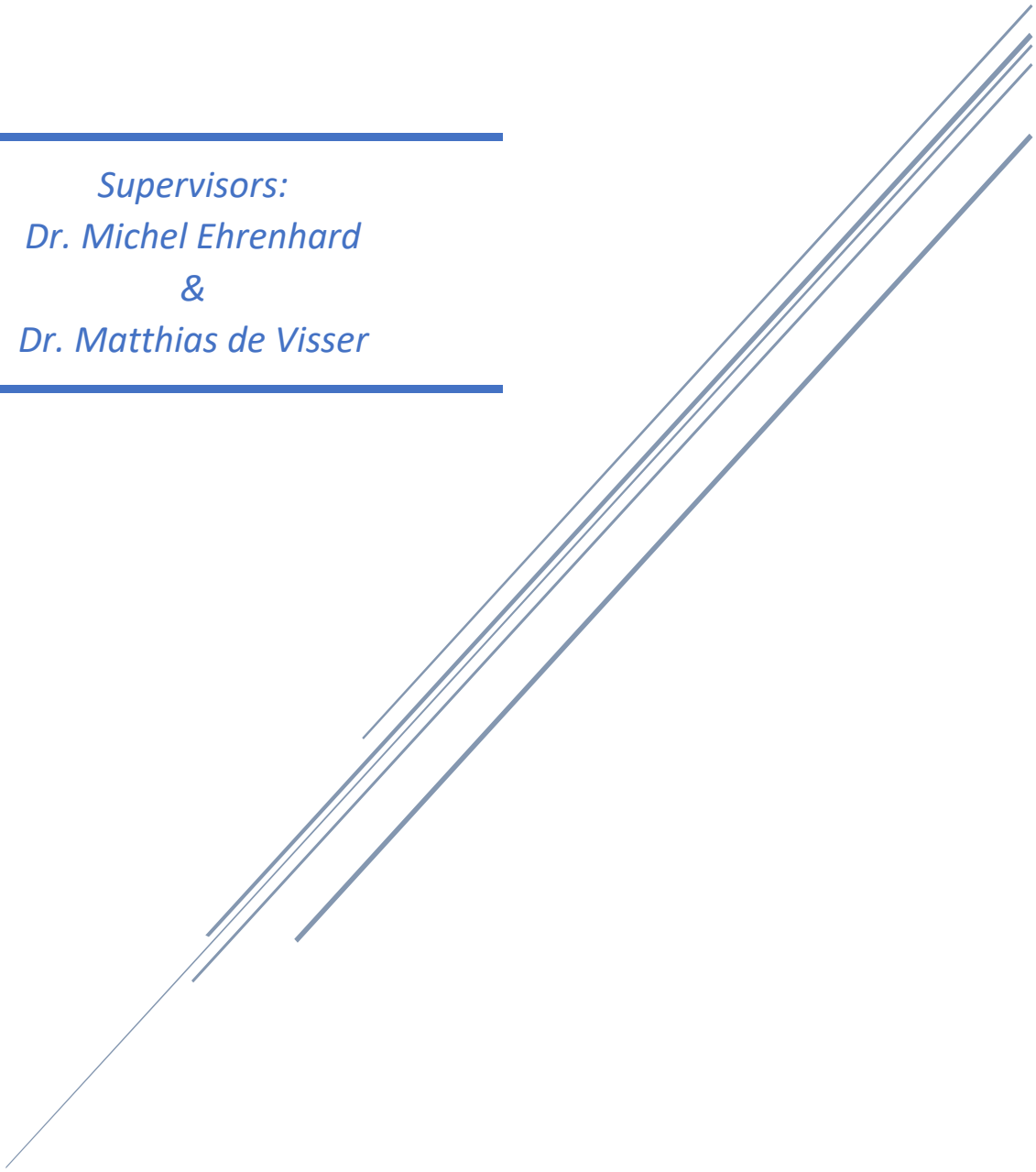

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Preface

I would like to thank my supervisors Dr. Michel Ehrenhard and Dr. Matthias de Visser for their guidance. The feedback and insights that I received from them were incredibly helpful in shaping this study and completing my thesis.

Management Summary

Mindfulness research has long been associated with its emphasis on psychological well-being, but studies on the influence of this construct in a workplace setting remain limited (Passmore, 2019). More specifically, few studies have investigated the relationship between mindfulness and performance-related outcomes in organisations (Dane, 2011). To address this gap, and contribute to the growing body of mindfulness research, this study aims to investigate the relationship between mindfulness and individual and team performance through various mediators. The mediating variables, linear thinking, emotional stability and conscientiousness were selected based on theory. The expectations based on the theoretical framework were that mindfulness would have significant positive effects on individual and team performance. Moreover, it was also expected that linear thinking, emotional stability and conscientiousness would significantly mediate the relationship between mindfulness and both individual and team performance.

The data received for this study was collected before this study was initiated using a survey conducted on students of an anonymised course and programme at the University of Twente. The questionnaire contained validated measurement scales for the independent and mediator variables. Furthermore, the individual and group grades for the course were used as direct measures of individual and team performance respectively. The data was analysed in SPSS using linear regression to test the direct effects of mindfulness on individual and team performance. An extension tool available in SPSS, known as PROCESS, was used to conduct the mediation analyses. The results show a positive significant relationship between mindfulness and individual performance, but the effect of mindfulness on team performance was not significant. Furthermore, contrary to theoretical expectations, the mediating effects of linear thinking, emotional stability and conscientiousness were all non-significant with respect to both individual and team performance. However, some promising results were found in the mediation analyses, which included the significant positive effects of mindfulness on emotional stability and conscientiousness as expected in theory.

Practical implications include being more mindful by engaging in mindful activities since it has shown to positively affect individual performance. However, in order to derive more meaningful practical implications, future research on mindfulness is recommended based on the key findings and limitations of this study. It was argued that since mindfulness of one individual may not influence the grade or performance of a group that possibly consists of individuals that are not mindfully aware, future research could focus on team mindfulness and collective mindfulness to determine their effect on team performance.

1. Introduction

Mindfulness is an ancient Buddhist concept that has seen rapid growth in interest among researchers, especially in psychology. This is mainly due to the multiple psychological benefits, such as improved attention, focus and memory associated with mindfulness over the decades (Davis & Hayes, 2011; Hyland et al., 2015; Passmore, 2019). Doctors and psychologists have been using a range of mindfulness techniques to treat patients with chronic pain, anxiety and depression (Hyland et al., 2015). Mindfulness has also gained popularity among a wider audience outside the field of psychology, including organisational leaders, employees, educational institutes and students in recent years due to the aforementioned benefits (Hyland et al., 2015). For instance, in the past decade, Google has started offering mindfulness programs to its employees in order to boost their well-being and effectiveness (Kelly, 2012). Furthermore, Harvard Business School has also implemented mindfulness training programs for its students' well-being and success (Hyland et al., 2015). Although several studies, as mentioned above, have explored the health-related benefits of mindfulness on individuals, fewer studies have focused solely on the performance related consequences of mindfulness in a workplace setting (Good et al., 2016; Hyland et al., 2015; Passmore et al., 2019).

It is only in the recent years that researchers have begun to explore the potential benefits of mindfulness in the workplace (Cleirigh & Greaney, 2014; Dane, 2011; Dane & Brummel, 2014; Glomb et al., 2012; Hyland et al., 2015; ; Levy et al., 2012; Passmore, 2019). Some notable findings include enhanced memory, resilience, productivity, task commitment, and task performance (Chaskalson, 2011; Glomb et al., 2012; Levy et al., 2012). Moreover, substantial performance-related outcomes have been associated with mindfulness, such as better sales performance (Seligman, 2006), and enhanced job performance in a dynamic service environment (Dane & Brummel, 2014). These studies indicate that the benefits of mindfulness are not limited to the realm of psychological well-being. There is suggestion of mindful employees being more effective and productive at a workplace (Hyland et al., 2015). However, despite the promising findings, researchers have called for a deeper insight into the effect of mindfulness on a wider range of workplace-related outcomes, such as creativity, cognition, adapting to changes in the environment, teamwork, and performance (Dane, 2011; Hyland et al., 2015; Passmore, 2019).

The goal of this study is to contribute to the growing body of research on mindfulness by investigating its effect on task performance on both individual and team levels. The research question is as follows: "How does mindfulness affect individual and team performance?"

The core components of the research question are thoroughly discussed, argued and formally defined in the following chapter (Literature Review). In order to answer the research question, key elements found in the definition of mindfulness proposed by Dane (2011) is used, who defined mindfulness as "a state of consciousness in which attention is focused on present-moment phenomena occurring both externally and internally". Although this study focuses on trait mindfulness, this definition was deemed most appropriate for this study because it was developed by accounting for the most frequently appearing elements of mindfulness found in the definitions of both state and trait mindfulness (Brown & Ryan, 2003; Dane, 2011; Good et al., 2016; Herndon, 2008; Kabat-Zinn, 2005; Passmore, 2019). The key elements of this definition- namely the internal and external present-moment phenomena- are then probed individually to determine other relevant variables that may mediate the relationship between mindfulness and individual and team performance. These hypotheses were tested in SPSS using pre-collected data, which is discussed thoroughly in Chapter 3 (Methodology). The key findings are presented in the consequent chapter, followed by a conclusion for this study and recommendations for future research.

Overall, this study aims to provide management scholars and practitioners with an overview of what mindfulness is and how it can affect individual and team performance in a workplace setting. More specifically, this paper aims to:

- discuss what mindfulness is by evaluating the various definitions and conceptualisations put forward to date;
- evaluate extant literature on mindfulness and highlight the performance-related consequences of this construct;
- investigate how mindfulness can potentially enhance individual and team performance; and
- suggest new directions for scholars and managers to consider.

To summarise, this article intends to provide a more comprehensive understanding of mindfulness in the workplace by drawing on what is already known, investigating its impact on individual and team performance, providing useful information for management practitioners, and proposing new directions for future research.

2. Literature Review

Research on mindfulness has often been perceived to be challenging due to the ambiguity surrounding the term itself (Good et al., 2016; Lutz et al., 2015; Passmore, 2019). The lack of an agreed-upon definition of the term despite attempts to develop an operational definition (Bishop et

al., 2004), leaves mindfulness studies with construct validity concerns (Passmore, 2019). It is mainly because mindfulness is an internal state which is difficult to observe, measure or describe (Good et al., 2016). This ambiguity also makes it difficult to compare studies regarding mindfulness (Analayo, 2018). However, according to Analayo (2018), understanding the historical roots of mindfulness is important in evaluating this concept. The following sub-section elaborates the roots of mindfulness, which lie in ancient Buddhist traditions, before comparing the various conceptualisations and definitions of the term offered by scholars from multiple disciplines in an attempt to lay a solid foundation for this study.

2.1 What is mindfulness?

As mentioned above, the definition of mindfulness may vary across multiple disciplines which creates a degree of confusion surrounding the term. Hence, before exploring the significance of this concept in the management literature, it is equally important to establish what mindfulness is and is not from a historical standpoint (Dane, 2011). Historically, the concept of mindfulness has been perceived as a state of consciousness that can be achieved through meditation, making it seem more spiritual than science to be considered as a relevant scientific construct. This spiritual conceptualisation of mindfulness roots from ancient Buddhist traditions where mindfulness played a central role in the process of ending personal suffering (Bishop et al., 2004). In the late 1970s, mindfulness began to emerge as a therapeutic means to treat chronic illness (Good et al., 2016; Kabat-Zinn, 2003), and later in 1993, mindfulness was introduced in the management literature (Good et al., 2016). Since then, mindfulness has been conceptualised as a state and a trait. State mindfulness recognises mindfulness as a state of consciousness that can be cultivated through mindfulness meditation, whereas trait mindfulness refers to an individual's inclination towards being mindfully aware (Kiken et al., 2015). These two conceptualisations of mindfulness are elaborated further in the following sub-section.

