UNIVERSITY OF LINCOLN

MINDFULNESS-BASED STRENGTHS PRACTICE: A 'TOOLBOX' FOR SELF-EFFICACY IN HIGHER EDUCATION

Rebecca Jane Park

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School of Psychology

College of Social Science

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ABSTRACT

Mindfulness-Based Strengths Practice (Niemiec, 2014; MBSP) is an eight-week programme which is unique in its combined teaching of mindfulness and character strengths. In previous literature participants in the programme reported increases in psychological wellbeing, strengths use and employee performance (Ivtzan et al., 2016; Pang & Ruch, 2019a; Wingert et al., 2020). This thesis identifies the consistent outcomes of MBSP by replicating and extending the previous single-cohort studies into several iterations of the programme, and measuring changes in mindfulness, strengths use, self-efficacy, resilience, work engagement, wellbeing, depression, anxiety and stress. Qualitative accounts of the programme were also elicited to further elaborate participants' experience of the programme and identify additional themes not otherwise measured. The thesis also reports the development of a 6-week adaptation of MBSP, which addresses the requirement for shorter character development programmes in education contexts, while retaining the effectiveness of the original programme. In addition, this thesis explores which of the proposed active components of MBSP (mindfulness, character strengths and their mutual integration) contribute most to the elicitation of specific outcomes.

Multiple controlled intervention studies were conducted. In studies 1, 2 and 3, participants reported consistent increases in mindfulness, strengths use and self-efficacy in both the original structure of MBSP (MBSP-8) and the 6-week adaptation (MBSP-6). Increases in wellbeing and resilience were also observed with some study cohorts within Study 1 and Study 3, but not others. No increases in work engagement, depression, anxiety or stress were recorded. Qualitative analysis in Study 2 from MBSP participants highlighted the superordinate theme of 'the toolbox effect', in which participants reported using exercises from MBSP as coping strategies up to a year after completing the programme. Study 3 developed and validated a 6-week adaptation of MBSP which retained the same effects as MBSP-8 and produced marginally stronger effects. Study 4 identified a structural equation model presenting the 'Strengths over Mindfulness' theory, which identified strengths education (over mindfulness) as the most active component of MBSP. Study 5 aimed to test this empirically, by directly comparing interventions for each component of MBSP. Unfortunately, this chapter yielded disappointing results and further exploration is required.

Overall this thesis makes several unique contributions to the MBSP literature. Firstly, the finding that MBSP (both MSBP-8 and MBSP-6) increases not only strengths use, but also mindfulness and self-efficacy. These novel findings are replicated throughout all trials of MBSP within this thesis. Secondly, the thesis presents some understanding of the active components of MBSP, conceptualised as the ‘toolbox effect’, and the ‘strengths over mindfulness’ theory, suggesting that it is the character strengths taught in the programme that are largely responsible for the increases in self-efficacy and wellbeing reported. Thirdly, a novel, validated six-week adaptation of the intervention was presented (MBSP-6) which demonstrated clear increases in mindfulness, strengths use and self-efficacy, but also in resilience and wellbeing. The thesis therefore provides good support for the use of MBSP in higher education to promote self-efficacy among students, which may additionally improve wellbeing longitudinally, and offers MBSP-6 as a validated alternative where longer programmes may not be appropriate. Future research should look to empirically test the ‘strengths over mindfulness’ theory.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

MBSP	Mindfulness-Based Strengths Practice
MBSP-6	6-week adaptation of Mindfulness-Based Strengths Practice
MBSP-8	8-week Mindfulness-Based Strengths Practice
MBSR	Mindfulness-Based Stress Reduction
MBCT	Mindfulness-Based Cognitive Therapy
LKM	Loving-Kindness Meditation
BAMBA	British Association of Mindfulness-Based Approaches
MAAS	Mindful Attention Awareness Scale
DAAS	Depression, Anxiety and Stress Scale
SU	Strengths Use
SE	Self-efficacy
BR	Brief Resilience
PERMA	Positive Emotion, Engagement, Relationships, Meaning, Accomplishment
OWB	Overall Wellbeing
MED	First Year Medical Students
FSY	Foundation Science Year Students
PGR	Postgraduate Researchers
PSY	Second Year Psychology Students
SEM	Structural Equation Model

CHAPTER ONE: GENERAL INTRODUCTION

"Self-efficacy beliefs are at the core of every action that we all, whether teacher or student, undertake. These specific beliefs about perceptions of capability as related to individual tasks are not one of the most commonly talked about qualities of self, but self-efficacy beliefs are fundamental to everything." – Ritchie (2015, p vii)

As more universities seek to not only develop good academics, but to become 'flourishing institutions', the holistic wellbeing and life satisfaction of students is now an important mission of education (Chow, 2005; O'Neill, 1981). More institutions are beginning to include reference to wellbeing, character and flourishing in their mission statements and policy documents, with recent work leading to the creation of frameworks to enable this (e.g. Jubilee Centre for Character and Virtue & The Oxford Character Project, 2021). The aim of becoming a flourishing institution stems from 'positive education', which when related to universities has been defined as "the development of educational environments that enable the learner to engage in established curricula in addition to knowledge and skills to develop their own and others' wellbeing" (Oades et al., 2011, p.432). Here, Oades and colleagues (2011) establish that positive universities need to encourage the use of positive character strengths to achieve goals which in turn increase positive emotions, meaning, engagement and decrease mental illness.

This thesis suggests that self-efficacy, defined as an individual's belief in their ability to influence the events in life and achieve their goals (Bandura, 1977), is a vital component which universities should aim to increase in their students to achieve this due to it's defining role in goal-achievement, and influence on numerous positive effects, including wellbeing. In an attempt to provide a concise, established intervention for use in higher education, this thesis proposes the use of Mindfulness-Based Strengths Practice (Niemiec, 2014), a positive psychology intervention which incorporates the use of mindfulness skills and character strength education. Though no existing research has investigated its impact on self-efficacy, the programme directly targets all four of Bandura's sources of self-efficacy, and poses as an accessible and effective means of increasing self-efficacy in higher education students.

Self-Efficacy

Self-efficacy, as established by Bandura (1977), has been identified as not only important for academic achievement and learning styles in higher education, but also for student's social life and future career (Cheng et al., 2015) and to enable smooth life transitions (Kyndt et al., 2018). Self-efficacy is referred to as a personal resource factor, which buffers distress from experiences, determines whether coping behaviour is utilised and is a prominent predictor for subjective perceptions following experiences of failure (Bandura 1986; Jerusalem & Schwarzer, 1992).

Bandura describes that individuals high in self-efficacy approach difficult tasks as personal challenges rather than as threats, and additionally recover quickly after experiencing a failure (1985). Stronger self-efficacy is related to higher levels of achievement, better health, social integration (Bandura 1997), increases in work satisfaction, work-related performance, job satisfaction and improved mental health (Judge & Bono, 2001; Schutte, 2013; Stajkovic & Luthans, 1998), and is described as one of the most important protective factors against psychological stress (Schwarzer & Fuchs, 1996). Self-efficacy has additionally been used in studies of leadership, showing that higher self-efficacy and self-awareness are important for the self-empowerment of ethical leaders (Caldwell & Hayes, 2016).

This belief in one's abilities to successfully face the challenges ahead has been explicitly separated from related concepts such as self-esteem and self-regulation (Schunk & Zimmerman, 2006). However, there are several subtypes of self-efficacy which all have attracted psychological study. Williams and Rhodes (2014) provide a summary of several of these subtypes, such as action self-efficacy, coping self-efficacy, treatment self-efficacy, recovery self-efficacy, control self-efficacy and abstinence self-efficacy. Perhaps once of the most studied subtypes is that of academic self-efficacy. Given all of the holistic benefits of self-efficacy described above, it is therefore no surprise that it has a key role in education, with researchers and teachers seeking clear, effective means of increasing self-efficacy in their students.

Studies surrounding self-efficacy in educational settings are wide and far reaching. Student-focused research demonstrates that students high in self-efficacy experience higher levels of optimism, better academic performance and GPA, are better able to cope with stress, show higher retention in school and report higher levels of satisfaction (Chemers et al., 2001; Richardson et al., 2012; Zajacova et al., 2005). Similarly, teacher-focused studies on self-efficacy demonstrate that self-efficacy provides a protective buffer against high levels of stress and burnout in teachers (Schwarzer & Hallum, 2008), and higher levels of self-efficacy in teachers predict higher job satisfaction and engagement, and lower levels of emotional exhaustion (Skaalvik & Skaalvik, 2014).

Looking specifically at the role of self-efficacy in higher education, the meta-analysis of 64 articles conducted by Bartimote-Aufflick et al. (2015) serves as a useful summary. Here they found that higher levels of self-efficacy within higher education students was linked to value, self-regulation and metacognition, locus of control, intrinsic motivation and strategy learning use. The authors place great emphasis on the importance of self-efficacy within higher education, claiming that it is “perhaps the single most important (and reliable) predictor of university student achievement” (p. 1918). In this they found three main findings. Firstly, they identified the variables associated with self-efficacy as detailed above. Secondly, the meta-analysis showed that teachers can actively influence increases in self-efficacy within their students. Finally, they identified several ways in which the evaluation and study of self-efficacy within higher education can be improved.

As part of their meta-analysis Bartimote-Aufflick et al. (2015) reviewed intervention studies which reported increases in self-efficacy. Of the studies they examined, they found ten which showed that certain teaching strategies lead to increases in self-efficacy (e.g. Shaw, 2010). Further to this, they also identified seven intervention programme studies which demonstrated significant increases in self-efficacy (e.g. Papastergiou, 2010). Many existing self-efficacy interventions used in eduation are only focused on increasing academic self-efficacy (Bresó et al., 2010), can often be long interventions that take place over the course of over 20 weeks (Papinczak et al., 2006) or are designed for younger students (Grenner et al., 2020).

One positive psychology intervention from Bartimote-Aufflick et al.’s (2015) meta-analysis which sought to incorporate positive psychology was designed for first year psychology students by adding positive psychology into a voluntary study skills programme (Macaskill & Denovan, 2013). As part of this programme, participants learnt about their own ‘character strengths’. Whilst this is a promising start, the intervention again focused on the develop academic self-efficacy with a focus on autonomous learning and academic confidence. In addition to this, participants were not randomly assigned to either condition and the intervention was only tested with one group. Despite these shortcommings, increases in self-efficacy were still recorded in the intervention group. Similarly, though not based in education, the use of character strengths and positive psychology to increase self-efficacy has yielded promising results (Yan et al., 2020) and higher levels of strengths specific self-efficacy has been shown to correlate with higher levels of consciousness of the self, congruence and commitment (Lane & Chapman, 2011). These interventions provide good indication that the use of character strengths can be effective for increasing self-efficacy.

In their meta-analysis, Bartimote-Aufflick et al. (2015) identified some common design issues in the intervention studies which limited the conclusions that could be drawn from the intervention results. Namely the inability to account for confounding factors, failing to randomly assign participants to treatments and not replicating the effects through using multiple groups. The interventions described above are therefore either not concerned with general self-efficacy, are time intensive, are not yet designed for higher education students or, as point out, are not sufficiently evaluated. As such, the thesis will look to not only identify Mindfulness-Based Strengths Practice as a positive psychology intervention which increases general self-efficacy in higher education students in an accessible, time-sensitive manner, but will do so with the aim of evaluating it according to some of the suggestions described by Bartimote-Aufflick et al. (2015), particularly looking to replicate effects across multiple intervention cohorts.