2.1.1 State and trait mindfulness

Several authors have conceptualised mindfulness as a state that can be cultivated with or without mediation (Bayle-Cordier et al., 2022; Birtwell et al., 2018; Dane, 2011; Hanh, 1976; Harvey, 2000; Lau et al., 2006; Rosch, 2007). In line with this suggestion, Birtwell et al. (2018) argued that mindfulness can be achieved through both formal and informal mindful practices. Formal mindfulness practices involve making separate time to engage in mindfulness practices, such as meditation (Birtwell et al., 2018). On the other hand, informal mindfulness refers to incorporating mindfulness practices into everyday routine tasks, such as mindfully washing dishes (Hanley et al., 2015), mindfully having a meal, and a host of other mundane activities including drinking tea, housekeeping, and even walking mindfully (Birtwell et al., 2018). Dane (2011) extended on this

notion by arguing that since mindfulness can be conceptualised as a state, it is not an attribute that an individual inherently possesses, but that it can be achieved by any individual at any given time.

On the contrary, mindfulness has also been conceptualised as a trait (known as trait or dispositional mindfulness) (Brown & Ryan, 2003; Kiken et al., 2015; Rau & Williams, 2016; Stillman et al., 2014). Brown & Ryan (2003) conceptualised mindfulness as an "attribute of consciousness" that require "awareness and attention" to present events. They argued that although awareness and attention are inherent human attributes, the quality of these features may vary from person to person due to their differing capacity of maintaining awareness and attention. In line with this conceptualisation, Stillman et al. (2014) found association between the individual differences in inclination towards mindful awareness. Furthermore, Rau & Williams (2016) conceptualised dispositional mindfulness as a two-dimensional construct that not only focuses on attention and awareness, but also emphasises the quality of the attention. They also argued that this form of mindfulness is entirely distinct from state mindfulness which can be cultivated through numerous methods as discussed previously (Rau & Williams, 2016). Interestingly, Dane (2011) argued that, at core, mindfulness is a state that can be examined at trait-level as well. In line with this argument, Kiken et al. (2015) suggested that improving state mindfulness through mindfulness interventions is likely to enhance trait mindfulness. This study is based on trait mindfulness, but the common elements of mindfulness found in the definitions of both trait and state mindfulness are evaluated in order to build a comprehensive theoretical framework to measure the effect of mindfulness on individual and team performance. The following sub-section evaluates a key aspect that is commonly found in the various conceptualisations of mindfulness- the emphasis on present-moment (Dane, 2011).

2.1.2 Present-moment phenomena

An aspect of mindfulness that can be found in most definitions (both trait and state mindfulness) is the attention to and awareness of the present-moment (Brown & Ryan, 2003; Dane, 2011; Good et al., 2016; Herndon, 2008; Kabat-Zinn, 2005). For example, Kabat-Zinn (2005) defined mindfulness as "paying attention in a particular way: on purpose, in the present-moment, and non-judgementally". Herndon (2008) defined mindfulness as being attentive to events unfolding "here and now". The emphasis on present-moment extends to another element of being mindfully aware, which is paying attention to both internal and external phenomena (Dane, 2011). According to Brown & Ryan (2003), internal and external phenomena are part of the present-moment. Therefore, a lack of awareness of either external or internal events would entail lack of mindfulness (Dane, 2011). Dane (2011) combined these elements and engraved them in his definition of mindfulness- "a state of consciousness in which attention is focused on present-moment phenomena occurring both externally and internally". This definition not only paints a clearer picture of mindfulness as a

construct that can be investigated scientifically, but also allows it to be distinguishable from other similar psychological states (Dane, 2011). An example of such psychological state would be the state of absorption, where an individual is deeply engaged in one particular task or role (Dane, 2011). In this state, an individual is focused on the present-moment, but unlike mindfulness, the number of stimuli that the individual is aware of, which is also known as the attentional breadth (Dane, 2011), is relatively narrow.

In summation, mindfulness can be beneficial to individuals from a spiritual or psychological standpoint. Over the last two decades, scholars across various domains have evidently recognised mindfulness as a construct that can be scientifically investigated as discussed so far in this paper. However, the impact of this mindfulness is still vague in the context of a workplace (Good et al., 2016; Passmore, 2019). To address this, the following section explores the possible effects of mindfulness on workplace-related outcomes, more specifically on individual and team performance.

2.2 Mindfulness: individual and team performance

Task performance can be defined as a critical dimension of job performance that contribute to the organisations core (Dane, 2011). This study focuses on task performance on both individual and team levels. The definitions of performance on team and individual levels are closely related to each other (Salas et al., 2008). That is, performance concerns the outcomes of the activities performed in order to complete a task (Motowildo, 2003; Salas et al., 2008). In line with notion, Zulfadi et al. (2020) defined team performance as the degree to which teams can attain expected goals and tasks while maintaining their desired standard. Furthermore, Kozlowski & Klein (2000) conceptualised team performance as a multilevel process that require the members of a team to manage their tasks at both individual and team levels. Building on this notion, it can be argued that individual performance and team performance are concepts that may overlap and even complement each other to an extent.

The integrative framework developed by Good et al. (2016) shows evidence of the impact of mindfulness on a wide array of performance-related outcomes in the workplace such as, job performance, task performance and safety performance in various sectors and occupations. Studies have found direct association between trait mindfulness and job performance among supervisors and servers in restaurants (Dane & Brummel, 2014; Reb et al., 2014). Similarly, Beach et al. (2013) found positive association between trait mindfulness and overall patient ratings among health care workers. Trait mindfulness has also been associated with task performance in complex work

environments that require high degree of safety standards (Zhang et al., 2013; Zhang & Wu, 2014). For instance, Zhang et al. (2013) found significant positive relationship between trait mindfulness and safety among workers responsible for complex tasks in a nuclear power plant. Overall, evidence indicates that mindfulness positively affects task performance. It can be argued that mindfulness has a significant positive effect on individual performance. Based on these arguments, this study hypothesises:

H1: Mindfulness positively affects individual performance.

In order to closely assess the effect of mindfulness on team performance, it is useful to investigate the effect of each aspect of this consciousness state as noted by Dane (2011). First, it may be argued that a wide external receptive state (or attentional breadth) is best suited to a dynamic environment that requires real-time decision making with a degree of interdependency (Dane, 2011). A dynamic environment involves rapid change where an individual interacts in an interdependent manner (Nadkarni & Barr, 2008). Teams and teamwork require such task interdependency, coordination, collaboration, and sharing information to achieve a common goal (Salas et al., 2008). Furthermore, according to Salas & Fiore (2004), team performance is the result of a dynamic process that involves team work. Mindfulness allows an individual to attend to and process a large number of stimuli and inputs (Dane, 2011), which can prove useful in a team environment by contributing to team work which is a key ingredient for team performance as emphasised by Salas & Fiore (2004). Hence, it can be argued that team mindfulness significantly enhances team performance in a workplace setting. Based on these arguments, this study hypothesises:

H2: Mindfulness positively affects team performance.

Although there are a handful of studies supporting the relationship between mindfulness on individual and team performance as discussed in this section, the overall effect of mindfulness on individual and team performance may be dependent on a range of other factors (Dane, 2011), which are elaborated in the following sub-sections.

2.2.1 Linear thinking

Since mindfulness broadens the attentional breadth of an individual both externally and internally, it can be argued that mindfulness may affect the way in which that individual captures and processes the relevant information required to carry out the task at hand (Bishop et al., 2004; Cleirigh & Greaney, 2014; Dane, 2011). Since individuals in a mindful state are more attuned to their internal thoughts (Kabat-Zinn, 2005), Dane (2011) suggested that mindfulness may affect the cognitive style of individuals. According to several studies, the cognitive style of individuals can be differentiated

into two systems known as non-linear (non-conscious, intuitive, experiential, implicit, system 1) and linear (conscious, analytic, rational, explicit, system 2) (Epstein, 1995; Evans, 2008; Fabbro et al., 2017; Nissbet et al., 2001). The non-linear system operates at high-capacity with low effort since the process is unconscious and automatic, whereas the linear system operates in a controlled and analytic manner (Evans, 2008).

Several studies have shown association between mindfulness and the dual cognitive system (Brown & Ryan 2003; Hutcherson et al., 2008; Remmers et al., 2016; for review, see Fabbro et al., 2017; Bargh & Chartrand, 1999, as cited in Good et al., 2016). Most notably, Bargh & Chartland (1999), found evidence linking mindfulness to 'reduced automaticity'. They suggested that mindfulness generates a mental gap between stimulus (for example, an urge to smoke) and the behavioural or habitual response (which, in this case, is to smoke) (Bargh & Chartland, 1999). Mindful individuals are likely to resist the urge by engaging in a different activity (such as going for a walk instead of smoking) (Bargh & Chartland, 1999). Although it is not strictly a workplace performance related example, it shows that mindfulness can foster linear thinking. It indicates that mindfulness provides individuals with a choice of whether to allow the habitual response to run its course or to consciously adjust their behaviour to achieve a different, more desired, outcome (Good et al., 2016). In line with this argument, evidence gathered from neuroimaging suggests that the subcortical regions of the brain that supports habitual or automatic responses tends to be interrupted by mindful awareness, and alternatively, the frontal lobes are more deeply engaged, which supports linear thinking (Stillman, 2014). Building on this notion, Dane (2011) argued that mindfulness makes individuals more consciously aware of their non-conscious thought process. The wide internal attentional breadth may not be the only aspect of mindfulness that promotes linear thinking, but the wide external attentional breadth may also aid conscious information processing, which is elaborated in the following paragraph.

As argued above, mindfulness reduces automaticity by allowing individuals to consider a wide range of choices to base their decisions upon. However, in order to be internally aware of the choices available, it may be argued that it is equally important to be attuned to the external environment to capture valuable information and consequently, broaden the array of available options at one's disposal. This notion can be supported by an example taken from Dane's (2008) research on trial lawyers where he concluded that it is important for lawyers to continuously gather useful information from the courtroom to ensure effective decision-making such as, what line of arguments to use or what type of strategy to pursue. Dane (2008) also emphasised the positive role of mindfulness in aiding lawyers to attend to such breadth of events. Furthermore, Dane (2011) suggested that retaining a wide external attentional breadth can potentially reduce the error rate

that may be caused by non-awareness of vital cues from the external environment. In summation, it can be argued that the conscious information-gathering effect of maintaining a wide external attentional breadth, followed by the linear information processing effect of having a wide internal attentional breadth can reduce errors and enhance task performance. Based on these arguments, it can be hypothesised that a linear cognitive style plays a significant positive mediating role in the relationship between mindfulness and individual performance.

H3: Linear thinking significantly mediates the relationship between mindfulness and individual performance.

As mentioned before in this paper, the key aspects of the definitions of individual and team performance definitions are similar (Salas, et al., 2008), it can be argued that linear thinking may also foster team performance. To support this argument, Salas & Fiore (2004) concluded in their study that conscious cognitive processes such as encoding, storing and retrieving information play important roles in team performance. Based on this notion, it can be argued that conscious cognitive style at team level plays a positive mediating role in the relationship between team mindfulness and team performance.

H4: Linear thinking significantly mediates the relationship between mindfulness and team performance.

2.2.2 Emotional stability

Research has shown that mindfulness can have positive effects on individual, group and organisation levels (Bayle-Cordier et al., 2022; Oliver et al., 2017). At the individual level, mindfulness has been linked with improved performance at work which includes enhanced productivity and decision-making skills (Bayle-Cordier et al., 2022; Montani et al., 2020; Mulla et al., 2017). Furthermore, enhanced cognition, mental well-being and emotional stability were identified as individual level outcomes of mindfulness (Bayle-Cordier et al., 2022). Emotional stability is one of the Big Five personality traits that are commonly used in personality studies (Barrick & Mount, 2012). According to Taylor (2011), the present-moment aspect of mindful awareness is linked with greater emotional stability. Building on this notion, Bajaj et al. (2018) argued that mindfulness promotes emotional stability through objective reactions to emotional circumstances. Furthermore, studies have also shown that mindfulness enhances emotional stability in hostile situations via reduced emotional reactions and rapid recovery (Arch & Craske, 2006; Taylor et al., 2011). Hence, based on prior studies, it can be argued that mindfulness positively affects emotional stability.

Research suggests that emotionally stable individuals are likely to perform better in their jobs (Barrick & Mount, 2015; Ployhart et al., 2006; Prewett, 2016). More precisely, Ployhart et al. (2006) observed that task and organisational level emotional stability was positively related to individual job performance. This seems to be a logical observation because individuals that lack emotional stability may be prone to stress resulting from ruminative thinking, such as worrying about their task performance or questioning their own decisions or abilities (Barrick & Mount, 2015). This may result in lack of attention towards the task at hand (Barrick & Mount, 2015). Mindfulness has been shown to reduce ruminative thinking by focusing attention on the present-moment (Dane, 2011). Therefore, mindful individuals are arguably more likely to be emotionally stable, and hence, perform better in completing their tasks. Based on these arguments, the following hypothesis is proposed:

H5: Emotional stability significantly mediates the relationship between mindfulness and individual performance.

Emotional stability has also been linked with positive team-level outcomes (Barrick & Mount, 2015). Mount et al. (1998) found a significant correlation between emotional stability and tasks that require interpersonal interactions, such as helping or collaborating with others. This effect proved to be even stronger in team environments (Mount et al., 1998). Furthermore, emotional stability is said to be more suited to environments that require productivity and courteous interactions (Ashton & Lee, 2007). Based on this notion, Prewett (2016) argued that emotional stability should foster relationships between team members. Furthermore, Barrick & Mount (2015) suggested that emotional stability impacts the willingness of individuals to get along with other individuals in a team environment. Based on these effects of emotional stability on team-related outcomes, it has been theorised to affect performance ratings in a team setting (Barrick & Mount, 2015). In summation, it can be argued that emotional stability positively mediates the relationship between mindfulness and team performance.

H6: Emotional stability significantly mediates the relationship between mindfulness and team performance.

2.2.3 Conscientiousness

Since mindfulness attunes individuals to the present-moment, while reducing ruminative thinking, mindfulness promotes self-regulation among individuals (Leyland et al., 2019). This notion can been supported by several other studies that suggest that mindful individuals tend to possess greater self-regulation (Masicampo and Baumeister, 2007, Shapiro et al., 2006). The idea of self-regulation is not limited to mindfulness, but it is shared with a Big Five personality construct, that is conscientiousness (Giluk, 2009). Self-regulation is one the key elements of conscientiousness (Costa & McCrae, 1992).

Gulik (2009) demonstrated a strong positive relation between mindfulness and conscientiousness, which, according to the researcher, was larger than expected. Based on the findings, Gulik (2009) also emphasised the need to investigate the relationship between mindfulness and conscientiousness. Despite the commonalities mentioned between these two constructs, the lack of further assessment may be due to researchers not considering a natural theoretical relation as they tend to do with mindfulness and emotional stability (Gulik, 2009). Now that mindfulness research has been gaining momentum in the management literature, this relationship may be worth a deeper investigation.

Conscientiousness has also been suggested as one of the significant predictors of workplace related outcomes, such as job performance and team performance (Barrick et al., 2001; Barrick & Mount, 2015; Prewett et al., 2016). More specifically, conscientious has been linked with greater dependability and responsibility. (Barrick et al., 2001). Moreover, conscientiousness has also been viewed from the perspective of achievement-orientation (Driskell et al., 2006). Dependability, responsibility and achievement-orientation are key aspects of conscientiousness which have been proven to positively affect team performance (Driskell et al., 2006). According to studies, individuals who are dependable are more likely to excel in teamwork compared to ones that are less dependable (Driskell et al., 2006; Hough, 1992). Responsibility (or dutifulness) has been associated with increased responsibility towards team performance and team members even at the expense of personal sacrifice (Driskell et al., 2006; Ellemers et al., 1998). Lastly, achievement-oriented team members are likely to be more driven towards achieving team goals (Driskell et al., 2006). Overall, greater conscientiousness in a team-setting has been associated with better team performance (Barrick et al., 1998; Prewett, 2016). Based on these arguments, this study hypothesises:

H7: Conscientiousness significantly mediates the relationship between mindfulness and team performance.

The three aspects of conscientiousness- dependability, responsibility and achievement-orientation- also seem to impact individual performance at work by minimising counterproductive behaviour and increasing goal-orientation (Barrick & Mount, 2015). Furthermore, conscientious individuals tend to apply more time and effort into a task, which results in enhanced task performance (Barrick & Mount, 2015). Barrick & Mount (2015) also found that conscientious individuals are highly organised and both plan and detail oriented. As a result of these attributes, conscientious individuals tend to be analytical and critical when looking for problems or errors in a workflow or the output (Barrick & Mount, 2015). This would logically result in better task performance for those individuals. This argument can be supported by observations made by Ployhart et al. (2006), who found positive

relation between conscientiousness and individual-level job satisfaction and task performance. Hence, based on these arguments, this study hypothesises:

H8: Conscientiousness significantly mediates the relationship between mindfulness and individual performance.

2.3 Research model

The following figure depicts the hypotheses proposed in this study:

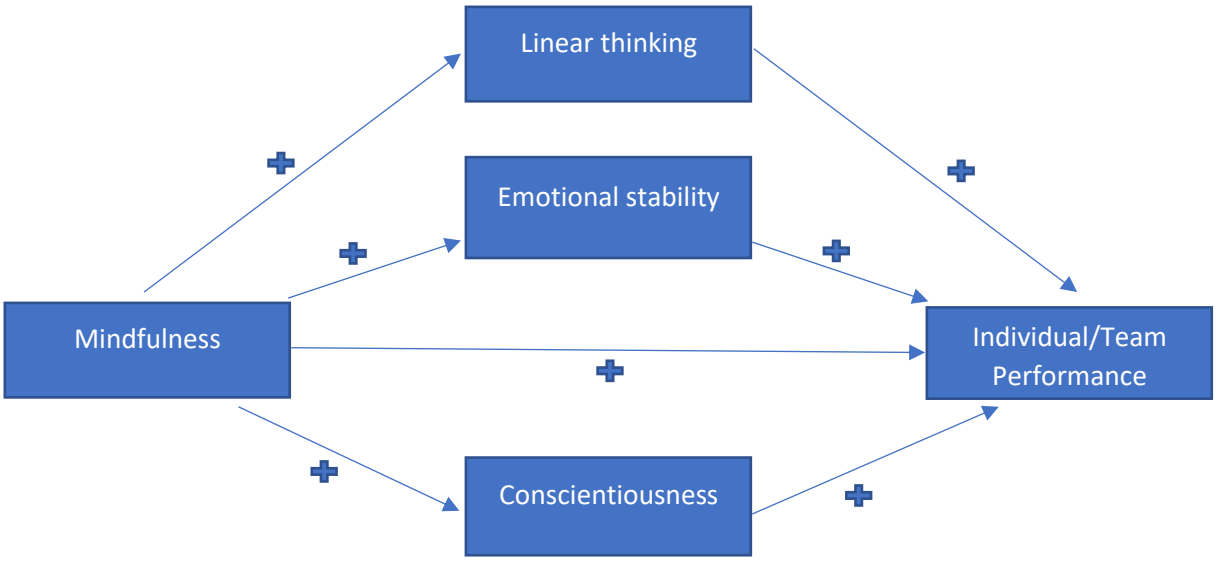


Figure 1: Research model

3. Methodology

3.1 Design

The dataset used for this study was collected before this study was initiated from students of an anonymised course and programme at the University of Twente (UT). The data was collected using a self-report questionnaire which included verified scales that are relevant to capture meaningful data on the variables under observation for this study. This includes the independent variable (mindfulness) and three mediators (linear thinking, emotional stability and conscientiousness). The questionnaire consisted of statements and closed-ended questions where the respondents were asked to select an answer from list of options provided, which is a five-point Likert scale. The sample for this study included 160 respondents comprised of students from an anonymised course and programme at UT. The students completed an individual and group assignment for the same course. The individual and group grades from the course were used as direct measures of individual and

team performance respectively. The following sections provide more information on the scales used for this study, along with the data analysis tools and techniques used to test the hypotheses.

3.2 Measurement scales

3.2.1 Mindfulness

The Mindful Attention and Awareness Scale (MAAS) (Brown & Ryan, 2003) was used to gather data about mindfulness. MAAS is an important self-report instrument that has been used in several studies about mindfulness (Stillman et al., 2014). MAAS consists of 15 items that are assumed to measure one's disposition to be attentive and aware of the present-moment phenomena in daily life situations (Brown & Ryan, 2003). Each item is measured with a 5-point Likert scale (1 = occurs almost all the time; 5 = almost never occurs), where high sores are associated with greater mindfulness (Brown & Ryan, 2003).

The items are spread across the multiple domains including cognitive, physical and emotional domains. Interestingly, during the scale construction, the items that directly reflected greater attention and awareness- two of the core domains of mindfulness based on the arguments presented in the literature review- were left out. This was due to the significantly low loadings of these items found in the factor analysis during the scale construction (Brown & Ryan, 2003). However, there has been criticism surrounding the negative wordings of the items (see table) of MAAS (Hofling et al., 2011). According to Hofling et al. (2011), the negative wording of the items correspond to construct validity concerns of this self-report questionnaire. Podsakoff et al. (2003) also suggested that the validity of mindfulness assessment may be jeopardised by wording issues. Brown & Ryan (2003) anticipated these criticisms and argued that mindless states are more readily accessible to humans than mindfulness, and that it is easier to put a finger on what is missing when it comes to discussing present-moment awareness.

3.2.2 Linear thinking

To measure linear thinking, Epstein et al. (1996) Rational-Experiential Inventory (REI) was used. More specifically, the short version Epstein et al. (1998), which consists of 10 items compared to the 59-item scale originally constructed. The 10 items were selected based on the highest factor loadings (Epstein et al., 1998). The 10 items are evenly distributed to measure linear and non-linear cognitive styles of the respondents with a 5-point Likert scale (1 = completely false to 5 = completely true). The mean scores of the 5 items for each of linear and non-linear cognitive style are calculated to determine the cognitive style of an individual. Therefore, a high score for either category means that an individual possesses that cognitive style.

3.2.3 Emotional stability and Conscientiousness

Emotional stability and conscientiousness- two of the Big Five personality traits- were measured using Thompson's (2008) adapted version of Saucier's (1994) Big Five mini-markers, also known as the International English Mini-Markers (IEMM) (Thompson, 2008). This instrument consists of 40 items that measure the Big Five dimensions of personality- extraversion, openness, agreeableness, emotional stability and conscientiousness (Thompson, 2008). The IEMM was chosen over the range of other instruments that measure the Big Five personality constructs because of the following reasons:

- The IEMM was developed to ensure it captures accurate response from non-native English speakers as well it does from native speakers (Thompson, 2008). The construction of this instrument involved studying both English-speaking and bilingual samples (Thompson, 2008). Since the sample of this study are largely non-native English speakers, this instrument was deemed most appropriate for this survey.
- The IEMM consists of relatively less items compared to other similar instruments. For instance, two popular personality test instruments, Costa & McCrae's (1992) NEO-PI-R has 240 items, and the NEO-FFI also by McCrae & Costa (2003) contains 60 items. Therefore, considering the attention span of respondents, this instrument was considered to be more effective and efficient in capturing data.

Personality measuring instruments such as IEMM are constructed using conventional factor models such as exploratory factor analysis (EFA) or principal component analysis (PCA) (Ginns et al., 2014). Thus, such instruments are generally assumed to clearly represent the data (e.g. Goldberg, 1992, McCrae & Costa, 1987, Saucier and Goldberg, 1996; Thompson, 2008).

3.2.4 Individual and team performance

The sample of this study involved students from a specific course, where they completed an individual and group assignment. Hence, the grades for those individual and group assignments were logically used as direct measures of individual and team performance respectively. However, not every student from each group participated in the survey, and the group numbers were also not available in the dataset. As a result, the group grades were measured and stored per individual rather than per group in the dataset .

3.2.5 Reliability of scales

Cronbach's Alpha was used to determine the reliability of the scales used in this study since it is the most widely used method to report scale reliability (Schrepp, 2020). Cronbach's Alpha measures the internal consistency of the different items in an instrument to determine whether the items reliably

reflect the construct (Dooley, 2001). Cronbach's Alpha of at least 0.6-0.7 is considered acceptable as it indicates an acceptable level of reliability (Hair et al., 2010; Loewenthal, 2010).

The following table displays the Cronbach's Alpha for each construct used in this study. As shown in Table 1, the Cronbach's Alpha for each of the constructs is above 0.6, which indicates good reliability. Since the Big Five Mini Markers were used to measure emotional stability and conscientiousness, the overall reliability of the scale was also measured. The Cronbach's Alpha for the Big Five dimensions was 0.82. Furthermore, the separate Cronbach's Alpha for emotional stability and conscientiousness were also above the par value with 0.77 and 0.86 respectively.