Positive Psychology

Character strengths are intrinsically linked with self-efficacy, as they are described as ‘drivers’ or ‘pathways’ (Crabb, 2001) through which one can achieve a goal and are a key pillar of positive psychology (Seligman & Cszikszentmihalyi, 2000). Formally founded by Martin Seligman in his 1998 presidential address to the APA, positive psychology is defined as the study of human flourishing in the face of adversity (Seligman & Czikszentmihalyi, 2000). This field of scientific study on optimal human functioning is an attempt to address the imbalance seen in research, caused by the neglect of two of the three missions of psychology: (1) diagnosing and curing mental illnesses, (2) helping individuals to live more fulfilling lives and (3) identifying and nurturing high levels of talent. Seligman describes that the latter two were lost in psychology after WWII, and a ‘disease model’ of psychology became the focus. Seligman seeks to address this imbalance by focusing on the positive aspects of human experience, understanding the “wellsprings, processes and mechanisms” that result in positive outcomes (Linley et al., 2006, p.8).

In the focus of human flourishing, positive psychology explores the conditions and mechanisms that support the optimal functioning of individuals, groups and institutions (Gable & Haidt, 2005). Seligman and Cszikszentmihalyi (2000) identified three pillars of positive psychology: (1) positive experiences such as experiences of happiness, wellbeing and hope; (2) positive individual traits, including concepts such as vocation and the capacity for strengths of character; and (3) positive institutions which help promote greater levels of citizenship and civic virtues. This thesis will primarily draw on methodologies frequently used in the field of positive psychology, alongside the subjective qualitative data analysis from phenomenological research, to explore how teaching positive individual traits (pillar 2) within higher education (pillar 3) can promote positive outcomes (pillar 1). Although referred to as a specific field in psychology, Sheldon and King (2001) argue that positive psychology “is simply psychology” (p.216), which considers individuals with a view to identifying positive processes and actions. This is echoed by Martin and Johnson (2000), who argued that the study of human strengths should not be isolated as a separate field of study, contrary to the work of Allport (1937) who set aside the psychological study of personality as a separate field. The aim of positive psychology is to provide a counterpoise to the disease model of psychological research, to widen the focus from repairing mental health disorders to also include the study of positive qualities

(Seligman & Cszikszentmihalyi, 2000, p.5).

Though the formal introduction to positive psychology is considered to be Seligman's presidential address (Linley et al., 2006), aspects can be seen in the work of earlier psychologists, such as William James. James is sometimes considered America's first positive psychologist because of his call for the study of subjective experiences when studying optimal human functioning (Taylor, 2001, p.15). Here James looked to combine positivistic and phenomenological methodologies to create radical empiricism (Froh, 2004). Additionally, the phrase 'positive psychology' can be seen earlier than Seligman, in the title of a book chapter "Toward a positive psychology", written by Maslow in 1954, where he explained:

> "The science of psychology has been far more successful on the negative than on the positive side; it has revealed to us much about man's shortcomings, his illnesses, his sins, but little about his potentialities, his virtues, his achievable aspirations, or his full psychological height. It is as if psychology had voluntarily restricted itself to only half its rightful jurisdiction, and that the darker, meaner half" (Maslow, 1954, p. 354).

Critics have accused Seligman of not giving enough credit to humanistic psychology (Rich, 2001). Humanistic psychology focuses on topics such as love, self-actualisation, peak experience and courage (Misiak & Sexton, 1966). Similarities between humanistic psychology and positive psychology can be seen in the Seligman's three pillars (2002), as James described the need for studying subjective experience when considering personal growth (seen in pillar one) and Maslow describes the need for a 'health fostering culture', which is linked to the third pillar of positive organisations and societies (Froh 2004). However, Seligman and Cszikszentmihalyi distance the field of positive psychology from humanistic psychology after critiquing the lack of empirical foundations in humanistic psychology research, and commissioning positive psychology to provide more empirically grounded studies (2000, p.7). Although the lack of empirical research in humanistic psychology is debated (e.g., Shapiro, 2001), the distinction between positive and humanistic psychology can be found in the research methodology as Froh describes the humanistic approach to be more focused on qualitative data, whereas positive psychology more frequently utilises quantitative methodologies for its studies (2004).

Since its introduction, the field of positive psychology has grown in the face of critique, particularly that of Pawelski (2016a, 2016b). In his two papers, he explores the different understandings of the word 'positive' in positive psychology (2016a), stating that a full definition of 'positive' should be agreed in order to successfully add to the field. He goes on to highlight (Pawelski, 2016b) the need for interdisciplinary research including theoretical, empirical and applied positive psychology to fully explore the human flourishing. A recurrent criticism of positive psychology is the polarization between positive and negative (Pawelski 2016b). Firstly, this polarization fails to acknowledge the complexities of both emotional outcomes, and the context in which these emotions or positivity are expressed, for example when an excess of positivity can be harmful. Secondly, the polarisation does not value the importance of negative emotions, which were once considered natural, whereas positive psychology has been criticised for reframing these as disorders (Horwitz & Wakefield, 2007).

As a response to this polarization, the 'Second Wave' of positive psychology was introduced to recognise the importance of 'negative' emotions in true wellbeing (Lomas, 2016). This second wave recognises that human flourishing involves a complex dialectical relationship between the positive and negatives, noting that happiness is not synonymous with wellbeing. Lomas describes four principals of the 'Second Wave of Positive Psychology'. Firstly, that defining events or emotions as either positive or negative is context dependent; secondly that any experienced phenomena can have both positive and negative elements; thirdly that the positive and negative can be complimentary of each other and finally that it should continue to evolve, moving from a binary categorisation of positive/negative towards a nuanced synthesis of the two.

The field is continuously adapting as different critiques arise. Only four years after the 'Second Wave' of positive psychology was released, Lomas and colleagues (2020) announced the emerging 'Third Wave', described simply as broadening the complexity of existing positive psychology. Recognising that the majority of research has focused on individuals (Kern et al., 2019), the third wave looks to 1) broaden research to groups, organisations and wider systems; 2) become more interdisciplinary; 3) appreciate multiculturalism as opposed to sole focus on the western cultures in which it was developed; and 4) utilise a wider use of methodologies such as qualitative data, implicit measures and computational data collection techniques.

The VIA Framework

As part of the second pillar of positive psychology which explores positive individual traits, the VIA framework of character strengths and virtues is considered to be a backbone of positive psychology (Hart & Sasso, 2011). The handbook written by Peterson and Seligman (2004) is the product of a three-year collaboration project with 55 social scientists, who examined historical documents spanning the last 2,500 years from a variety of religions and cultures across the world, exploring which virtues or personal strengths of character are globally valued. The result of this work is a classification of 24 character strengths, which serve as a common language to describe positive traits of individuals. This framework offers a classification of 'what is right' in individuals, similar to how the DSM-IV (American Psychological Association, 2000) classifies what is wrong (Dahlsgaard et al., 2005).

For character strengths to be included in the classification, each character strength needed to reach ten criteria (Peterson & Seligman, 2004, p. 17): 1) Fulfilling (can contribute to individual happiness and satisfaction); 2) Morally Valued (the strength is appreciated not for the outcomes it produces but is valued in itself); 3) Does not diminish others (admired by others, but without causing jealousy or lessening others); 4) Nonfelicitous opposite (the antithesis of a character strength is negative); 5) Traitlike (a strength is a reasonably stable individual difference); 6) Distinctiveness (the strength cannot be better explained by another strength); 7) Paragons (some individuals model the strength with excellence); 8) Prodigies (some children embody the strength); 9) Selective absence (the strength is missing in some individuals) and 10) Institutions (some societies specifically encourage the strength). Park et al. (2004) recommend two further criteria to include: Ubiquity (the character strength is recognised cross-culturally) and Measurable (the strength has been successfully measured by researchers). A list of character strengths and their relative definitions as described by Park et al., (2004) can be seen in Table 1.1.

Table 1.1

VIA Classification of Character Strengths.

Virtue	Character Strength
Courage	**Bravery** [valour]: Not shrinking from threat, challenge, difficulty, or pain; speaking up for what is right even if there is opposition; acting on convictions even if unpopular; includes physical bravery but is not limited to it. **Integrity** [authenticity, honesty]: Speaking the truth but more broadly presenting oneself in a genuine way; being without pretence; taking responsibility for one's feelings and actions. **Persistence** [perseverance, industriousness]: Finishing what one starts; persisting in a course of action in spite of obstacles; "getting it out the door"; taking pleasure in completing tasks. **Zest** [vitality, enthusiasm, vigour, energy]: Approaching life with excitement and energy; not doing things halfway or half-heartedly; living life as an adventure; feeling alive and activated.
Humanity	**Kindness** [generosity, nurturance, care, compassion, altruistic love, "niceness"]: Doing favours and good deeds for others; helping them; taking care of them. **Love**: Valuing close relations with others, in particular those in which sharing and caring are reciprocated; being close to people. **Social intelligence** [emotional intelligence, personal intelligence]: Being aware of the motives and feelings of other people and oneself; knowing what to do to fit in to different social situations; knowing what makes other people tick.
Justice	**Citizenship** [social responsibility, loyalty, teamwork]: Working well as a member of a group or team; being loyal to the group; doing one's share.

	Fairness: Treating all people the same according to notions of fairness and justice; not letting personal feelings bias decisions about others; giving everyone a fair chance. **Leadership**: Encouraging a group of which one is a member to get things done and at the same time maintaining good relations within the group; organizing group activities and seeing that they happen.
Temperance	**Forgiveness and mercy**: Forgiving those who have done wrong; giving people a second chance; not being vengeful. **Modesty and humility**: Letting one's accomplishments speak for themselves; not seeking the spotlight; not regarding oneself as more special than one is. **Prudence**: Being careful about one's choices; not taking undue risks; not saying or doing things that might later be regretted. **Self–regulation** [self–control]: Regulating what one feels and does; being disciplined; controlling one's appetites and emotions.
Transcendence	**Appreciation of beauty and excellence**: [awe, wonder, elevation]: Noticing and appreciating beauty, excellence, and/or skilled performance in all domains of life, from nature to art to mathematics to science to everyday experience. **Gratitude**: Being aware of and thankful for the good things that happen; taking time to express thanks. **Hope** [optimism, future–mindedness, future orientation]: Expecting the best in the future and working to achieve it; believing that a good future is something that can be brought about. **Humor** [playfulness]: Liking to laugh and tease; bringing smiles to other people; seeing the light side; making (not necessarily telling) jokes. **Spirituality** [religiousness, faith, purpose]: Having coherent beliefs about the higher purpose and meaning of the universe; knowing where one fits within the

<table>
<tr><td></td><td>larger scheme;   having beliefs about the meaning of life that shape conduct and provide comfort.</td></tr>
<tr><td>Wisdom</td><td>Curiosity [interest, novelty–seeking, openness to experience]: Taking an interest in all of ongoing experience; finding all subjects and topics fascinating; exploring and discovering.

Creativity [originality, ingenuity]: Thinking of novel and productive ways to do things; includes artistic achievement but is not limited to it.

Judgment [open–mindedness, critical thinking]: Thinking things through and examining them from all sides; not jumping to conclusions; being able to change one's mind in light of evidence; weighing all evidence fairly.