Construct	Cronbach's Alpha	Number of Items	Items removed
Mindfulness	0.80	15	0
Linear thinking	0.69	5	0
Big five	0.82	40	0
Emotional stability	0.77	8	0
Conscientiousness	0.86	8	0

Table 1: Scale reliability

3.3 Data analyses

3.3.1 Correlation matrix

Construct	Mindfulness	Linear thinking	Emotional stability	Conscienti-ousness	Individual grade	Group grade
Mindfulness	1					
Linear thinking	0.15	1				
Emotional stability	0.37**	0.15	1			
Conscienti-ousness	0.16*	0.12	0.12	1		
Individual grade	0.20*	0.08	0.06	0.12	1	
Group grade	0.01	0.15	-0.02	-0.02	0.09	1

Table 2: Pearson correlation

$*p < 0.05$ (2-tailed) $**p < 0.01$ (2-tailed)

Table 2 displays the Pearson correlation coefficients between the variables under observation in this study. It is the most common measure of correlation to observe linear relationships between continuous variables (Chao, 2017). As is can be observed in the Table 2, mindfulness and emotional stability are significantly correlated. Furthermore, there is also a positive significant correlation between mindfulness and conscientiousness. Finally, Table 2 also displays a significant positive correlation between mindfulness and individual grade.

3.3.2 Data analysis methods

In order to assess the direct effects of mindfulness on individual performance (H1) and team performance (H2), linear regression was performed in SPSS. Furthermore, the mediating effects of linear thinking, emotional stability and conscientiousness were tested using the SPSS version of PROCESS. PROCESS is a statistical tool developed by Andrew Hayes that can run regression analyses containing moderators and mediators (Hayes, 2013). The Sobel test (Sobel, 1982) was also considered for this analysis, but it requires extensive manual calculations. Furthermore, the Sobel test has also received criticism for requiring a large sample size to conduct mediation analyses, since it is reliant on the standard normal distribution (Abu-Bader & Jones, 2021). PROCESS, on the other hand, uses bootstrapping methods that do not depend on assumptions, and reduces the risk of type I error (Abu-Bader & Jones, 2021; Hayes, 2013).

Additional steps were taken and careful considerations were made in order to ensure that using a bootstrapping technique was the optimal choice of data analysis method for this study, which are outlined as follows. First, since mediation analysis follows the same assumptions as linear regression (Author, 2016), as it is part of a regression analysis, the assumptions were checked while conducting the initial analyses. The findings of this preliminary analyses showed that the assumptions were met for the dependent variable, individual grade. However, for group grade, none of the assumptions were met convincingly (see Appendix A for reference). The outliers found in the distribution played a key role in not meeting the normality assumption, for instance. However, the outliers were considered to be natural variations within the dataset, also known as true outliers (Abu-Bader & Jones, 2021). Since these outliers are not products of measurement errors or data-entry errors, they were kept in the dataset for the testing of the hypotheses. As discussed earlier in this section, since bootstrapping requires fewer assumptions, PROCESS was considered to be more reliable, and hence, suitable to conduct this study.

Second, one of the limitations of PROCESS outlined by Hayes (2012) is that the dependent variables must be continuous. This statistical tool does not have any built-in function to include categorical

variables (Hayes, 2012). However, all the variables for this study- independent, dependent and mediators- are all continuous. Therefore, considering the factors discussed, PROCESS was chosen as the suitable statistical tool to test the mediated relationships in this study.

4. Results

This section presents and evaluates the results of the data analyses conducted to test each if the hypotheses. A key consideration was made regarding the conditions for conducting mediation analyses laid out by Baron and Kenny (1986). In summary, the key element of conducting mediation analyses based on these conditions is that the independent variable must be a significant predictor of the dependent variable, otherwise mediation cannot be assumed (Baron and Kenny, 1986). While conducting the analyses for this study, it was found that the effect of mindfulness on one of the dependent variables, group grade, was not significant. However, this particular step for mediation has been widely criticised by researchers who argued that mediation can exist even when the relationship between the independent and dependent variable is not significant (Abu-Bader & Jones, 2021; MacKinnon et al., 2007; Rucker et al., 2011; Saunders & Blume, 2018). Furthermore, bootstrapping is often used as an extension, or replacement, of Baron and Kenny's (1986) approach (Abu-Bader & Jones, 2021). Based on these arguments, it was decided to continue with the mediation analyses to investigate the relationship between mindfulness and group grade.

H1: Mindfulness positively affects individual performance.

R-squared	b	Standard error	t	p-value
0.042	0.377	0.145	2.604	<0.05

Table 3

As summarised in Table 3, there is a significant positive effect of mindfulness on the dependent variable individual grade ($b=0.38$, $t=2.60$, $p<0.05$). Hence, this hypothesis can be supported. In other words, in line with theory, the direct effect of mindfulness of individual performance is significant. Moreover, the r-squared entails that 4.2% of change in individual grade can be explained by mindfulness.

H2: Mindfulness positively affects team performance.

R-squared	b	Standard error	t	p-value
0.000	0.024	0.144	0.169	>0.05

Table 4

Table 4 displays the results of the regression analysis to test the relationship between mindfulness and the dependent variable group grade. As it can be observed in the table, the effect of mindfulness on group grade is not significant (b=0.02, t=0.17, p>0.05). Furthermore, the r-squared value shows that the variation in group grade cannot be explained by mindfulness at all. Therefore, the hypothesis is rejected. Contrary to theory, the effect of mindfulness on team performance is not significant.

H3: Linear thinking significantly mediates the relationship between mindfulness and individual performance.

Variable / Effect	b	SE	t	p	95% CI	
Mindfulness → Individual grade	0.36	0.15	2.49	<0.05	0.07	0.65
Mindfulness → Linear thinking	0.15	0.09	1.79	>0.05	-0.02	0.32
Mindfulness → Linear thinking → Individual grade	0.08	0.14	0.61	>0.05	-0.18	0.35
Effects						
Direct effect	0.36	0.15	2.49	<0.05	0.07	0.65
Indirect effect*	0.01	0.03			-0.04	0.07
Total effect	0.38	0.14	2.60	<0.05	0.09	0.66

Table 5

**Based on 5000 bootstrap samples*

As shown in Table 5, the effect of mindfulness on the mediator, linear thinking, is not significant with a p-value greater than 0.05. The direct effect of mindfulness on individual performance is significant (b=0.38, t=2.59, p<0.05). Finally, the table shows that the indirect effect based on 5000 bootstrap samples is approximately 0.003 with a 95% bootstrap confidence interval of -0.04 (lower limit) and 0.03 (upper limit). Since "zero" falls between the upper and lower limits of the 95% confidence interval, the indirect effect is not significant. Therefore, the hypothesis can be rejected. In other words, contrary to theory, linear thinking does not significantly mediate the relationship between mindfulness and individual performance.

H4: Linear thinking significantly mediates the relationship between mindfulness and team performance.

Variable / Effect	b	SE	t	p	95% CI	
Mindfulness → Group grade	0.01	0.14	0.07	>0.05	-0.27	0.29
Mindfulness → Linear thinking	0.06	0.07	0.75	>0.05	-0.09	0.20
Mindfulness → Linear thinking → Group grade	0.24	0.15	1.58	>0.05	-0.06	0.55
Effects						
Direct effect	0.01	0.14	0.07	>0.05	-0.27	0.29
Indirect effect*	0.01	0.02			-0.03	0.07
Total effect	0.02	0.14	0.17	>0.05	-0.26	0.31

Table 6

**Based on 5000 bootstrap samples*

As it can be observed in Table 6, the effect of mindfulness on linear thinking is not significant ($p>0.05$) in line with the results of the previous hypothesis. The direct effect of mindfulness on group performance is also not significant ($b=0.01$, $t=0.07$, $p>0.05$). Furthermore, the indirect effect based on 5000 bootstrap samples is also not significant ($b=0.01$, Bootstrap CI_{95}=-0.03 and 0.07) since zero falls within the upper and the lower limits of the 95% confidence interval. Hence, the hypothesis can be rejected. Therefore, contrary to expectations, linear thinking does not significantly mediate the relationship between mindfulness and team performance.

H5: Emotional stability significantly mediates the relationship between mindfulness and individual performance.

Variable / Effect	b	SE	t	p	95% CI	
Mindfulness → Individual grade	0.38	0.16	2.49	<0.05	0.08	0.70
Mindfulness → Emotional stability	0.42	0.09	4.96	<0.05	0.26	0.60
Mindfulness → Emotional stability → Individual grade	-0.03	0.13	-0.15	>0.05	-0.29	0.25
Effects						
Direct effect	0.39	0.16	2.49	<0.05	0.08	0.70
Indirect effect*	-0.01	0.07			-0.15	0.11
Total effect	0.38	0.14	2.63	<0.05	0.09	0.67

Table 7

**Based on 5000 bootstrap samples*

The results summarised in Table 7 shows that the effect of mindfulness on the mediator, emotional stability, is significant with p<0.05. The direct of mindfulness on individual performance is also significant (b=0.38, t=2.49, p<0.05). However, the indirect effect is not significant since zero falls within the 95% bootstrap confidence interval of -0.15 (lower limit) and 0.11 (upper limit). Interestingly, the sign of the relationship also changes to negative, contrary to expectations. Therefore, the hypothesis can be rejected. Contrary to theoretical expectations, it can be concluded that emotional stability does not significantly mediate the relationship between mindfulness and individual performance.

H6: Emotional stability significantly mediates the relationship between mindfulness and team performance.

Variable / Effect	**b**	**SE**	**t**	**p**	**95% CI**	
Mindfulness → Group grade	0.04	0.16	0.29	>0.05	-0.26	0.35
Mindfulness → Emotional stability	0.43	0.09	4.94	<0.05	0.26	0.60
Mindfulness → Emotional stability → Group grade	-0.05	0.13	-0.37	>0.05	-0.31	0.21
Effects						
Direct effect	0.04	0.16	0.29	>0.05	-0.26	0.35
Indirect effect*	-0.02	0.07			-0.17	0.09
Total effect	0.02	0.14	0.16	>0.05	-0.26	0.31

Table 8

**Based on 5000 bootstrap samples*

As displayed Table 8, the effect of mindfulness on emotional stability is significant as expected in theory (b=0.43, t=4.94, p<0.05). The direct effect of mindfulness on group grade is not significant (p>0.05). Furthermore, the indirect effect is also not as it can be observed in the table from the confidence intervals (Bootstrap CI_{95} = -0.17 and 0.09). Furthermore, similar to the results for individual grade, the indirect effect is negative, which contradicts the theory. As a result of these observations, the hypothesis is rejected. The mediating effect of emotional stability between mindfulness and team performance is not significant, which is contrary to what was expected based on the theorical foundation.

H7: Conscientiousness significantly mediates the relationship between mindfulness and team performance.

Variable / Effect	b	SE	t	p	95% CI	
Mindfulness → Group grade	0.03	0.15	0.22	>0.05	-0.26	0.32
Mindfulness → Conscientiousness	0.20	0.10	2.01	<0.05	0.004	0.40
Mindfulness → Conscientiousness → Group grade	-0.04	0.12	-0.34	>0.05	-0.27	0.19
Effects						
Direct effect	0.03	0.15	0.22	>0.05	-0.26	0.32
Indirect effect*	-0.01	0.02			-0.06	0.04
Total effect	0.02	0.14	0.17	>0.05	-0.26	0.32

Table 9

**Based on 5000 bootstrap samples*

As expected based on theory, the effect of mindfulness on conscientiousness is significant (b=0.20, t=2.01, p<0.05). Similar to previous results in this section, the direct effect of mindfulness on group grade is not significant in this model (p>0.05). Moreover, the indirect is negative and also not significant (b=-0.01, Bootstrap CI_{95} = -0.06 and 0.04) contrary to expectations. Hence, based on the results summarised in Table 9, the hypothesis is rejected. In other words, conscientiousness does not significantly mediate the relationship between mindfulness and team performance.

H8: Conscientiousness significantly mediates the relationship between mindfulness and individual performance.

Variable / Effect	b	SE	t	p	95% CI	
Mindfulness → Individual grade	0.35	0.15	2.39	<0.05	0.06	0.64
Mindfulness → Conscientiousness	0.42	0.09	4.96	<0.05	0.26	0.60
Mindfulness → Conscientiousness → Individual grade	0.12	0.12	1.1	>0.05	-0.11	0.35
Effects						
Direct effect	0.35	0.15	2.39	<0.05	0.08	0.70
Indirect effect*	0.03	0.03			-0.03	0.09
Total effect	0.38	0.14	2.60	<0.05	0.09	0.67

Table 10

**Based on 5000 bootstrap samples*

As it can be observed in Table 10, the direct effect of mindfulness on individual grade, and the effect of mindfulness on conscientiousness are both significant (p<0.05). However, the indirect effect is not

significant (b=0.03, Bootstrap CI_{95} = -0.03 and 0.09) since zero falls within the upper and lower limits of the 95% bootstrap confidence interval. As a result, the hypothesis is rejected. Contrary to theoretical expectation, conscientiousness does not significantly mediate the relationship between mindfulness and individual performance.

The following section offers discussions regarding the key findings presented in this section, and how they contribute to or differ from theory.

5. Discussion and Conclusion

5.1 Key Findings

Interestingly, the only hypothesis that was in line with theory was the positive effect of mindfulness on individual performance. Therefore, mindful individuals are more likely to perform better at their jobs compared to those who are not mindfully aware. All the indirect relationships tested in this study proved to be counterintuitive. Contrary to theory, The indirect effects of linear thinking, emotional stability and conscientiousness did not significantly explain the relationship between mindfulness and the dependent variables, individual and team performance. However, despite the non-significant outcomes, there were a few positive takeaways that are worth mentioning. One of them being the significant relationship between mindfulness and emotional stability, which is in line with theory. Going back to Dane's (2011) definition of mindfulness, it was theorised that mindfulness attunes an individual to the present-moment both internally and externally. Therefore, a mindful individual is less likely to be neurotic, which is a product of ruminative thinking and mindlessness, and more likely to be calm and composed. This can be confirmed by the results of this relationship. The significant positive effect on mindfulness on conscientiousness in the results of this study was also expected based on the theoretical framework. Conscientious individuals are organised, detail oriented, and hence, more productive in their accomplishing their tasks (Barrick & Mount, 2015). Mindful individuals are less likely to engage in counterproductive activities, which allows them to perform better at their tasks compared to individuals that are not mindfully aware (Barrick & Mount, 2015). This argument can be supported by the findings of this study.

Based on Dane's (2011) definition, mindfulness also widens the receptive state of an individual which was initially thought to enhance team performance in the theoretical framework. However, the results suggest that mindfulness is not a significant predictor of team performance, since the direct of effect of mindfulness on group grade was not significant. Since the mindfulness scores were only observed at an individual level, a mindful individual may have performed well in their individual assignment, but their group grade may have been affected by factors outside of their control (e.g.

lack of effort from one or more group members) since the group grade is shared by the efforts of multiple students.

The same argument could be used to explain the non-significant indirect relationships between mindfulness and team performance through the mediator variables- linear thinking, emotional stability and conscientiousness. The mindfulness score, emotional stability, conscientiousness, or linear cognitive style of one individual is perhaps not likely to affect the group grade significantly if the other group members had a low score in one or more of these constructs based on the survey. However, outcomes of these indirect relationships for individual performance were also non-significant contrary to expectations. However, it is worth mentioning a few limitations that may, to some extent, explain the non-significant results, and perhaps even motivate future research with a different approach altogether. The following sub-section highlights and discusses some of the shortcomings of this study which may have influenced the data analyses and, consequently, the outcomes.

5.2 Limitations

The group numbers of the students were not available in the dataset. Also, not all members of each group participated in the survey, hence, it was not possible to aggregate the scores of the constructs under observation at team level (e.g. team mindfulness). Hence, it can be argued that the effect of mindfulness, along with the effects of the mediators, on team performance do not paint a clear picture of how the effect of these variables on team performance. Although it cannot be argued that, for instance, the effect of team mindfulness could have had a significant effect on team performance, the findings of such an analysis would be more conclusive in terms of how these variables are related.

The second limitation of this study lie in the theoretical framework. First, there is no agreed-upon operational definition of mindfulness. Many researchers have highlighted the ambiguity surrounding mindfulness as a construct, which leads to construct validity concerns (Good et al., 2016; Lutz et al., 2015; Passmore, 2019). The hypotheses of this study are built on the definition of mindfulness offered by Dane (2011), who combines several common aspects found in the various definitions of both trait and state mindfulness. Although this definition is widely recognised by scientists, it is still not an operational definition of the construct due to the fact that there are multiple conceptualisations of mindfulness that exist in mindfulness literature. This is a general limitation of mindfulness research. This ambiguity also makes it difficult to compare studies regarding mindfulness

(Analayo, 2018). Furthermore, since the data used for this study was pre-collected and received, the design of the study was limited. More specifically, the variables selected for this study were limited to what was available in the dataset. Hence, the theoretical framework was based on the constructs with available data. As a result, the scope of the study was limited.

5.3 Practical implications

The only practical implication based on the findings of this study would be to be more mindful when engaging in an individual task as it has shown to positively affect individual performance. This study is based on trait mindfulness, which does not involve any interventions that are associated with state mindfulness. However, research has shown that mindfulness interventions used for state mindfulness, such as mediation, can improve trait mindfulness as well (Kiken et al., 2015). Therefore, engaging in such mindful activities would allow mindful individuals to further enhance their trait mindfulness, and as a result, improve their individual performance. However, further research is required in order to derive more meaningful practical implications of mindfulness on performance related outcomes. The following sections offers a number of suggestions for future research that could address the shortcomings of this study, and consequently, contribute to both theory and practice.

5.4 Future research

Future studies could emphasise the relationships between mindfulness, emotional stability, conscientiousness and individual performance, due to the significant relationships found between mindfulness and both emotional stability and conscientiousness, along with the significant direct effect of mindfulness on individual performance. Furthermore, conscientiousness has not been extensively studied with relation to mindfulness, which is evident in the literature review. Hence, it would be interesting to explore further how this construct is affected by mindfulness, and how it may influence task performance in a dynamic environment. In order to derive practical implications from mindfulness studies in an organisational setting, it would perhaps be more effective to use a different sample, such as employees at a specific company.

As mentioned in this chapter before, since one mindful individual may have minimal effect on the achievements or performance of a team, it would perhaps be interesting to investigate team mindfulness or collective mindfulness. Team level constructs may result in more meaningful performance related outcomes at team level. For instance, De Visser et al. (2014) studied the effect of team cognitive styles on the performance of new product development (NPD) project teams. The

study showed significant positive relationships between the variables under observation. Since, mindfulness has shown to positively affect one of the cognitive styles- linear thinking- in this study, the findings of De Visser et al. (2014) could serve as a basis for future studies to gain deeper insight into how team cognitive styles may affect the relationship between team mindfulness and team performance.

On the other hand, collective mindfulness, according to Wieck et al. (1999), is a practice that allows organisations to operate effectively under volatile and uncertain circumstances. This construct can be measured using the Mindful Organizing Scale constructed by Wieck and Sutcliffe (2007). There are also promising results in studies investigating the relationship between collective mindfulness and team performance, such as Oliver et al. (2017), which can be used as a basis for future research on this topic.

References

Abu-Bader, S., & Jones, T. V. (2021). Statistical mediation analysis using the sobel test and hayes SPSS process macro. *International Journal of Quantitative and Qualitative Research Methods*. https://ssrn.com/abstract=3799204

Anālayo B. (2019). Adding historical depth to definitions of mindfulness. *Current opinion in psychology*, *28*, 11–14. https://doi.org/10.1016/j.copsyc.2018.09.013

Author. 2016. Advanced and Multivariate Statistical Methods for Social Science Research. New York, NY: Oxford University Press.

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: the Kentucky inventory of mindfulness skills. *Assessment*, *11*(3), 191–206. https://doi.org/10.1177/1073191104268029

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Barrick, M. & Mount, M.. (2015). Select on Conscientiousness and Emotional Stability. 10.1002/9781119206422.ch2.

Barrick, M. R., Mount, M. K., & Judge, T. A. (2001). Personality and performance at the beginning of the new millennium: What do we know and where do we go next? International Journal of Selection and Assessment, 9, 9–30.

Bayle-Cordier, J., Rouvelin, P., Savoli, A., & Vieira-Da-Cunha, J. (2022). An integrative model of corporate mindfulness: A systematic literature review. Canadian Journal of Administrative Sciences/Revue canadienne des sciences de l'administration, 39(2), 199– 212. https://doi.org/10.1002/cjas.1655

Beach, M. C., Roter, D., Korthuis, P. T., Epstein, R. M., Sharp, V., Ratanawongsa, N., Cohn, J., Eggly, S., Sankar, A., Moore, R. D., & Saha, S. (2013). A multicenter study of physician mindfulness and health care quality. Annals of family medicine, 11(5), 421–428. https://doi.org/10.1370/afm.1507

Birtwell, K., Williams, K., van Marwijk, H. (2018). An Exploration of Formal and Informal Mindfulness Practice and Associations with Wellbeing. *Mindfulness* 10, 89–99 (2019). https://doi.org/10.1007/s12671-018-0951-y

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice, 11*(3), 230–241. https://doi.org/10.1093/clipsy.bph077

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. Journal of Personality and Social Psychology, 84(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry, 18*(4), 211–237. https://doi.org/10.1080/10478400701598298

Costa, P. T., & McCrae, R. R. (1992). The five-factor model of personality and its relevance to personality disorders. *Journal of Personality Disorders, 6*(4), 343–359. https://doi.org/10.1521/pedi.1992.6.4.343

Chao, C. (2017). Correlation, pearson. In M. Allen (Ed.), The sage encyclopedia of communication research methods (Vol. 1, pp. 267-270). SAGE Publications, Inc, https://dx.doi.org/10.4135/9781483381411.n99

Cleirigh, D. O., & Greaney, J. (2015). Mindfulness and group performance: An exploratory investigation into the effects of brief mindfulness intervention on group task performance. *Mindfulness, 6*(3), 601–609. https://doi.org/10.1007/s12671-014-0295-1

Dane, E. (2011). Paying Attention to Mindfulness and Its Effects on Task Performance in the Workplace. Journal of Management, 37(4), 997–1018. https://doi.org/10.1177/0149206310367948

Dane, E., & Brummel, B. J. (2014). Examining workplace mindfulness and its relations to job performance and turnover intention. Human Relations, 67(1), 105–128. https://doi.org/10.1177/0018726713487753

Davis, D. M., & Hayes, J. A. (2011). What are the benefits of mindfulness? A practice review of psychotherapy-related research. *Psychotherapy, 48*(2), 198–208. https://doi.org/10.1037/a0022062

De Visser, M., Faems, D., Visscher, K. and de Weerd-Nederhof, P. (2014), Team Cognitive Styles and NPD Project Performance. J Prod Innov Manag, 31: 1167-1180. https://doi.org/10.1111/jpim.12247

Dooley, D. (2001). Social Research Methods, 4th Edition. Pearson.

Driskell, James & Goodwin, Gerald & Salas, Eduardo & O'Shea, Patrick. (2006). What makes a good team player? Personality and team effectiveness. Group Dynamics: Theory, Research, and Practice. 10. 249 - 271. 10.1037/1089-2699.10.4.249.

Ellemers, N., de Gilder, D., & van den Heuvel, H. (1998). Career-oriented versus team-oriented commitment and behavior at work. Journal of Applied Psychology, 83(5), 717–730. https://doi.org/10.1037/0021-9010.83.5.717

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American Psychologist, 49*(8), 709–724. https://doi.org/10.1037/0003-066X.49.8.709

Evans, J. S. B. T. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. Annual Review of Psychology, 59: 255-278.

Fabbro, A., Crescentini, C., Matiz, A., Clarici, A., & Fabbro, F. (2017). Effects of Mindfulness Meditation on Conscious and Non-Conscious Components of the Mind. Applied Sciences, 7(4), 349. https://doi.org/10.3390/app7040349

Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., Baer, R. A., Brewer, J. A., & Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. *Journal of Management, 42*(1), 114–142. https://doi.org/10.1177/0149206315617003

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4*(1), 26–42. https://doi.org/10.1037/1040-3590.4.1.26

Ginns, Paul & Martin, Andrew & Liem, Gregory Arief & Papworth, Brad. (2014). Structural and concurrent validity of the International English Mini-Markers in an adolescent sample: Exploring analytic approaches and implications for personality assessment. Journal of Research in Personality. 53. 10.1016/j.jrp.2014.10.001.