Love of learning: Mastering new skills, topics, and bodies of knowledge, whether on one's own or formally; obviously related to the strength of curiosity but goes beyond it to describe the tendency to add systematically to what one knows.

Perspective [wisdom]: Being able to provide wise counsel to others; having ways of looking at the world that make sense to oneself and to other people.</td></tr>
</table>

Note. Reprinted from "Strengths of Character And Well-Being" by N. Park., C. Peterson., and M. Seligman, 2004, *Journal of Social and Clinical Psychology, 23,* 5, p. 606. Copyright 2004 by The Gulliford Press.

At the end of the handbook, Peterson and Seligman (2004) establish the *Values in Action Inventory of Strengths (VIA-IS)*, a self-report survey which uses a 5-point likert scale, with ten items for each of the character strengths. Shorter versions of the of the VIA were also created including the VIA-120 and the VIA-72. An adaptation for children between the ages of 10 and 17 was also created, known as the VIA-Youth, one with 198 items and a shorter version of 96 items (Park & Peterson, 2006).

The results given from the VIA-IS rank the character strengths, with the top 3-7 results being identified as "Signature Strengths". Peterson and Seligman posit possible criteria for signature strengths which Niemiec and McGrath (2019) sum up as 3 key features: they are essential (core to personal identity), effortless (used naturally) and energizing (uplifting to use) (p.22-23). Research demonstrates that identifying, using and discussing signature strengths contributes to flourishing (Jayawickreme et al., 2012; Kobau et al., 2011), results in decreased depression (Peterson & Peterson, 2008), increases cognitive wellbeing (Mitchell et al., 2009), happiness (Mongrain & Anselmo-Matthews, 2012), life satisfaction (Schutte & Malouff, 2019) and elevates harmonious passion (Forest et al., 2012).

Critique of the VIA Framework

Several critiques of the VIA have been raised, particularly by Miller (2018) who raises several philosophical issues with the VIA, combining concerns raised by other philosophers and psychologists (e.g., Kristjansson, 2012, 2013; Banicki, 2014).

Firstly, Miller argues that the framework is missing some character strengths that should be included. An example he provides here is that of patience, which would seemingly belong among other temperance strengths such as self-control. This is also used as an example of missing virtues by other critical philosophical voices (e.g., Kristjansson, 2013). Secondly, Miller shows concern at the lack of 'vices' in the framework, particularly as one criterion for a character strength is to have clear, negative opposites (Peterson & Seligman, 2004). He notes this can be rectified but would require the same level of cross-cultural study as the initial classification. Further to this, a key absence Miller notes in the framework is that of the Aristotelian theory of 'practical wisdom', a recurring critique by philosophers (Snow, 2018), with some philosophers recommending practical wisdom as the 'master virtue' (Kristjansson, 2013; Miller, 2016; Schwartz & Sharpe, 2006). Following this, Miller expresses concern that some character strengths can be seen to be in conflict with each other, such as the potential conflict between practicing kindness and practicing fairness, described also in Schwartz and Sharpe's critique (2006).

A further concern that Miller holds is the lack of clarity in the connection between character strengths and subsequent virtues, and he posits several different ways of interpreting the connections. Moving forward without clarification of these relationships could confirm a critique expressed by Lazarus (2003), who warned that the practice of positive psychology would progress ahead of the science, and thus lack empirical rigour. This is similar to Miller's next critique around the classification of strengths within virtues. He questions the grouping of character strengths, for example the inclusion of humour in transcendence, and contrasts other published research which, often through exploratory factor analyses, propose alternative groupings. Published factor analyses support Miller's critique here, by finding that the 24 character strengths can be grouped with a three factor solution (McGrath et al., 2015; 2017), a four factor solution (Shryack et al., 2010) and with five factor solutions (Peterson et al., 2008; McGrath, 2014). The final critique from Miller specifically concerns the VIA-IS measure, as the statements used for each of the items describe actions taken by individuals, without any consideration for intention or motivation. Miller does concede that this would be difficult to achieve fully but maintains revisions should be made. Finally, Miller disagrees with the notion that everyone possesses all 24 character strengths, some being stronger or weaker, and instead suggests that thresholds for each character strength should be introduced. The measurements would then look to identify individuals who truly possess these strengths by exceeding a certain threshold in the measure, which supports the concept that some people can be void of a particular strength.

When reflecting on these critiques, Miller highlights the issues that should be most prominent in the fields of philosophy and psychology separately. Firstly, that the issues with the framework philosophers might find most worrisome include the missing of vice, missing practical wisdom, the neglect of motivation and the threshold concern; but that psychologists should be mostly concerned with the missing vices, conflict between strengths, the unclear connections to virtues, and the misclassification concern.

Similar to the way in which the field of positive psychology has adapted to overcome critiques, the VIA framework has undergone revisions and additions as an attempt to explain or correct the criticisms laid out by Miller, some of which he recognises in his work. For example, he admits that although missing virtues is a valid critique of the framework, Peterson and Seligman in their handbook explicitly state that the list is not exhaustive and that revisions and adaptations can be made (2004, p.13). As such, Miller finds the issue is not with the original proposed framework, but that no revisions have been made to the classification since its publication. Recent work in the field offer a potential remedy to the two following critiques of missing vices and missing practical wisdom. In 2015, Seligman published Peterson's unfinished work outlining the opposite, absence and excess of each strength, also known as "overuse-underuse" (Niemiec, 2014). Seligman explains the Aristotelian theory of "the golden mean"

(Seligman, 2015, p.6) which is tightly linked with ‘practical wisdom’. This 2015 publication therefore seems to offer a solution to these critiques.

Continuing these rebuttals, the criticism that positive character strengths can be in conflict with each other (a controversial notion among philosophers (Miller, 2018, p.4)), is not a concern that Peterson and Seligman share (2004, p.13). Whilst they recognise this as an important philosophical issue, Peterson and Seligman argue that the framework utilises a similar hierarchy to that used by philosophers, which explains why one strength is used over another. In the VIA framework, they describe the hierarchy of virtues, then smaller strengths, and finally situational themes, arguing that the choice of strength depends on the overall aim of using a strength, and the situation in which it is being used. Further to this, they argue that this is a small criticism where psychology provides clear concepts and measurements of the strengths of higher “explanatory power out of the realm and reach of philosophy" (p.13). Nevertheless, the framework and psychometric continue to be revised and improved. A full revision of the VIA-IS was conducted in 2017 by McGrath, resulting in three new measures: the VIA-IS-P of 96 items, which includes only positively worded items, the VIA-IS-M with 96 mixed positive and negative items, and the VIA-IS-R, a new revised assessment of 192 items (McGrath, 2019). Whilst these revisions may not combat the lack of motivational questioning in items deemed necessary by Miller, it does demonstrate that further revisions on the VIA-IS are being conducted and improved.

Character Strength Research

Since the publication of Peterson and Seligman’s handbook, research on each of the character strengths has increased exponentially, with hundreds of empirical pieces of research being conducted on each of the character strengths and on exploring the relationships between the strengths and outcome measures (VIA Institute, 2020). Prominent studies identify the relationships between character strengths and positive outcomes, such as identifying the character strengths of love, hope, curiosity, gratitude and zest as high predictors of satisfaction with life (Park et al., 2004; Peterson et al., 2007); other-orientated strengths (such as social intelligence and teamwork) as predictors of less depressive symptoms; and transcendence strengths (e.g., spirituality) as significant predictors of life satisfaction (Gillham et al., 2010). Character strengths also provide a buffer against many psychological disorders and negative effects. This has been studied in youth (Park, 2004), but also in the relationship between physical/mental illness and reduction in life satisfaction (Peterson et al., 2006). Some research even demonstrates an increase in character strengths in response to a traumatic event (Peterson et al., 2008), specifically in higher reports of gratitude, hope, kindness, leadership, love, spirituality and teamwork after the events of 9/11 (Peterson & Seligman, 2003). Identifying clear relationships, such as those reported above, provide clear grounding for targeting specific strengths in outcome-orientated interventions. Looking at school-related positives, Weber and Ruch (2012) examined which character strengths were linked to school satisfaction measures and academic self-efficacy, finding that 'character strengths of the mind' such as love of learning, perseverance and self-regulation predicted students' success in school, whereas strengths such as perspective, hope, teamwork and gratitude seemed to be indicative of students who would improve their grades during the school year (Weber & Ruch, 2012).

Interventions aimed at developing both specific and overall strength use have been created, tested, and are brought together in Niemiec's "Character Strength Interventions" book (2017). Examples include using the *Loving-Kindness Meditation* to develop love and kindness, the *Imagined Conversation* to boost perspective, the *Gratitude Letter* for gratitude and *Three Funny Things* for humour. One intervention designed by Proyer et al. (2012) focused on several of the character strengths most strongly linked with life satisfaction as found by Park et al. (2004; curiosity, gratitude, hope and zest), but used humour instead of love. This intervention was compared with another focused on the character strengths least linked with life satisfaction (appreciation of beauty and excellence, creativity, kindness, love of learning and perspective). Results here showed that both interventions increased life satisfaction regardless of which strengths were targeted. Additionally, self-regulation had a facilitating role in the success of the intervention. Despite suggestions that interventions which target specific strengths rather than strengths in general are more effective (Linkins et al., 2014), such as that of Proyer et al. (2012), attention since has turned to targeting signature strengths of individuals, rather than specific strengths. Meta analyses on signature strength interventions demonstrate clear effects on wellbeing, positive affect, life satisfaction, flourishing, signature strength use and decreases in depressive symptoms, but no effects on negative affect (Schutte & Malouff, 2019; Quinlan et al., 2011). Strengths-based positive interventions demonstrate positive effects on wellbeing, job outcomes such as work engagement, group cohesion and personal growth (Ghielen et al., 2017) and alleviating depression (Sin & Lyubomirsky, 2009).

A prominent study in strength-based interventions by Seligman et al. (2005) conducted a randomised control trial which compared several positive interventions and measured effects up to 6 months later. The interventions included the *Gratitude Visit, Three Good Things, You at Your Best, Using Signature Strengths in a New Way, Identifying Signature Strengths* and used an early memories active control group. Participants who took part in *Signature Strengths in a New Way* and *Three Good Things* experienced increased happiness and decreased depression for up to 6 months, and those who took part in the *Gratitude Visit* experienced large positive effects for one month. The other interventions caused positive but menial changes on happiness and then decreased over time. However, the extent to which participants actively continued the exercises beyond the formal weeklong practice mediated the long-term effects of the exercises (Seligman et al., 2005). A part-replication of this study was conducted with some changes to the interventions. The results showed that all interventions (except for the two-week *Three Good Things* intervention) increased happiness and all interventions (including the control) decreased depression (Gander et al., 2012a).

The effect of character strengths on educational outcomes described earlier has led to 'positive education', in which character strength education is integrated into the curriculum, with schools adopting the use of various character strength interventions to further the wellbeing of students. Positive psychology has been integrated into education through classroom interventions and cultivating positive school cultures. Positive education aims to provide an education for traditional skills whilst introducing skills for flourishing (Seligman et al., 2009). Rather than focusing on grades and academic achievement, positive education posits a more holistic view of the success of the individual (Schreiner, 2015).

Most existing research in positive education focuses on primary or secondary education, though this thesis looks at positive higher education. Clear rationale for this is evident in the literature, looking to the clear relationship between wellbeing and professional success, arguing that "If positive psychology is applied to higher education, we increase the likelihood of seeing students working to their potential" (Williams et al., 2018, p.92). Current positive psychology in higher education focuses primarily on strengths-based interventions and other initiatives (Schreiner et al., 2012), with

Khramtsova (2008) suggesting that teaching character strengths can be incorporated into the curriculum, noting again the importance of higher education to help students develop more positive personalities. Explorations into which character strengths are important for education show that the strengths of perseverance, love, gratitude and hope predict academic achievement (Park & Peterson, 2009), and perseverance, self-regulation, prudence, judgement and love of learning predicted student GPA (Lounsbury et al., 2009). However, research also shows that specific strengths do not always need to be targeted, and that students learning of their own signature strengths resulted in higher levels of confidence and autonomous learning (Gustems & Calderon, 2014). The evidence shows the importance of integrating character strengths into higher education and calls for more work on structured interventions**.**

Character Strength Interventions

Currently there seems to be a lack of structured character strength programmes that can be used in formal non-clinical settings, with the majority of studies addressing short-term programmes (e.g., Mongrain & Anselmo-Matthews, 2012; Seligman et al., 2005). However, a small number of structured character strength interventions are beginning to emerge, such as the “Strengths Gym” (Proctor et al., 2011), designed for school use as a series of lessons on each of the 24 character strengths, which has been shown to increase life satisfaction. There is also the “Positive Psychology Programme” (Seligman et al., 2009), a 20-25 session long curriculum on positive psychology designed to help students understand character strengths and how to use them which results in increases in student enjoyment, engagement, school achievement and social skills; and similarly another character strengths psychology undergraduate course demonstrated increases in wellbeing as measured by the PERMA (Smith et al., 2020). The first two of these programmes are designed specifically for use with school children, integrated as part of the curriculum, and do not offer any applicability with the general population who may wish to explore strengths beyond the initial VIA-IS report, whilst Smith’s course was designed as a psychology elective for undergraduate students.

However, there is space for further development of strengths interventions. Prominent researchers in strengths-based interventions described several methods of justifying the design and implementation of future strengths-based interventions (Ruch et al., 2020). Fundamentally, they recommend that these interventions should be measured against control groups, to produce more reliable reflections of its effectiveness. They state that future interventions can be: 1) adapted from existing validated interventions; 2) created by adding character strengths to existing controlled interventions; 3) utilising interventions that are only described, not validated; 4) developed from observational research; 5) founded on existing theoretical discussion; 6) extracted from broader strengths-interventions. Currently, the most widely used manualised intervention focused on character strengths, is Mindfulness-Based Strengths Practice (Niemiec, 2014), which is unique in its attempt to combine positive psychology and the VIA framework with mindfulness practices.

Mindfulness

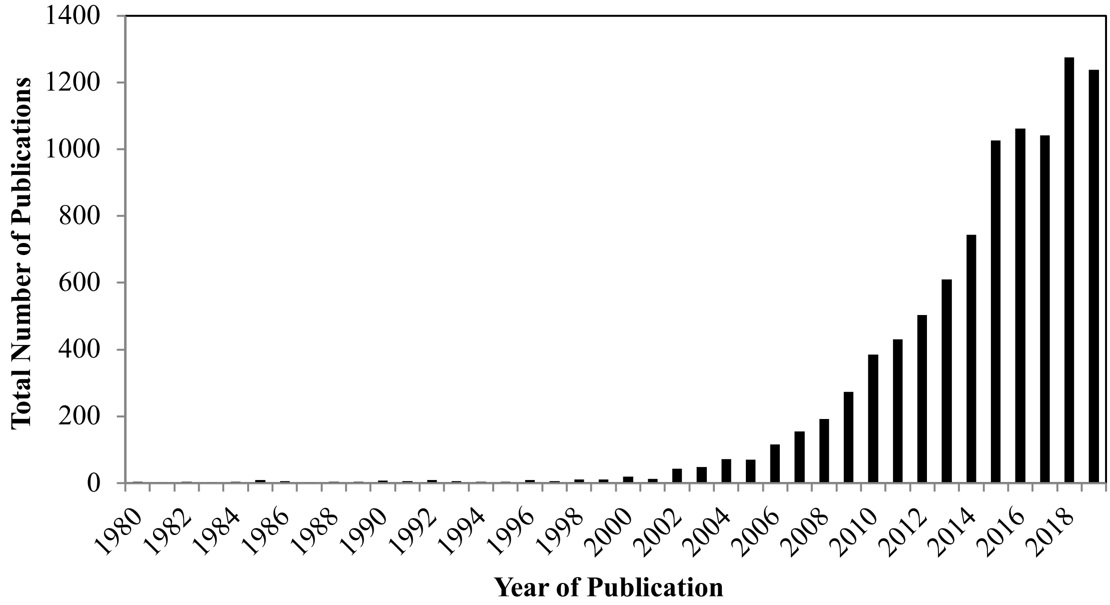
Bandura states that it is difficult for individuals to demonstrate self-efficacy when in low moods, specifically through pessimism of their ability in achieving these goals (Dickson et al., 2011). Mindfulness has been identified as a way to develop the psychological flexibility needed to regulate these negative emotions (Kashdan & Rottenberg, 2010). As mindfulness has been shown to alleviate these negative emotions (Hofman et al., 2010), using MBSP which combines character strengths with mindfulness may be a promising means of increasing self-efficacy in higher education students.

Brief History of Western Mindfulness

The practice of mindfulness dates back 2,500 years to Buddhism, from which four foundations of mindfulness were identified: mindfulness of the body, feelings, the mind and the world (Silananda, 2002). The Indian term for the meditation practice that dates back 2,500 years is '*vipassana*', translated literally as "clear seeing", but the first translation of what the west understands as mindfulness, was first translated from the Buddhist term '*sati*' by Rhys Davis (Gethin, 2011). Jon Kabat-Zinn is often attributed with bringing mindfulness to the West, was trained by Thich Nhat Hanh (a prominent zen master and founder of the Plum Village) and has since authored over 100 books on mindfulness, such as his prominent book, 'Full Catastrophe Living' (Kabat-Zinn, 1990). His creation of *Mindfulness-Based Stress Reduction* (MBSR), provided a new opportunity to empirically test the effects of mindfulness, with psychology articles on mindfulness exponentially increasing from the 1980s (see Figure 1.1).

Figure 1.1

Number of peer-reviewed journal articles published within psychology using the keyword "mindfulness". Numbers collated from PsychInfo.



Definitions of Mindfulness

Scientific research has attempted to define, conceptualise and objectively measure mindfulness, though there is some disagreement over what the specific elements of mindfulness are. The literature displays a notable lack of agreement on the scientific definition of mindfulness which is necessary to operationalise the concept and develop robust measures for use in research (Grossman & Van Dam, 2011). A common characteristic present in many definitions of mindfulness is an awareness of the present moment. This is prominent in early definitions which focus on consciousness and perception, such as Thera (1972), who defines mindfulness as "the clear and single-minded awareness of what actually happens to us and in us at the successive moments of perception" (p.5). Similarly, Thich Nhat Hanh used the terms "keeping one's consciousness alive to the present reality" (p.11, 1976). As seen in these definitions, a core feature of mindfulness is the awareness and acceptance to the present moment (Deikman, 1982; Martin, 1997). These sentiments are mirrored by Brown and Ryan, who explained mindfulness as the act of awareness and attentiveness to the present moment (2003). Black (2011) notes the continuous themes among definitions to be full engagement with the present moment and receptivity to the present moment. Whilst there seems to be some level of agreement, Chiesa (2012) suggests these definitions of mindfulness are too simplistic, and that mindfulness cannot be fully understood or defined without a deep level of training in traditional mindfulness practice.

Alternatively, mindfulness has been defined within the context of other theories and therapies for use in practical settings and clinical practice. For example, mindfulness as defined within the Relational Frame Theory is a collection of psychological processes which include contact with the present moment, acceptance (as in other definitions), but also diffusion, and a transcendent sense of self (Fletcher & Hayes, 2005). These components of mindfulness are used and targeted in *Acceptance and Commitment Therapy* (Hayes et al., 1999) and provide evidence that mindfulness underlies the changes seen as a result of the therapy (Fletcher & Hayes, 2005). Mindfulness is also used in *Dialectical Behaviour Therapy* (Linehan, 1993), where it is defined as the act of (1) observing external events and internal thoughts, emotions and behaviours; (2) describing these events by 'labelling' without judgement; and (3) participating by fully engaging with "the activity of the present moment without self-consciousness" (Wagner et al., 2006, p. 173). A similar three component model is highlighted by Shapiro, comprised of intention, attention and attitude (Shapiro et al., 2006).

Hayes and Shenk (2004) note that it is difficult to achieve a scientific definition of mindfulness, as mindfulness is a 'pre-scientific' concept, and any definition is unlikely to be accepted as scientific without some disagreement among researchers. To offer a solution, Bishop et al. (2004) offer an operational definition of mindfulness as two aspects: the *self-regulation of attention* and the *orientation to experience.* This definition looked to specify the psychological processes involved in mindfulness and to establish the defining criteria of mindfulness. Acceptance, which is seen as a common theme throughout definitions, is included here as the *orientation to experience*. Hayes and Shenk (2004) state that Bishop's definition is an improvement on Kabat-Zin's 2003 definition which "relies on many terms that are more linked to lay psychology than to psychology as a discipline" (p.250). This thesis will utilise the definition from Kabat-Zinn, which defines mindfulness as "paying attention in a particular way; on purpose, in the present moment, and non-judgementally" (Kabat-Zinn, 1994, p.4), as this is the definition most utilised in *Mindfulness-Based Strengths Practice* (Niemiec, 2014, p.5).

Hölzel and colleagues (2011a) identify four key mechanisms of mindfulness: attention regulation, awareness of the body, emotion regulation and changing perspective towards the self (Hölzel et al., 2011a) which work together to reach enhanced self-regulation, yielding many other benefits as a result. Hölzel even suggested that through targeting separate mechanisms, mindfulness can then be specialised for use with different psychological disorders (2011a). An alternate three mechanism process of mindfulness has also been proposed to explain the positive effect of mindfulness on psychological distress (Coffey & Hartman, 2008). These include emotional regulation, which helps manage negative affect, the reduction of rumination - explained as repetitive, negative thoughts – which is associated with depression, and finally, the detachment from goals, resulting in less distress when goals cannot be attained.

A common way of understanding mindfulness is through contrasting it with ‘automatic pilot’ (Segal et al., 2002) in which, instead of holding awareness of the present moment, attention is focused on things to come, past experiences, or on an internal monologue. Whilst automatic pilot is not a negative in itself, it distracts from the detail and experience of the present moment, and to embrace full mindfulness, practitioners must learn how to handle their automatic pilot, even though this can be difficult (Mrasek et al., 2012).