Hanley, A., Warner, A. & Garland, E.L. (2015). Associations Between Mindfulness, Psychological Well-Being, and Subjective Well-Being with Respect to Contemplative Practice. *J Happiness Stud* 16, 1423–1436 (2015). https://doi.org/10.1007/s10902-014-9569-5

Hair, J. F. Black, W.C., Babin. B.J., Anderson, R.E. (2010). Multivariate Data Analysis, 7th Edition. Pearson education.

Hawkins DM. Diagnostics for conformity of paired quantitative measurements. Statistics in Medicine. 2002;21:1913–1935. http://dx.doi.org/10.1002/sim.1013

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from http://www.afhayes.com/ public/process2012.pdf

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* Guilford Press.

Herndon, F. (2008). Testing mindfulness with perceptual and cognitive factors: External vs. internal encoding, and the Cognitive Failures Questionnaire. *Personality and Individual Differences, 44*(1), 32–41. https://doi.org/10.1016/j.paid.2007.07.002

Hmieleski, K.M. and Corbett, A.C. (2006), Proclivity for Improvisation as a Predictor of Entrepreneurial Intentions. Journal of Small Business Management, 44: 45-63. https://doi.org/10.1111/j.1540-627X.2006.00153.x

Höfling, V., Moosbrugger, H., Schermelleh-Engel, K. & Heidenreich, T. (2011). Mindfulness or Mindlessness?: A Modified Version of the Mindful Attention and Awareness Scale (MAAS). *European Journal of Psychological Assessment. 27*. 59-64. 10.1027/1015-5759/a000045.

Hough, L. M. (1992). The "Big Five" personality variables—construct confusion: Description versus prediction. Human Performance, 5(1-2), 139–155. https://doi.org/10.1207/s15327043hup0501&2_8

Hülsheger, U. R., van Gils, S., & Walkowiak, A. (2021). The regulating role of mindfulness in enacted workplace incivility: An experience sampling study. *Journal of Applied Psychology, 106*(8), 1250–1265. https://doi.org/10.1037/apl0000824

Hutcherson, C. A., Seppala, E. M., & Gross, J. J. (2008). Loving-kindness meditation increases social connectedness. *Emotion, 8*(5), 720–724. https://doi.org/10.1037/a0013237

Hyland, P. K., Lee, R. A., & Mills, M. J. (2015). Mindfulness at work: A new approach to improving individual and organizational performance. *Industrial and Organizational Psychology: Perspectives on Science and Practice, 8*(4), 576–602. https://doi.org/10.1017/iop.2015.41

Kabat-Zinn, J. (2005). Coming to Our Senses: Healing Ourselves and the World through Mindfulness. New York: Hyperion.

Kiken, L.G., Garland, E.L., Bluth, K., Palsson, O.S., & Gaylord, S.A. (2015). From a state to a trait: Trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Personality and individual differences, 81*, 41-46 .

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions (pp. 3–90). Jossey-Bass.

Leyland, A., Rowse, G., & Emerson, L.-M. (2019). Experimental effects of mindfulness inductions on self-regulation: Systematic review and meta-analysis. *Emotion, 19*(1), 108–122. https://doi.org/10.1037/emo0000425

Loewenthal, K.M. (2010). An introduction to psychological tests and scales. Routledge; 2nd edition.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual review of psychology*, *58*, 593–614. https://doi.org/10.1146/annurev.psych.58.110405.085542

Masicampo, E. J., & Baumeister, R. F. (2007). Relating mindfulness and self-regulatory processes. Psychological Inquiry, 18(4), 255–258. https://doi.org/10.1080/10478400701598363

Meyer, A. (1998). Organizing for Improvisation: The Backstage Story of the Vancouver Jazz Concert and Symposium. Organization Science, 9(5), 569–576. http://www.jstor.org/stable/2640297

Montani, F., Vandenberghe, C., Khedhaouria, A., & Courcy, F. (2020). Examining the inverted U-shaped relationship between workload and innovative work behavior: The role of work engagement and mindfulness. Human Relations, 73(1), 59–93. https://doi.org/10.1177/0018726718819055

Motowidlo, S. J. (2003). Job performance. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), Handbook of psychology: Industrial and organizational psychology, Vol. 12, pp. 39–53). John Wiley & Sons Inc.

Mulla, Z. R., Govindaraj, K., Polisetti, S. R., George, E., & More, N. R. S. (2017). Mindfulness-based Stress Reduction for Executives: Results from a Field Experiment. Business Perspectives and Research, 5(2), 113–123. https://doi.org/10.1177/2278533717692906

Nadkarni, S. and Barr, P.S. (2008), Environmental context, managerial cognition, and strategic action: an integrated view. Strat. Mgmt. J., 29: 1395-1427. https://doi.org/10.1002/smj.717

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review, 108*(2), 291–310. https://doi.org/10.1037/0033-295X.108.2.291

Oliver, Nick & Senturk, Melike & Calvard, Thomas & Potočnik, Kristina & Tomasella, Maurizio. (2017). Collective Mindfulness, Resilience and Team Performance. Academy of Management Proceedings. 2017. 12905. 10.5465/AMBPP.2017.12905abstract.

Passmore, J. (2019), "Mindfulness in organizations (part 1): a critical literature review", Industrial and Commercial Training, Vol. 51 No. 2, pp. 104-113. https://doi.org/10.1108/ICT-07-2018-0063

Ployhart, R. E., Weekley, J. A., & Baughman, K. (2006). The Structure and Function of Human Capital Emergence: A Multilevel Examination of the Attraction-Selection-Attrition Model. The Academy of Management Journal, 49(4), 661–677. http://www.jstor.org/stable/20159791

Podsakoff, P., MacKenzie, S., Lee, J. & Podsakoff, N. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *The Journal of applied psychology*. 88. 879-903. 10.1037/0021-9010.88.5.879.

Pressing, J. (1988). Improvisation: Methods and models. In J. A. Sloboda (Ed.), *Generative processes in music: The psychology of performance, improvisation, and composition* (pp. 129–178). Clarendon Press/Oxford University Press.

Prewett, M. S., Brown, M. I., Goswami, A., & Christiansen, N. D. (2018). Effects of Team Personality Composition on Member Performance: A Multilevel Perspective. Group & Organization Management, 43(2), 316–348. https://doi.org/10.1177/1059601116668633

Rau, H. K., & Williams, P. G. (2016). Dispositional mindfulness: A critical review of construct validation research. *Personality and Individual Differences, 93,* 32–43. https://doi.org/10.1016/j.paid.2015.09.035

Reb, J., Narayanan, J. & Chaturvedi, S. (2014). Leading Mindfully: Two Studies on the Influence of Supervisor Trait Mindfulness on Employee Well-Being and Performance. Mindfulness 5, 36–45. https://doi.org/10.1007/s12671-012-0144-z

Remmers, C., Topolinski, S., & Koole, S. L. (2016). Why being mindful may have more benefits than you realize: Mindfulness improves both explicit and implicit mood regulation. *Mindfulness, 7*(4), 829–837. https://doi.org/10.1007/s12671-016-0520-1

Rucker, D.D., Preacher, K.J., Tormala, Z.L. and Petty, R.E. (2011), Mediation Analysis in Social Psychology: Current Practices and New Recommendations. *Social and Personality Psychology Compass, 5*: 359-371. https://doi.org/10.1111/j.1751-9004.2011.00355.x

Salas, E., Cooke, N. J., & Rosen, M. A. (2008). On Teams, Teamwork, and Team Performance: Discoveries and Developments. Human Factors, 50(3), 540–547. https://doi.org/10.1518/001872008X288457

Salas, E., & Fiore, S. M. (Eds.). (2004). *Team cognition: Understanding the factors that drive process and performance.* American Psychological Association. https://doi.org/10.1037/10690-000

Saucier, G. (1994). Mini-Markers: A brief version of Goldberg's unipolar Big-Five markers. *Journal of Personality Assessment, 63*(3), 506–516. https://doi.org/10.1207/s15327752jpa6303_8

Saunders, C. & Blume J. (2018), A classical regression framework for mediation analysis: fitting one model to estimate mediation effects, *Biostatistics*, *19*(4), 514-528, https://doi.org/10.1093/biostatistics/kxx054

Schrepp, M. (2020). On the Usage of Cronbach's Alpha to Measure Reliability of UX Scales. *Journal of usability studies, 15*(4), 247-258

Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of clinical psychology, 62*(3), 373–386. https://doi.org/10.1002/jclp.20237

Sobel, M.E. (1982) Asymptotic Confidence Intervals for Indirect Effects in Structural Equation Models. *Sociological Methodology, 13*, 290-321. https://doi.org/10.2307/270723

Stillman, C. M., Feldman, H., Wambach, C. G., Howard, J. H., Jr., & Howard, D. V. (2014). Dispositional mindfulness is associated with reduced implicit learning. *Consciousness and Cognition: An International Journal, 28,* 141–150. https://doi.org/10.1016/j.concog.2014.07.002

Thompson, E. R. (2008). Development and validation of an International English Big-Five Mini-Markers. *Personality and Individual Differences, 45*(6), 542–548. https://doi.org/10.1016/j.paid.2008.06.013

Vallabh, P., & Singhal, M. (2014). Workplace Spirituality Facilitation: A Person–Organization Fit Approach. Journal of Human Values, 20(2), 193–207. https://doi.org/10.1177/0971685814539407

Vera, D., & Crossan, M. (2005). Improvisation and Innovative Performance in Teams. *Organization Science, 16*(3), 203–224. https://doi.org/10.1287/orsc.1050.0126

Weick, K. E., Sutcliffe, K., & Obstfeld, D. (1999). Organizing for high reliability: Processes of collective mindfulness. Research in Organizational Behavior, 15(3), 81–123.

Weick, K. E., & Sutcliffe, K. M. (2007). *(2nd ed.). Jossey-Bass.*

Zhang, J., Ding, W., Li, Y., & Wu, C. 2013. Task complexity matters: The influence of trait mindfulness on task and safety performance of nuclear power plant operators. Personality and Individual Differences, 55: 433-439.

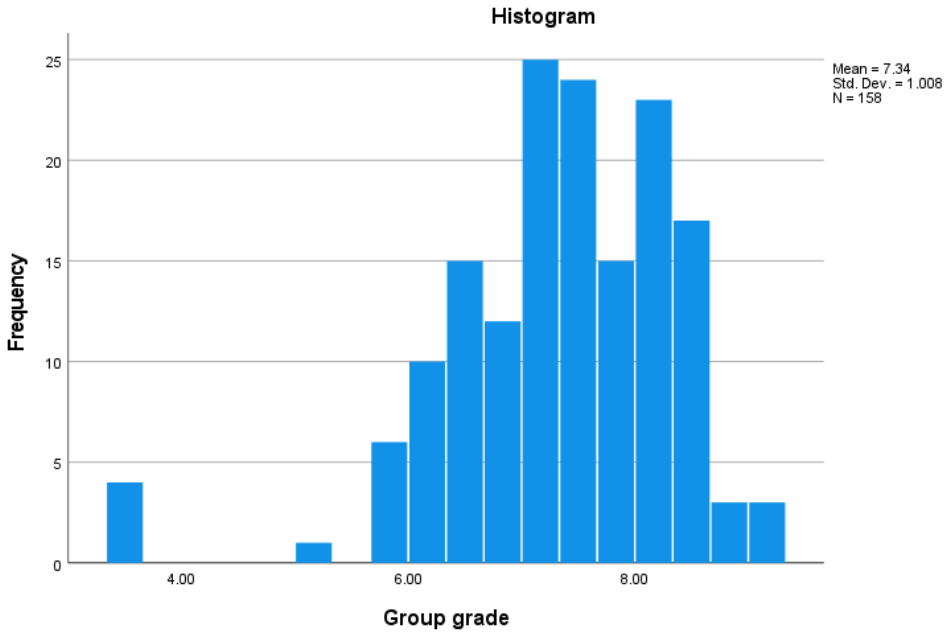
Zhang, J., & Wu, C. 2014. The influence of dispositional mindfulness on safety behaviors: A dual process perspective. Accident Analysis & Prevention, 70: 24-32.