Thich Nhat Hanh outlined five mindfulness trainings (Nhat Hanh & Cheung, 2010), which serve as ideals to strive to, rather than commandments, and stem from an awareness of suffering in the world. The first mindfulness training is a reverence for life, in which the practitioner is aware of the suffering caused by loss of life and committing to acting with compassion and for the protection of life. Secondly, ‘True Happiness’, which involves awareness of the suffering caused by social injustice and committing to being generous not just with material resources, but with time and thoughts. Thirdly, the training of ‘True Love’ is aware of the suffering caused as a result of sexual misconduct and commits to living with responsibility and integrity to protect individuals and relationships. Fourthly, the training of ‘Loving Speech and Deep Listening’, which aims to be aware of the suffering caused by speaking rashly, without thought and by a lack of listening. Here the practitioner aims to bring mindful awareness and careful thoughts to their words and listening skills to promote peace among others. Finally, the fifth training is ‘Nourishment and Healing’, which involves an awareness of the dangers and consequences of mindless consumption, not only of food but of content in general. As such, here the focus is on being mindful of what is consumed and committing to living a physically and mentally healthy lifestyle (Nhat Hanh & Cheung, 2010).

Benefits of Mindfulness

Numerous studies of the benefits of mindfulness have been conducted, with a focus on the effect of mindfulness on an individual's well-being (Brown et al., 2007; Hart et al., 2013). Research shows that mindfulness has a positive effect on wellbeing, including optimising psychological functioning, decreasing stress, anxiety and depression and even increased health in parents of children with autism (Brown & Ryan, 2003; Coffey et al., 2010; Cash & Whittingham, 2010; Ferraioli & Harris, 2013; Sedlmeier et al., 2012). Research confirms that mindfulness reduces distractive and ruminative thoughts and demonstrates its effectiveness in improving symptoms associated with mood disorders (Baer et al., 2004; Jain et al., 2007; Teasdale et al., 1995).

Mindfulness practice has also been associated with positive outcomes in the workplace such as improved employee wellbeing, job satisfaction, need satisfaction, role performance, organisational citizenship behaviours and reduced need frustration (Reb et al., 2014; Schultz et al., 2015). Not only does mindfulness positively affect psychological wellbeing, research also shows the improvements that take place in cognitive ability (Jha et al., 2007; Malinowski et al., 2017; Mrazek et al., 2013; Semple et al., 2010; Zylowska et al., 2008) and several brain differences such as increased anterior activation and increased regional gray matter density that occur as a result of mindfulness practice (Davidson et al., 2003; Hölzel et al., 2011b).

Specifically looking at mindfulness in education, meta-analyses and literature reviews report extensive positive outcomes from using mindfulness within educational contexts. These include both improved personal wellbeing and academic outcomes in children and adolescents, (Greenberg & Harris, 2011; LeLand, 2015; Weare, 2013), 16-18 year olds (Broderick & Metz, 2009) and with students in higher education (Beddoe & Murpohy, 2004; Shapiro et al., 2008). Shapiro et al. (2011) offer a clear rationale for including mindfulness meditation in higher education, including opportunities for enhancing cognitive and academic performance, managing academic-related stress and the development of the whole person, not just improvement of academic skills. Webster-Wright (2013) suggests that the frequent use of reflective practices such as 'mindful inquiry' is particularly useful in higher education, to provide an opportunity for taking time to sharpen focus and seek clarity in an environment which is otherwise busy. Much of the stress in higher education staff comes from the external environment of work, and the use of mindfulness has been shown to have positive effects on coping strategies to manage this stress (Kelly & Dorian, 2017). Among students, mindfulness has been shown to be useful for reducing distress particularly during exam periods, again providing evidence that mindfulness can have positive effects for managing the stress of academic life (Shapiro et al., 1998).

Some methods of integrating mindfulness into higher education for students have included introducing brief mindfulness practices before and occasionally after lectures. These methods have shown positive outcomes such as increased concentration, academic performance, effectiveness (Oberski et al., 2015), decreased stress and anxiety (Schwind et al., 2019) and increases of mindfulness (De Bruin et al., 2014), although some research shows that the mindfulness has no effect on academic achievement (Baranski & Was, 2019). Mindfulness-based practices such as regulation strategies and mindful positive reappraisal have been shown to increase resilience and lower negative affect (Bennett et al., 2018; Pogrebtsova et al., 2017). Some suggest these decreases in negative affect are no stronger than with normal cognitive reappraisal (Brockman et al., 2016), although mediation analyses show that mindfulness is a significant mediator in the relationship between cognitive reappraisal and resilience (Zarotti et al., 2020), and in the relationships between positive affect and resilience (Pillay, 2020).

Mindfulness has been used as a foundation for several structured programmes and therapies, such as the widely known *Mindfulness-Based Stress Reduction* (MBSR, Kabat-Zinn, 1990), *Mindfulness-Based Cognitive Therapy* (MBCT, Segal et al., 2002), *Mindfulness-Based Relapse Prevention* (Marlatt & Gordon, 1985), *Mindfulness-Based Relationship Enhancement* (Carson & Carson, 2004) and *Mindfulness-Based Eating Awareness Training* (Kristeller et al., 2006). Mindfulness is also used as a tool in *Acceptance and Commitment Therapy* (Hayes et al., 2016) and in *Dialectical Behaviour Therapy* (Linehan, 1993).

MBSR (Kabat-Zinn, 1990) was developed by Jon Kabat-Zinn in the late 1970’s by combining mindfulness practices into a structured 8-week long intervention. Each session was designed to last 2.5 hours and the programme includes a day-long retreat. Each session contains in-session experience and discussion of the mindfulness practices included in the programme. Participants are given homework exercises to consolidate their mindfulness experience, with the use of audio tapes (Bishop, 2002). According to Bishop, MBSR teaches individuals to approach potentially stressful situations mindfully, with to the aim of helping people respond to the situation, rather than react. As the first structured programme of secular mindfulness, this programme is a key reason for the increase in publications and is the "most studied mindfulness programme" (Niemiec, 2014, p. 15).

Studies on MBSR show that the programme successfully reduces stress (Chiesa & Serretti, 2009; Shapiro et al., 2005), depression (Bohlmeijer et al., 2010; Reibel et al., 2001; Rosenzweig et al., 2003), and anxiety (Miller et al., 1995; Shapiro et al., 1998). In addition to this, MBSR participants experienced increases in wellbeing and mental health (Carmody & Baer, 2007; Eberth & Sedlmeier, 2012; Ledesma & Kumano, 2008; Mackenzie et al., 2006), reduced sleep disturbance (Winbush et al., 2007), increased health-benefits (Grossman et al., 2004), and improved control of thinking (Roemer & Orsillo, 2002; 2010). A meta-analysis of 29 studies showed that MBSR had large positive effects on stress, moderate effects on anxiety, depression, distress and quality of life and small effects on burnout (Khoury et al., 2015).

MBCT (Segal et al., 2002) was based on MBSR, including a greater number of themes over eight sessions. The themes of MBCT include automatic pilot, acceptance and 'thoughts are not facts' as in MBSR, but with the inclusion of self-care and relapse prevention. A key change mechanism of MBCT is that of decreasing rumination (Kingston et al., 2007). Through a meta-analysis of MBSR and MBCT, Gu and colleagues (2015) describe that the active mechanisms in these programmes address cognitive and emotional reactivity, mindfulness, rumination and worry. Research into MBCT showed that the programme reduced anxiety and depression (Evans et al., 2008), improved quality of life (Kuyken et al., 2008), and reduced the risk of depression relapse in those who had three or more previous episodes of depression, but not in those who had two previous episodes (Teasdale et al., 2000). A meta-analysis confirmed these findings, showing that MBCT reduced depression, and anxiety (Chiesa & Serretti, 2011).

Mindfulness-Based Strengths Practice

Mindfulness and Character Strengths are both researched within the field of positive psychology and share some fundamental goals and theoretical underpinnings. Niemiec et al. (2012) summarise these links, by stating both are universal qualities, are viewed as processes, and can be developed intentionally. However, research exploring how the two integrate is still relatively scarce. Niemiec brings mindfulness and character strengths together in the programme, *Mindfulness-Based Strengths Practice* (MBSP, 2014), using two concepts: *Strong Mindfulness* and *Mindful Strength Use*. These methods of integration are foundational to the theoretical underpinnings of the programme, and as such are explored below.

Strong Mindfulness

The integration of mindfulness and character strengths can be seen even in some definitions of mindfulness. The definition provided by Bishop et al. (2004), suggests a two-component definition of mindfulness as a) the self-regulation of attention, with b) curiosity, openness and acceptance. Here, self-regulation and curiosity are both character strengths in their own rights, demonstrating their role in successful mindful practice. This link to self-control is also highlighted by Masicampo and Baumiester (2007), who suggest that any mindfulness intervention can be used as an exercise in self-control. Similarly, mindfulness has also been shown to predict persistence (Evans et al., 2009) and the authenticity involved in the character strength of honesty (Lakey et al., 2008).

Beyond the definition, a selection of character strengths are evident in mindful practices. Even in the original book on character strength and virtues (Peterson & Seligman, 2004), reference is made to the five mindfulness trainings, identifying that three out of five of these practices are linked to the humanity and justice strengths, whilst the remaining two are linked to strengths of temperance and courage. Niemiec (2012) goes beyond this, to highlight ways of using specific character strengths in response to each of the five trainings. For reverence for life, Niemiec identifies the roles of kindness, fairness, judgement, bravery and appreciation of beauty and excellence; for true happiness: kindness, gratitude, teamwork and leadership; for true love: prudence, integrity, bravery, perspective, social intelligence, love and kindness; for loving speech and deep listening: love, social intelligence, humility, self-regulation, kindness and forgiveness; and for nourishment and healing: self-regulation, prudence, hope and perseverance.

In this, Niemiec introduces one foundation for the integration between mindfulness and character: 'Strong Mindfulness' (Niemiec et al., 2012). *Strong Mindfulness* involves bringing forth character strengths to fully enhance one's mindfulness practice. Niemiec suggests that interpersonal strengths are needed to maintain regular mindfulness practice, transcendence strengths to make mindfulness more meaningful, and courage to deal with obstacles faced during mindfulness. Using strengths in the face of obstacles in mindfulness can include using perseverance when experiencing boredom, zest when experiencing lethargy, and bravery to face unpleasant sensations or thoughts. Niemiec also identifies the use of perspective in the de-centring aspect of mindfulness, and the role of love, kindness, forgiveness and fairness directed inwardly in order to help build a sustainable mindfulness routine. The role of signature strengths in mindfulness is also identified, to use higher strengths to support and boost the practice. Additionally, Niemiec suggests 'labelling' thoughts as character strengths can also be a useful way to handle the wandering mind in mindfulness, whilst expanding awareness of character strengths.

This theme of Strong Mindfulness is found throughout MBSP and is focused on in sessions three and four primarily, when using character strengths to tackle obstacles in the statue exercise, and using character strengths to fully enhance mindful living, through mindful walking exercises.

Mindful Strength Use

The second method of integration, known as '*Mindful Strength Use*', is best described in Niemiec's handbook of MBSP, in which character strengths are the base focus, and mindfulness is used as a vessel of exploration, development and balancing between overuse and underuse (Niemiec, 2014). *Mindful Strength Use* follows the pattern of the '*Aware-Explore-Apply*' model (Niemiec, 2013), starting with first becoming aware of one's strengths. This is normally done by completing the VIA psychometric survey and is often the first step of many signature strength interventions (e.g., Gander et al., 2012a). Mindful strengths awareness can also come from strengths spotting in others, which involves mindful listening. When directing mindful attention inwardly, the process is similar to 'psychological mindedness', defined as bringing awareness and understanding to the psychological processes and emotional states one is experiencing (Horowitz, 2002). The similarities between psychological mindedness and mindfulness have been identified empirically, while emphasizing that they remain separate constructs (Beital et al., 2005). A longitudinal mediation by Duan and Ho (2017) demonstrated that the observing facet of mindfulness (or, mindful awareness) predicted temperance strengths, which then in turn predicted flourishing. In simple correlations, this mindful awareness was also related to interpersonal, intellectual and temperance related character strengths– suggesting that one can direct mindful attention towards a strength, and in turn develop it further.

Niemiec (2014) states that "mindful awareness helps explore the nuances of strength expression" (p.89), in which mindfulness is used as a "higher-order process" (p.90) for using strengths in the correct context, combination and balance. One exercise in MBSP called '*Strengths Branding*', invites individuals to attach mindfulness to one of their signature strengths (e.g. mindfully curious), and explore how the two work together. Similarly, in the '*Strengths Exploration*' exercise in session five, participants direct their full attention to one character strength, becoming aware of the strength within them and exploring the different manifestations and meaning of the strength. Throughout the participants are instructed to return their attention back to the strength, similarly to how they would return their attention to their breath.

This exploration then leads to applying strengths, in which mindfulness is used as a monitor of strengths overuse and underuse. Niemiec argues that both underuse and overuse are a result of a lack of mindfulness, relapsing to autopilot, and that mindful awareness of strengths can lead to a better understanding of the golden mean of strengths (Biswas-Diener et al., 2011; Grant & Schwartz, 2011; Linley, 2008).

Research on MBSP

Published. There is limited published empirical research on MBSP to demonstrate its effectiveness on self-efficacy and other variables related to wellbeing. At the time of thesis design, only one empirical study was published and two pilot studies described in published literature. Since then, published papers on the programme are beginning to slowly increase. The first pilot study described in Niemiec's book was conducted in 2011, with a sample size of 15 (8 MBSP participants and 7 controls). Though the methods of statistical analysis are not specified, Niemiec reports increases in flourishing, engagement and signature strengths use in the MBSP group over controls

(Niemiec, 2014, p.118), but no changes in depression, meaning or mindfulness. A book chapter written by Niemiec and Lissing (2016), highlights positive relationships as a consistent finding in MBSP studies, evidenced by comments in the qualitative evaluation forms completed at the end of the programme. Describing several corporate case studies of MBSP, the authors describe the effect of the programme on inter-employee relationships, a deep enjoyment of the programme, and the use of MBSP skills to handle life difficulties.

The first empirical research (Ivtzan et al., 2016) published on MBSP recruited a larger sample size: 19 MBSP participants and 20 control participants. This study demonstrated increases in satisfaction with life, flourishing, engagement and signature strengths use among intervention participants in comparison to controls, who experienced no differences between pre and post measures. At time of thesis design, no randomised control trial on MBSP had been conducted. However, throughout the course of the PhD, three randomised control trials of MBSP have been published, two comparing the results between MBSP and MBSR. Results show that both interventions resulted in increases in humour, with a stronger effect found in the MBSP condition, even though humour is not directly targeted as part of the programme (Hofman et al., 2019). A further study explored the effectiveness of these two interventions on workplace outcomes and found that whilst both interventions showed increases in wellbeing and job satisfaction, MBSR additionally reduced stress and MBSP increased task performance. This demonstrated that MBSP is particularly effective on employee performance, rather than employee wellbeing (Pang & Ruch, 2019a). The third randomised control trial on MBSP was conducted in undergraduates, demonstrating that those who completed MBSP experienced significant increases in wellbeing as measured by the PERMA-profile and showed higher rates of retention (Wingert et al., 2020).

Unpublished. Despite the limited number of empirical papers published on MBSP, there are still several ongoing projects that are currently taking place across the world. In Mexico, a university-wide approach has been undertaken for both undergraduate and postgraduate students, indicating a positive impact on stress, relationships, self-control, mindfulness and meaning (Okamoto, 2019). On a smaller scale, Pang has continued work comparing MBSP with a waiting list control, demonstrating increases in mindfulness and all 24 character strengths (Pang, 2019). Similarly, work in the Netherlands has explored the benefits of an MBSP adaptation with adolescents (Keenes & Peeters, 2019) which demonstrates improvements in emotional and psychological wellbeing. Further pilot studies are referenced in a summary chapter of MBSP, which show similar decreases in anxiety and depression (Wingert, 2017, as cited in Bretherton & Niemiec, 2017) and in loneliness and negativity (Morales Cueto, 2017, as cited in Bretherton & Niemiec, 2017).

Structure of the Programme

Developed in 2014, MBSP is an 8-week non-clinical programme designed to combine mindfulness and character strengths to help individuals to flourish. A brief overview of the programme, including the focal exercises and meditations can be seen in Table 1.2.

Table 1.2

MBSP Outline following the original layout from Niemiec's handbook (2014)

Week	Title	Main Idea	Meditations/Exercises
1	Mindfulness vs Autopilot	Mindfulness allows for greater everyday life experience, when in autopilot we miss so many good details.	*Raisin Exercise, Body Mindfulness Meditation*
2	Your Signature Strengths	Everyone has character strengths that make us who we are. When we learn how to use these, we can unlock a greater potential.	*You At Your Best, Character Strengths Breathing Space*
3	Obstacles are Opportunities	When used together, mindfulness and character strengths can be used to tackle obstacles.	*Strength Outcomes, Statue Meditation*
4	Mindfulness in Everyday life	Strong Mindfulness (using character strengths to enhance your mindfulness practice).	*Walking Meditation, Strengths Gathas*

5	Valuing your relationships	Relationship with self is key to personal growth. This impacts how we relate to others.	*Loving-Kindness and Strengths Exploration*
6	Mindfulness of the Golden Mean	Strengths can be underused and overused. Mindfulness helps us reframe situations	*Reframing, Fresh Look Meditation*
7	Authenticity and Goodness	Being the best you, and the best person you can be.	*Strengths Branding, Best Possible Self, Defining Moments, Signature Strengths Breathing Space*
8	Your Engagement with Life	Taking stock of what has been learnt and how to be proactive in keeping up your practices.	*Sacred Object Meditation, Golden Nuggets*

Each session follows the same basic ingredients as seen in Table 1.3 as taken from Niemiec and Lissing (2016). The structure of each session is similar to that of MBSR, on which at least the structure of MBSP is based. The remainder of this chapter explores each session in detail, the main teachings, exercises and homework included, alongside the theoretical groundings for each component.

Table 1.3

Standard Structure of MBSP Sessions. Table taken from Niemiec and Lissing (2016)

Part	Focus Area	Description
I	Opening Meditation	Start group with “practice,” allows for letting go of preceding tension and ushers in a different focus.
II	Discussion: whole group or multiple small groups	Review participants’ practice from last week with the following catalyst: What went well?
III	Lecture/Input	Offering new material aligned with core themes.

IV	Experiential	Core practice with mindfulness and character strengths is experienced.
V	Virtue Circle	Structured, respectful approach for mindful listening/speaking practice and strengths-spotting/appreciating practice.
VI	Suggested Homework	Review of focus areas in between sessions.
VII	Closing meditation	Letting go of session to come fully into present moment; mindful transitioning to the next part of the day.

Session 1: Mindfulness VS Autopilot

Key Teachings. The aim of session one is to introduce the programme, establish the group culture, and set the expectations of engagement and commitment to the group. The first 20-30 minutes of this session is dedicated to welcoming, discussing logistics of the group, the structure of each session, the aim of the programme and getting to know group members, beginning with positive introductions to encourage group cohesion. Here, it is important for the facilitator to express their hopes for the group, as well as to show gratitude for each member taking part. The facilitator vocalising aspirations for the group, is a first step towards installing hope in participants, one of Yalom's (1995) therapeutic factors for group therapy.

Session one focuses on teaching the basics of mindfulness, introducing participants to the definition of mindfulness according to the definitions laid out by Thich Nhat Han (1979) and Jon Kabat-Zinn (1994). Through the exercises, individuals adopt a 'beginner's mind' approach to mindfulness, in which one experiences an object as if for the first time. This is known as the Zen Buddhism term 'Shoshin' (Suzuki, 2020). The concept of autopilot is also introduced, with the slogan "Catch AP-ASAP" or "catch auto-pilot, as soon as possible" (Niemiec, 2014, p.130). The facilitator emphasises that autopilot should not be perceived negatively and to appreciate the vast complex actions one can complete without needing to draw attention to it, but also highlights the great details that are missed through this.

In this first session, participants may be practicing mindfulness for the first time, so the facilitator must normalise difficulties in concentration, showing understanding and kindness to all participants in order to create an atmosphere in which individual's feel comfortable to be open and honest, and safe to explore mindfulness for the first time.

Raisin Exercise. The *Raisin Exercise* was created by Jon Kabat-Zinn in Mindfulness-Based Stress Reduction (1982) and research demonstrates the benefits of this exercise on encouraging heathier eating (Jordan et al., 2014), decreases in weight, depression, stress, eating disinhibition and binge eating (Dalen et al., 2010). It is a way of practicing the fourth mindfulness training of nourishment and healing, in which mindful eating is a way of practicing mindful consumption of food (Nhat Hahn & Cheung, 2011). Mindful eating strives towards this training and has been shown to result in higher levels of physical activity and healthy food intake (Barnett, 2018). Not only does mindful eating increase healthy lifestyle activities, but also positively affects wellbeing and self-compassion (Shaw & Cassidy, 2020). The *Raisin Exercise* is the first meditation that takes place in MBSP and is introduced as an accessible way to use the beginner's mind approach. The exercise begins, as with many meditations, with breath awareness, in order to bring individuals into the present moment and focus their attention. Then the practice uses each of the five senses to explore the raisin, as if for the first time. Throughout this first meditation, the facilitator refers to the wandering mind and introduces participants to how to handle these wandering thoughts though noticing and accepting them before redirecting attention elsewhere.

Body Scan. Mindfulness of the body is foundational in mindfulness programmes and was formally structured as the *Body Scan* by Kabat-Zinn in MBSR, where he described it as a "sweeping of the body" (1982, p.36). Research surrounding the *Body Scan* demonstrates the many benefits it can inspire, as is clear by its popularity and use in mindful programmes (Dreeben et al., 2013). Practicing the *Body Scan* produced even short term reductions in anxiety and stress (Call et al., 2014) and when used in longer interventions, resulted in lower irritability, tension, restlessness and lower desire to smoke than controls (Cropley et al., 2007), as well as increases in sensitivity toward somatic sensations (Mirams et al., 2013).

In this exercise attention is described as a 'spotlight' and participants are encouraged to shine this ‘spotlight’ on different parts of their body each in turn as guided by the facilitator, noticing sensations such as temperature, muscle tension, the feeling of clothes, breezes, movement in the body and so on. Throughout this exercise, participants are encouraged to bring curiosity, acceptance and openness to any sensations they notice, practicing ongoing self-kindness. Between each section of the body, participants are invited to release the details of the previous body part and bring their beginner’s mind to the next part.