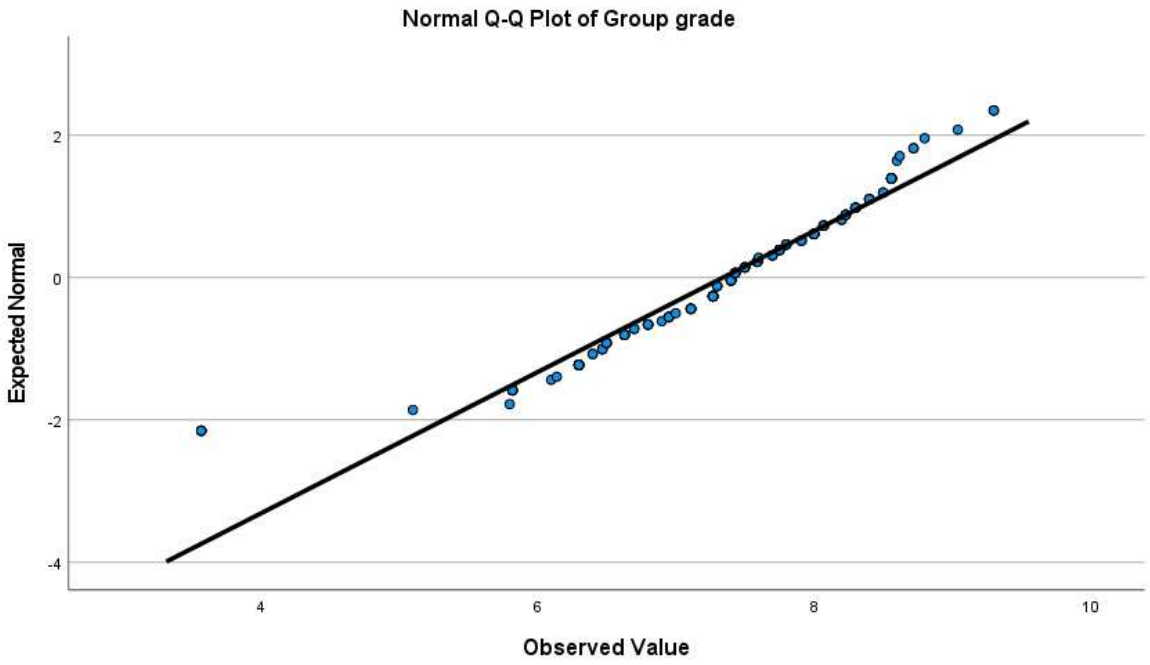
Zulfadil, Hendriani, S. and Machasin (2020), "The influence of emotional intelligence on team performance through knowledge sharing, team conflict, and the structure mechanism", Journal of Management Development, Vol. 39 No. 3, pp. 269-292. https://doi.org/10.1108/JMD-12-2018-0354

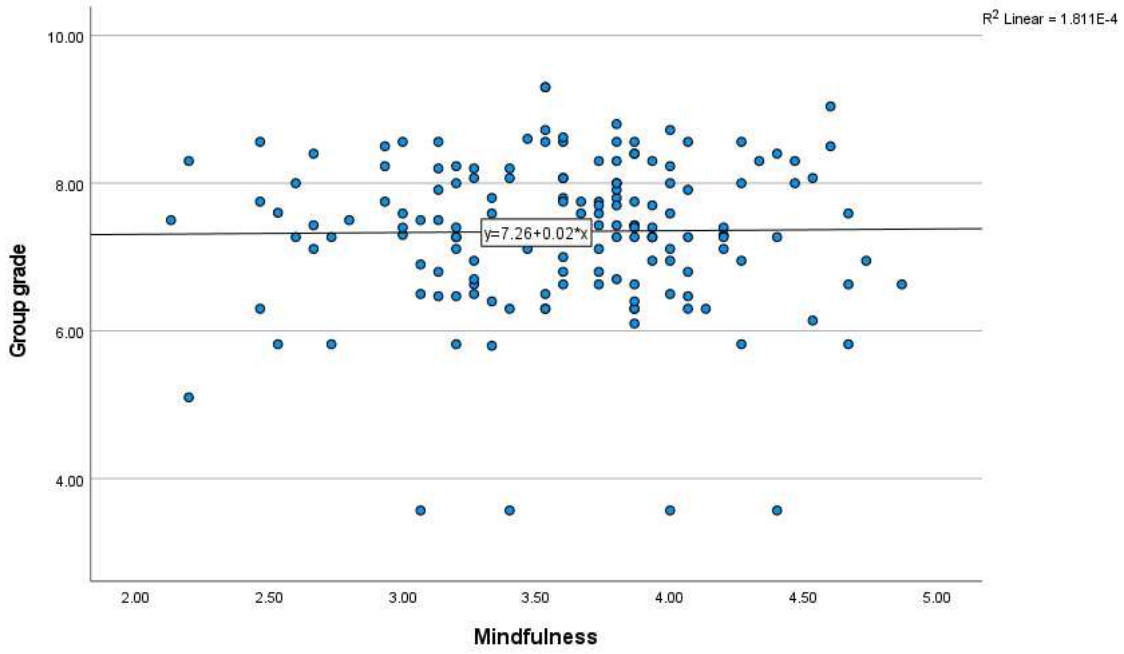
Appendices

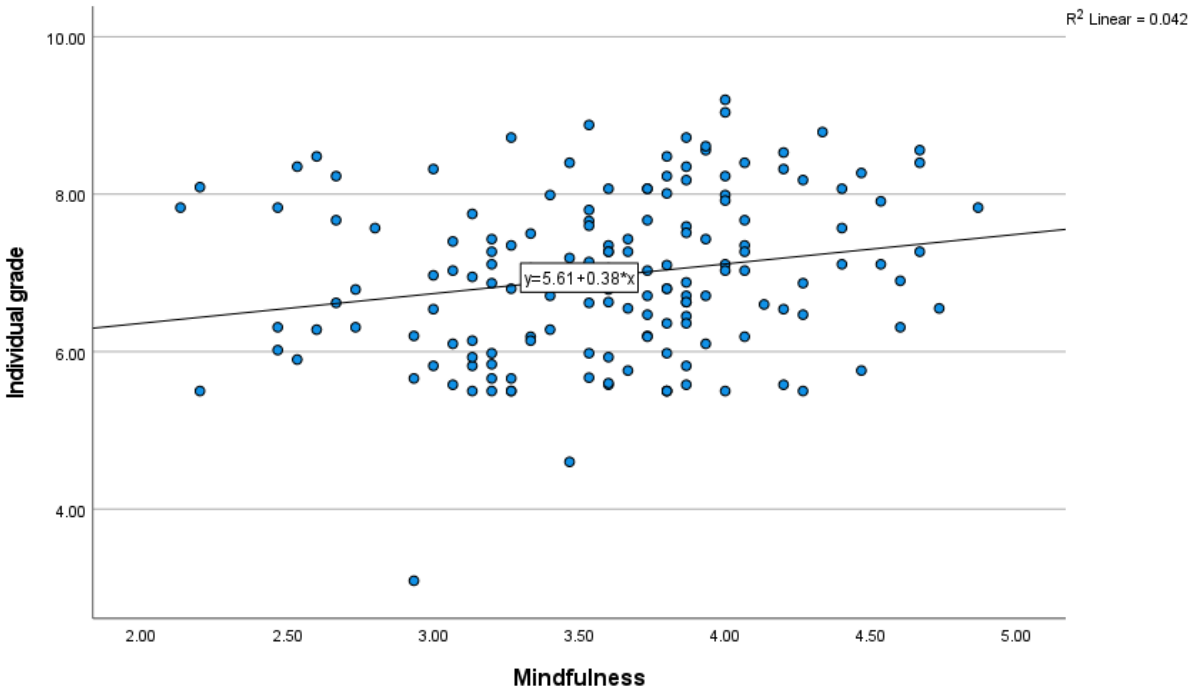
Appendix A: Assumptions tables and SPSS outputs

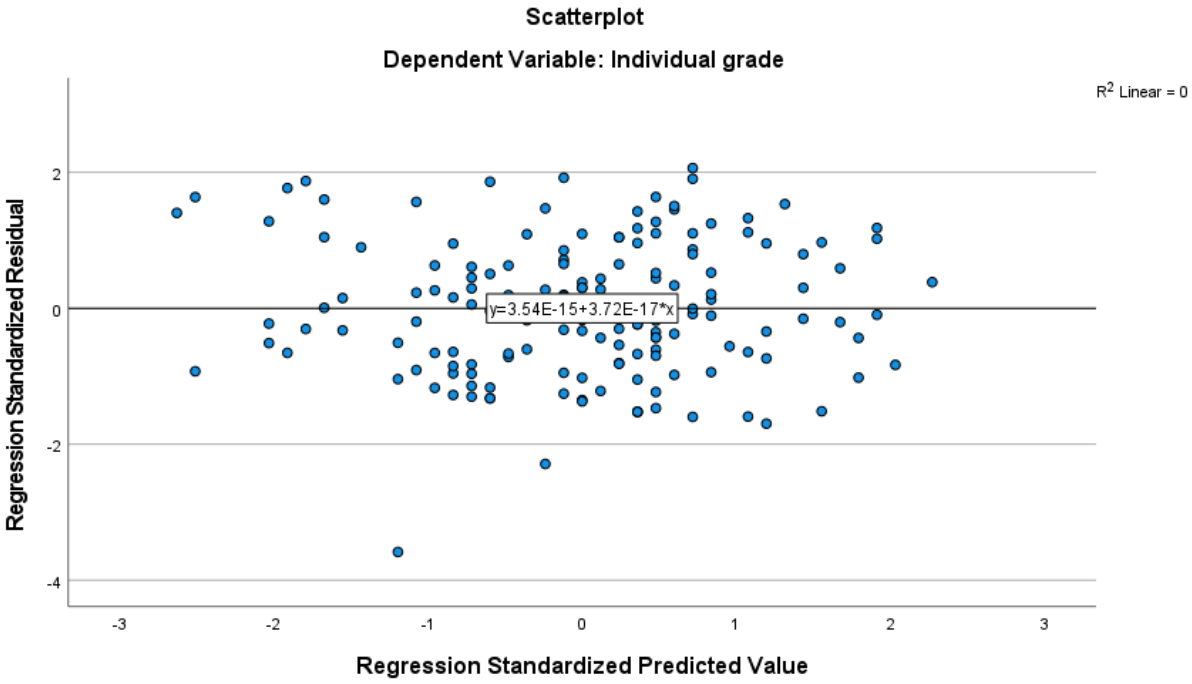
Variable	Skewness
Group grade	-1.253
Individual grade	-0.188
Mindfulness	-0.285
Emotional stability	-0.010
Cognitive style - linear	-0.734