Homework. The importance of homework throughout the programme is highlighted as fundamental to the programme, as it acts as the “connective tissue between sessions” (Niemiec, 2014, p.132). Meta-analyses on the role of homework in cognitive behaviour therapy demonstrate that homework assignments have positive effects on therapy outcome (Kazantzis et al., 2000), and the extent to which participants engage in mindful practices out of sessions mediates the effectiveness of the mindful interventions (Helber et al., 2012). As such, participants are presented homework tasks to practice and experiment with, to find out where they might fit within their routine. As the research demonstrated a mediating effect of homework compliance, participants were consistently encouraged to engage with homework throughout the programme. As homework, participants were given four practices to try at home. The first was to complete the online VIA-IS profile (Peterson & Seligman, 2004) and to bring a printout of their profile to the next session. Secondly, to practice the *Body Scan* once a day to begin to establish a mindfulness routine. Additionally, participants were asked to bring the beginner’s mindset to one routine activity throughout the week, such as brushing their teeth, eating or washing the dishes. Finally, participants were also asked to prepare a ‘*You At Your Best*’ story which will be used in session two.

Session Two: Your Signature Strengths

Key Teachings. Session two introduces participants to the VIA character strengths and virtue framework (Peterson & Seligman, 2004), and helps them to navigate their responses and reactions to their survey results. The session aims to reduce “strengths blindness” (Niemiec, 2014, p. 28) and help participants to recognise their personal strengths, something that many people find difficult (Linley & Harrington, 2006). Here, participants are introduced to their ‘Signature Strengths’, usually the strengths at the top of the VIA survey results. Research demonstrates that individuals who are aware of and actively use their signature strengths are significantly more likely to flourish (Hone et al., 2015). Alongside becoming aware of individual signature strengths, session two also teaches individuals the skill of '*Strength Spotting*' both in themselves and in other people. Niemiec reports that people tend to find spotting strengths in others initially easier than in themselves (2014; p. 33) and is a staple to most strengths interventions (e.g., Quinlan et al., 2018). As such the *You at Your Best* is the first strengths activity completed in session two.

You at Your Best. The *You at Your Best* exercise is the first introduction to strengths-spotting in the programme, by practicing spotting strengths in one another and can be used in pairs as in this session, or as an independent exercise. When tested as a stand-alone intervention, this exercise results in improvements in happiness and depression, but to the same degree as a placebo group as shown in Seligman and colleagues' study (2005). Although this specific exercise may not be effective in isolation, it is a useful tool to help participants become familiar with the language of character strengths (Niemiec, 2017, p.169), which is highlighted as an important first step to achieve strengths fluency (Linkins et al., 2014). However, general spotting and appreciating of strengths expression have been shown to predict relationships satisfaction and positive relational outcomes (Algoe et al., 2010; Kashdan et al., 2018). The story used in this exercise is prepared by the participants as part of the homework prior to the session, under the instructions to bring a story in which they felt they were at their best, such as a situation which they handled well. In this session, participants are invited to work in pairs with one person telling their story, and the other person identifying character strengths in the story. Once the account has finished, the 'listener' discusses the character strengths identified, providing a rationale for each one. Then the pair swap over, with person B now recounting their narrative. Following this, a group discussion takes place concerning the ease or difficulty with which participants took to each role. Normal feedback here indicates an ease around spotting strengths in others, and a discomfort or awkwardness when having their own strengths spotted. This awkwardness is evidence of the negativity bias in self-perception, which is more commonly active when considering a past and/or present self (Luo et al., 2010). As increased levels of character strengths reduce mental health stigma towards others (Müller-Pinzler et al., 2019), the *You at Your Best* exercise acts as an initial first step to positive self-thought and recognition of positive character strengths.

Character Strengths Breathing Space. This is a three-step exercise adapted from the *3-*

Minute Breathing Exercise used in Mindfulness-Based Cognitive Therapy (Segal et al., 2002) which is one of the most common practices prescribed by mindfulness apps (Mani et al., 2015). This exercise involves three steps: (1) Bringing awareness to the present moment, (2) focusing solely on the breath, and (3) expanding awareness to the whole body. This exercise allows individuals to fully explore the present moment, from the room around them, sounds and external stimuli, to one's breathing, and to their body as a whole. In Niemiec's paper on strong mindfulness (2012), he draws attention to three character strengths which are used in this exercise: curiosity, self-regulation and perspective. The *Character Strengths Breathing Space* exercise uses the same three steps as in MBCT, but explicitly references the use of each of these strengths. In the first stage, participants are encouraged to use curiosity to explore the present moment fully, followed by using self-regulation to maintain the focus on breathing. The final stage involves expanding awareness from the breath, to the body as a whole, using the character strength of perspective.

Homework. Participants were encouraged to continue practicing the body scan as in the last session, and to choose a new routine activity to bring full mindfulness to. One new exercise assigned as homework is to practice *Signature Strengths In A New Way* each day. This is a key practice in positive psychology, which has shown to maintain increases in happiness and decreases in depression for up to six months after completing it for a week (Gander et al., 2012a; Linley et al., 2010; Seligman et al., 2005). Finally, participants were invited to choose one or two questions on Handout 2.3 (e.g. 'What surprises you most about the results?', Niemiec, 2014) to further explore their reaction to their character strength results.

Session Three: Obstacles are Opportunities

Key Teachings. Having introduced both mindfulness and character strengths, session three begins to teach how they can be integrated with one another, as first introduced using the 'two trees' metaphor, in which Niemiec describes mindfulness and character strengths as two trees which are separate, but also connected and mutually supportive of one another (2014, p.48). In session three, the first way of integrating is introduced: *Strong Mindfulness*. The teachings in this session revolve largely around character strengths as pathways to achieve goals, and face obstacles experienced in mindfulness practice. Character strengths are frequently referred to as resources, particularly in positive education research (Shoshani & Slone, 2012), and specifically as resources to deal with work stress which occurs when facing obstacles (Weber et al., 2014). Instead of becoming deterred by obstacles, or feeling a sense of failure, MBSP participants are encouraged to view these as opportunities for strengths use, enhancing mindfulness practice, and for personal growth.

Strengths and Positive Outcomes. One of the first activities after the opening meditation and homework review, is a group activity in which participants are asked to consider what they want most out of life. Each 'goal' is added to the white board, and usual responses can include 'fulfilment', 'family', 'health' and so on. Once participants are ready, they are then asked to identify which character strengths can be used to achieve each of these goals (e.g., spirituality for fulfilment, love for family or self-regulation for health). Whilst not an exercise that would necessarily produce increases in wellbeing, this exercise is instrumental in educating participants on how strengths can be equipped in order to achieve goals.

Statue Meditation. The meditation introduced in session three is the '*Statue Meditation*', which provides an opportunity for participants to experience obstacles in mindfulness practice and bring character strengths and mindfulness to those obstacles. Including this exercise in MBSP equips individuals with tools to face obstacles and overcome them, a skill often not taught in mindfulness programmes (Baer & Linkins, 2011). In their paper '*Strong Mindfulness*', Niemiec and co-authors specifically describe the role of persistence, bravery, zest and perspective when facing obstacles in meditation (Niemiec et al., 2012). In MBSP, participants begin the *Statue Meditation* in a standing position and then raise their arms as if hugging a large exercise ball. As the meditation progresses, obstacles such as pain, boredom or fatigue will inevitably be experienced. When obstacles are experienced, participants are encouraged to label the obstacle, and bring forth a character strength to respond to it; for example, using perseverance in the face of pain, curiosity to combat boredom or zest for fatigue.

Homework. The out of session practices for session three continue building a routine, with use of the *Body Scan* and the *Character Strengths Breathing Space*. However, participants are encouraged to pay closer attention to the obstacles faced in these meditations and bring forth character strengths in response to these. Two new exercises are introduced as homework: the '*Speak*

Up!' and '*Strengths-Activity Mapping*' exercise.

'*Speak Up!*' is another exercise in strengths spotting and appreciation targeted at strengths in other people. Participants are challenged to spot and appreciate the strengths in two people, dedicating time to explicitly share the value and impact that someone's strengths use has had on them. Given the benefits of strengths spotting on relationships (Algoe et al., 2010; Kashdan et al., 2018), this exercise therefore not only increases strengths fluency but is likely to have a positive influence on the relationship between the participants and the target person.

Finally, participants are encouraged to practice self-monitoring their own strengths use throughout the day, to further develop strengths awareness in individuals, in an exercise called '*Strengths-Mapping*'. This is grounded in clinical treatment as a method of both assessment and treatment (Korotitsch & Nelson-Gray, 1999), and in MBSP this exercise continues to help individuals identify their character strengths at work in everyday life.

Session Four: Mindfulness in Everyday Life

Key Teachings. Session four continues to teach strong mindfulness, by using character strengths to bring mindfulness practices into everyday life. This is focused on bringing a beginner's mindset to everyday activities such as *Mindful Walking* and looking for opportunities to use strengths within them. In addition to using character strengths to face obstacles, this session also uses character strengths to enrich mindfulness practice. By consistently spotting strength use, such as the '*Signature Strengths In A Flash*' (a brief participant feedback exercise in which participants spot a signature strength they have used in the preceding week), this session further strengthens participants' understanding and exploration of their own strengths at work.

Walking Meditation. The focal exercise in this session is *Walking Meditation*, also found in session three of MBSR alongside mindful yoga (Santorelli et al., 2017), to bring further awareness to the body through movement. Here, mindful walking acts as an example for incorporating mindfulness into everyday life by bringing a beginner's mindset to the motion of walking. Mindful movement interventions demonstrate good empirical evidence for improving quality of life and reducing fear (Crane-Okada et al., 2012), and specifically mindful walking interventions demonstrate significant improvements in quality of life, reduced psychological stress (Teut et al., 2013) and can help maintain mindfulness practice (Gotink et al., 2016). In MBSP, this exercise can optionally begin with mindless walking, to draw a bigger contrast between the two styles of movement. After walking mindfully for a period of time, participants are asked to identify which character strengths they are using in the present moment, while they are mindfully walking, to draw connections between strength use and everyday mindfulness. When bringing strengths to this exercise, participants often choose curiosity, appreciation of beauty and excellence, and zest, which is explicitly suggested for use in this exercise (Niemiec, 2014). *Walking Meditation* is often enjoyed by individuals who perhaps struggle with stationary meditation.

Gathas. As the closing meditation, participants are led through a meditation on a *Gatha* and as homework, are challenged to create their own personalised *Strengths Gatha*. Gathas are described and created extensively by Thich Nhat Hanh (1979). Whilst similar to mantras, a gatha is a short poem or verse that brings awareness to the present moment and also makes a connection to the immediate future. Passage meditation-based interventions demonstrate clear benefits of mental health, decreased stress (Oman et al., 2006), increased caregiving self-efficacy (Oman et al., 2008) and increases in compassionate love (Oman et al., 2010). In MBSP, participants are encouraged to use these gathas to bring awareness to the present moment and their character strengths within it, to "help to catalyse moments of mindful living as well as positive action for the immediate future" (Niemiec, 2017, pg. 238). Participants are encouraged to utilise their creativity and gratitude to create their own gatha which might be offered as the opening or closing meditation in session five. This introduction to gathas is important, as they are used throughout the remaining sessions within meditations. Below is an example of a gatha:

Breathing in, I see my strengths,

Breathing out, I value my strengths,

Dwelling now in my strengths,

I express myself fully.