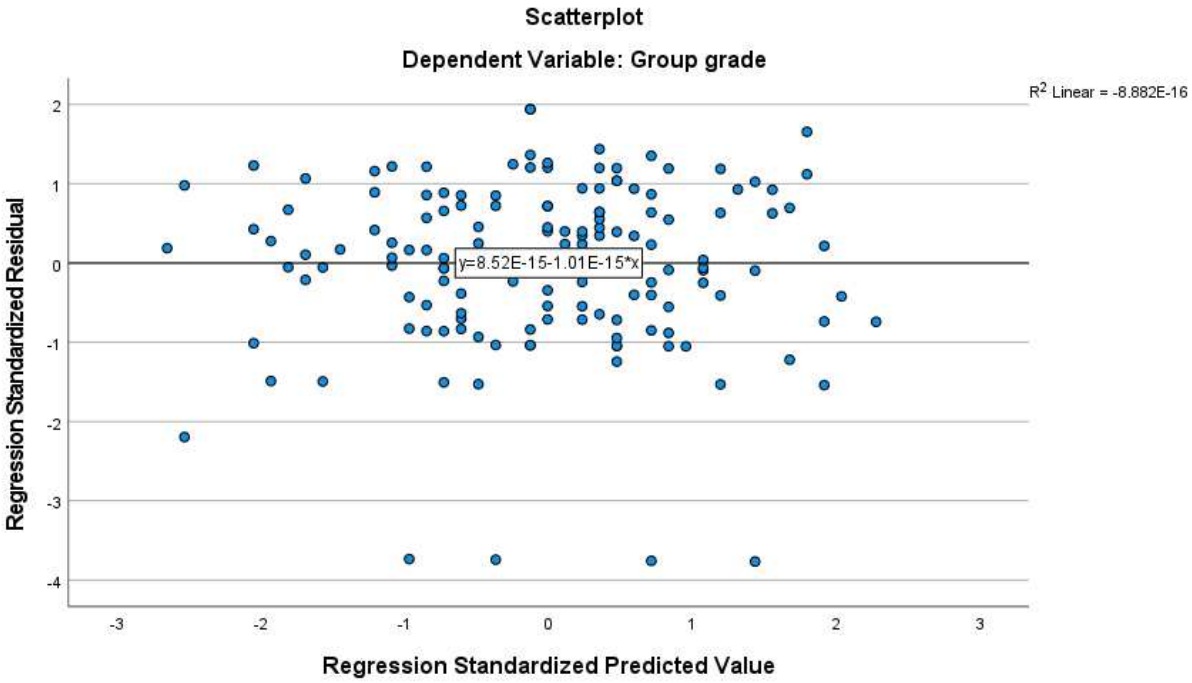


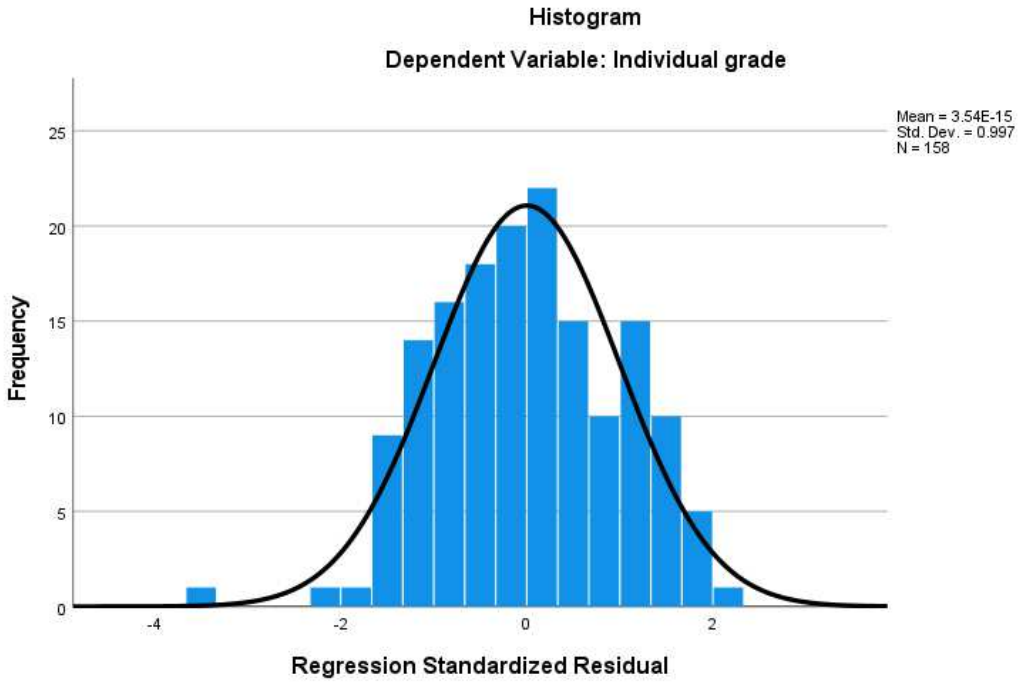

Normal Q-Q Plot of Group grade
Expected Normal
2
0
-2
-4
4
6
8
10
Observed Value

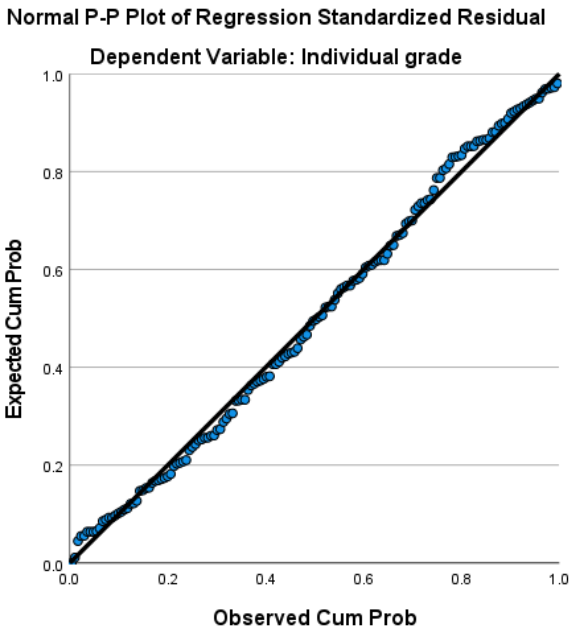

R2 Linear = 1.811E-4
10.00
8.00
6.00
4.00
y=7.26+0.02*x
Group grade
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Mindfulness


R² Linear = 0.042
10.00
8.00
6.00
4.00
Individual grade
y=5.61+0.38*x
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Mindfulness


Scatterplot
Dependent Variable: Individual grade
R² Linear = 0
2
0
-2
-4
Regression Standardized Residual
y=3.54E-15+3.72E-17*x
-3
-2
-1
0
1
2
3
Regression Standardized Predicted Value


Scatterplot
Dependent Variable: Group grade
R² Linear = -8.882E-16
y=8.52E-15-1.01E-15*x
Regression Standardized Residual
Regression Standardized Predicted Value
2
1
0
-1
-2
-3
-4
-3
-2
-1
0
1
2
3


Histogram
Dependent Variable: Individual grade
Mean = 3.54E-15
Std. Dev. = 0.997
N = 158
Frequency
Regression Standardized Residual
25
20
15
10
5
0
-4
-2
0
2



Appendix B: Results SPSS outputs

H1: Mindfulness → Individual performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.204[a]	.042	.036	1.01073

a. Predictors: (Constant), Mindfulness

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.926	1	6.926	6.780	.010[b]
	Residual	159.365	156	1.022		
	Total	166.292	157			

a. Dependent Variable: Individual grade

b. Predictors: (Constant), Mindfulness

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.608	.527		10.644	.000
	Mindfulness	.377	.145	.204	2.604	.010

a. Dependent Variable: Individual grade

H2: Mindfulness → Team performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.013[a]	.000	-.006	1.00792

a. Predictors: (Constant), Mindfulness

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.029	1	.029	.029	.866[b]
	Residual	160.513	158	1.016		
	Total	160.542	159			

a. Dependent Variable: Group grade

b. Predictors: (Constant), Mindfulness

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.259	.525		13.833	.000
	Mindfulness	.024	.144	.013	.169	.866

a. Dependent Variable: Group grade

H3: Mindfulness → Linear thinking → Individual performance

```
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0645      .0042      .2751      .6521     1.0000   156.0000      .4206

Model
             coeff         se          t          p       LLCI       ULCI
constant    3.4223      .2734    12.5168      .0000     2.8822     3.9624
Mind         .0606      .0751      .8075      .4206     -.0877      .2089

************************************************************************
OUTCOME VARIABLE:
 indiv

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2048      .0419     1.0279     3.3913     2.0000   155.0000      .0362

Model
             coeff         se          t          p       LLCI       ULCI
constant    5.4967      .7482     7.3468      .0000     4.0187     6.9746
Mind         .3746      .1454     2.5769      .0109      .0874      .6618
CogLin       .0325      .1548      .2103      .8337     -.2731      .3382


Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .3766      .1446     2.6038      .0101      .0909      .6623

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .3746      .1454     2.5769      .0109      .0874      .6618

Indirect effect(s) of X on Y:
          Effect     BootSE   BootLLCI   BootULCI
CogLin      .0020      .0156     -.0367      .0315
```

H4: Mindfulness → Linear thinking → Team performance

```
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0638      .0041      .2717      .6456     1.0000   158.0000      .4229

Model
             coeff         se          t          p       LLCI       ULCI
constant    3.4245      .2714    12.6189      .0000     2.8885     3.9605
Mind         .0598      .0744      .8035      .4229     -.0872      .2068

************************************************************************
OUTCOME VARIABLE:
 group

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1271      .0162     1.0060     1.2889     2.0000   157.0000      .2785

Model
             coeff         se          t          p       LLCI       ULCI
constant    6.4220      .7399     8.6790      .0000     4.9605     7.8835
Mind         .0097      .1435      .0678      .9460     -.2737      .2932
CogLin       .2444      .1531     1.5965      .1124     -.0580      .5468


Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0243      .1439      .1692      .8659     -.2599      .3086

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0097      .1435      .0678      .9460     -.2737      .2932

Indirect effect(s) of X on Y:
          Effect     BootSE   BootLLCI   BootULCI
CogLin      .0146      .0235     -.0262      .0685
```

H5: Mindfulness → emotional stability → individual performance

```
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2046      .0419     1.0279     3.3858     2.0000   155.0000      .0364

Model
             coeff         se          t          p       LLCI       ULCI
constant    5.6494      .5746     9.8325      .0000     4.5144     6.7844
Mind         .3872      .1562     2.4788      .0143      .0786      .6958
Emo         -.0247      .1343     -.1836      .8546     -.2900      .2406

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 indiv

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2041      .0417     1.0216     6.7799     1.0000   156.0000      .0101

Model
             coeff         se          t          p       LLCI       ULCI
constant    5.6080      .5269    10.6445      .0000     4.5674     6.6487
Mind         .3766      .1446     2.6038      .0101      .0909      .6623


Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .3766      .1446     2.6038      .0101      .0909      .6623

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .3872      .1562     2.4788      .0143      .0786      .6958

Indirect effect(s) of X on Y:
        Effect     BootSE   BootLLCI   BootULCI
Emo     -.0106      .0663     -.1583      .1090
```

H6: Mindfulness → emotional stability → team performance

```
OUTCOME VARIABLE:
 Emo

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3684      .1357      .3691    24.8100     1.0000   158.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.6764      .3163     5.3001      .0000     1.0517     2.3011
Mind          .4321      .0867     4.9810      .0000      .2607      .6034

************************************************************************************
OUTCOME VARIABLE:
 group

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0322      .0010     1.0215      .0816     2.0000   157.0000      .9217

Model
              coeff         se          t          p       LLCI       ULCI
constant     7.3404      .5711    12.8539      .0000     6.2124     8.4683
Mind          .0453      .1552      .2920      .7707     -.2613      .3519
Emo          -.0486      .1324     -.3669      .7142     -.3100      .2129

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0243      .1439      .1692      .8659     -.2599      .3086

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0453      .1552      .2920      .7707     -.2613      .3519

Indirect effect(s) of X on Y:
        Effect     BootSE   BootLLCI   BootULCI
Emo     -.0210      .0651     -.1688      .0893
```

H7: Mindfulness → Conscientiousness → Team performance

```
OUTCOME VARIABLE:
 Conscien

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1579      .0249      .4837     4.0400     1.0000   158.0000      .0461

Model
             coeff         se          t          p       LLCI       ULCI
constant    3.0322      .3621     8.3744      .0000     2.3171     3.7474
Mind         .1996      .0993     2.0100      .0461      .0035      .3957

************************************************************************
OUTCOME VARIABLE:
 group

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0299      .0009     1.0216      .0704     2.0000   157.0000      .9320

Model
             coeff         se          t          p       LLCI       ULCI
constant    7.3765      .6323    11.6656      .0000     6.1275     8.6255
Mind         .0321      .1461      .2195      .8265     -.2566      .3207
Conscien    -.0388      .1156     -.3353      .7379     -.2671      .1896


Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0243      .1439      .1692      .8659     -.2599      .3086

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .0321      .1461      .2195      .8265     -.2566      .3207

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Conscien    -.0077      .0244     -.0600      .0428
```

H8: Mindfulness → Conscientiousness → Individual performance

```
Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1651      .0273      .4843     4.3707     1.0000   156.0000      .0382

Model
              coeff         se          t          p       LLCI       ULCI
constant     3.0092      .3627     8.2960      .0000     2.2927     3.7258
Mind          .2082      .0996     2.0906      .0382      .0115      .4049

************************************************************************
OUTCOME VARIABLE:
 indiv

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .2206      .0487     1.0206     3.9655     2.0000   155.0000      .0209

Model
              coeff         se          t          p       LLCI       ULCI
constant     5.2338      .6322     8.2789      .0000     3.9850     6.4826
Mind          .3507      .1466     2.3926      .0179      .0612      .6403
Conscien      .1244      .1162     1.0699      .2863     -.1052      .3540


Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .3766      .1446     2.6038      .0101      .0909      .6623

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .3507      .1466     2.3926      .0179      .0612      .6403

Indirect effect(s) of X on Y:
            Effect     BootSE   BootLLCI   BootULCI
Conscien     .0259      .0297     -.0292      .0892
```