(Niemiec, 2014, p. 173)

Homework. As homework, participants are encouraged to bring mindfulness further into their everyday lives through practicing mindful walking regularly, along with maintaining their regular practice with the *Body Scan* or *Character Strength Breathing Space*. In addition to the gathas explained above, participants are also encouraged to carry out a '*Strengths Interview*' with a friend or family member. Reported as one of the favourite strengths practices (Niemiec, 2014, p. 120), this exercise involves interviewing someone about their own strengths and paves the way for session five, which focuses on relationships.

Session Five: Valuing Your Relationships

Key Teachings. Session five looks closer at the role of relationships, both with others and with ourselves in our flourishing. The session introduces the positivity ratio, first introduced by Fredrickson and Losada (2005), showing that a ratio of 2.9 or above of positive to negative affect was found in individuals classified as flourishing. In other words, there should be three positive experiences for every negative experience. In a relationship, this could be three affirmations for one criticism. This ratio has been widely critiqued and debunked (Brown et al., 2013; Friedman & Brown, 2018) with a five to one ratio suggested for relationships (Gottman, 2014). Although the critiques show the ratio should not be accepted as an absolute scientific value, Fredrickson argues that the evidence is a higher ratio is better, but within bounds (Fredrickson, 2013). As such in MBSP, it is introduced as a good principle to strive for, rather than a mathematical certainty. Here, character strengths are used as the positive language and participants are challenged to spot three strengths for every criticism. Beyond relationships to others, this session focuses on the relationship to the self, challenging participants to use this ratio inwardly in their self-talk. Self-compassion is key in this session, for which mindfulness is classed as one of the three components of self-compassion as defined by Neff (2003).

Loving-Kindness Meditation. *Loving-Kindness Meditation* (LKM) is a traditionally Buddhist meditation, in which loving-kindness is directed to the self, to close friends and family, to acquaintances and to 'enemies' (Salzberg, 1995). A meta-analysis on *LKM*-focused interventions demonstrated consistent improvements in positive emotions with medium effect sizes (Zeng et al., 2015). These positive emotions include increased social connectedness (Hutcherson et al., 2008), decreases in pain and psychological distress (Carson et al., 2005), reduced PTSD and repression (Kearney et al., 2013) and longitudinal increases in positive emotions (Fredrickson et al., 2008). In MBSP, this exercise is focused on self-compassion, revisiting a moment in which they felt loved by someone, and speaking a gatha inwardly. Here, mindfulness and the character strength of love work together as is illustrated in the two-step process of *LKM* from Kristeller and Johnson (2005). Here they state a process of disengagement from self-judgment and negative reactions (as can be achieved by being mindfully aware of thoughts and applying the 'thoughts are not facts' mentality) and directing attention towards the individual's ability to love (bringing attention to the character strength of love).

Strengths Exploration. In the *Strengths Exploration* meditation, participant's direct mindful attention to a character strength of their choice and are guided through the '*Aware-Explore-Apply*' model used by Niemiec throughout the programme (Niemiec, 2013; 2014; 2017). Research demonstrates that interventions based on this '*Aware-Explore-Apply*' model demonstrate increases in wellbeing and strengths use (Dubreuil et al., 2016). In MBSP, this model is gradually introduced throughout the design of the programme, but here it is used explicitly as a short, direct intervention on a specific strength. Participants begin by becoming aware of a strength within them, and how it is being used in the present moment. Following this, individuals explore what the strength means to them, perhaps considering personal experiences of the strength and when it has been used well. Finally, participants consider how they can apply this strength in the present moment and in the immediate future.

Homework. The homework from session five included continuing a mindfulness routine with either the Character Strength Breathing Space exercise or the Body Scan and practicing the Loving-Kindness *Meditation* throughout the week. Here, they are also challenged to complete the '*Character Strengths 360*' exercise, reported to be one of the favourite character strength exercises in the programme (Niemiec, 2014, p. 120). This exercise is a good example of the 'ask' in the 'ROADMAP' method to character development (Niemiec, 2014), in which participants ask friends, family and colleagues to spot strengths in them. These are then compared with other ratings and the VIA survey results to see which character strengths participants are demonstrating clearly in different domains of their life. This exercise has been used in education settings (Linkins et al., 2015) and also as a single session intervention, showing decreases in negative emotions and increased thriving (Bu & Duan, 2018). Finally, there is a short '*Character Strength Brainstorm*' worksheet, which asks several questions which follow the *Aware-Explore-Apply* model (i,e, 'What does it mean to have or express this strength?').

Session Six: Mindfulness of the Golden Mean

Key Teachings. Session six introduces an integral theme and skill for successful strength use: the golden mean, in which each character strength is considered on a spectrum and can be both overused and underused. Here, mindfulness is used to view character strength use accurately, and consider the balance needed depending on the context and aim of character strength use. This notion of balance comes from Aristotle's philosophy (as cited in Niemiec, 2019) which recommends the use of 'practical wisdom' or 'phronesis' (Aristotle, 2000) to use virtues effectively. Schwartz explains that no virtue can be used successfully without the use of practical wisdom, referring to Aristotle's thought that excellence comes from finding the mean between two extremes (Schwartz, 2011; Grant & Schwartz, 2011), describing that practical wisdom "combines will with skill" (p. 5). Schwartz specifically links practical wisdom with character strengths, arguing practical wisdom as a master virtue for whenever character strengths need to be used in actions (Schwartz & Sharpe, 2006). This 'practical wisdom' has been interpreted as mindfulness (McEvilley, 2001) and could be seen as 'mindful awareness' in the context of MBSP where participants become mindfully aware of their overuse and underuse, and consider the character strengths which are needed to bring balance to the situation. This is described in MBSP as the overuse and underuse of strengths (Niemiec, 2019). For example, the overuse of curiosity is being nosy and intrusive, whereas the underuse is being apathetic and self-involved (p. 5)

Overuse and underuse of strengths (Niemiec, 2019) has been used as a means of explaining psychological disorders such as obsessive-compulsive disorder (Littman-Ovadia & Freidlin, 2019) and social anxiety disorder (Freidlin et al., 2017), and a specific overuse-underuse scale has been developed (Freidlin et al., 2017). This golden mean and the use of reframing has great implications, such as for use with developmental disabilities (Niemiec et al., 2017). This session focuses on the ability to notice this and reframe the situation, looking to the strengths at work and the opportunity to use strengths effectively. Participants first practice reframing by listening to a story and identifying the strengths which are being overused, underused, and which new strengths are needed to bring balance. This takes place through discussion, to allow participants to explore this and understand fully prior to the meditation.

Fresh Look Meditation. The *Fresh Look Meditation* focuses on the golden mean, and reframing situations as is used in clinical hypnosis (Hammond, 1990; Yapko, 2011). Participants focus on a minor problem or situation they are facing, and bring a mindful awareness to their strengths use, identifying strengths which are being overused and underused, and which strengths need bringing to the situation. At the end of the exercise, participants are asked to replay the situation, but imagining it with optimal strengths use to notice how the situation might go differently. This exercise focuses on the process of reframing, a process of positive reappraisal, which is supported by the use of mindfulness (Garland et al., 2009). Applying mindfulness to positive reappraisals assists in developing a positive upwards spiral (Garland et al., 2011).

Homework. As homework, alongside continuing a regular mindfulness routine, participants practice *Fresh Look Meditation* throughout the week, and in addition take up a *Mindless-Mindful* exercise. This exercise differs from the mindfulness in a routine exercise, by bringing mindfulness to a bad habit, using a beginner's mind in the process, and to notice what new things they learn as a result. This process is described by Kabat-Zinn as a shift from instinctive reactions to responding skilfully to the situation (Kabat-Zinn 1990; Segal et al., 2013).

Session Seven: Authenticity and Goodness

Key Teachings. As the end of the programme draws closer, the final two sessions become focused on reflecting on the journey participants have completed, tools they have learnt and how they will utilise these tools going forward without formal sessions. Research demonstrates that character strengths are key in achieving personal goals (Linley et al., 2010; Miller & Frisch, 2009), supporting the notion of 'strengths as pathways' or 'drivers' (Crabb, 2011) that is prominent in MBSP. This session encourages participants to consider how the programme will help them become a better version of themselves, using all of their character strengths well and experiencing positive benefits; but also how the programme will help them to become a better and more effective person in their community. Participants reflect on the *Aware-Explore-Apply* process that the programme has undertaken and begin to set personal goals to continue their practice beyond the programme.

Best Possible Self. The *Best Possible Self* meditation focuses on the achievement of a future goal and noting the character strengths necessary to achieve it. This exercise has been used throughout the literature and demonstrates increased subjective wellbeing, decreased illness (King, 2001), decreased depressive symptoms in those low in emotional processing (Austenfeld et al., 2006), increased positive affect and more hopeful expectations of the future (Peters et al., 2010). This optimism remained even after controlling for increases in positive mood (Meevissen et al., 2011). The exercise begins with a breath anchor before identifying a personal goal participant wish to achieve and imagining the point in the future when they have achieved the goal. Then participants direct attention to which character strengths will be needed to make this goal a reality, considering strengths as pathways, and how signature strengths can be used to boost lower strengths.

Defining Moments. Continued from the previous meditation, this meditation instead looks to a past moment which was key in contributing to self-identity. This exercise follows a similar pattern to the *Best Possible Self* exercise, beginning by identifying and revisiting this moment in detail. Following this, participants are then encouraged to spot which strengths were at use in this moment and how the use of those strengths contributed to the positive outcome. This focuses on emphasising the personal growth that occurred in the moment, which has been shown to lead to higher levels of wellbeing (Bauer et al., 2008). Bauer et al. hypothesised that this exercise could increase self-efficacy, savouring and enhance positive self-perceptions. As such, completing this exercise immediately following the best possible self, could theoretically emphasise the theorised increase in self-efficacy. If the *Best Possible Self* focuses on how strengths will be needed, the *Defining Moments* shows participants that they have been able to do that successfully in the past, thus increasing perceptions of self-efficacy.

Homework. The homework for this session is centred around considering how participants will continue practice after the formal sessions have finished. The Goal-Setting worksheet focuses on setting life and mindfulness goals and highlighting which character strengths are needed to achieve them. Goal setting in itself has been linked to improved wellbeing (Sheldon & Elliot, 1999; Sheldon & Houser-Marko, 2001). Participants should also consider what type of support they would like to help maintain their practice and to choose a mindfulness cue. Finally, the session begins and finishes with a new meditation: the *Signature Strength Breathing Space* Exercise. Another three-step exercise like the *Character Strength Breathing Space*, this exercise draws the attention to a participant's own signature strengths, using the *Aware-Explore-Apply* model to fully consider one signature strength. This exercise brings together aspects from previous meditations and sessions, namely the use of signature strengths, *Strengths Gathas*, the *3-Step Breathing Space* and applying the *Aware-Explore-Apply* model.

Session Eight: Your Engagement with Life

Key Teachings. The final session of MBSP looks back on previous sessions, the themes and skills taught throughout, and also helps participants plan how MBSP skills will be applied in future life, to live with greater mindfulness and strengths use. The first two activities of this session are discussion based, considering the themes and practices which were prominent for participants throughout the programme, and the character strengths used within the group itself. Both of these are short whiteboard and virtue circle based activities, but provide an opportunity to collaboratively reflect on the programme as a group.

Sacred Object Meditation. As part of reflecting on the programme, participants are offered a 'sacred object' to act as a 'transitional object' (Niemiec, 2013, p. 219) for them to keep as a reminder of the programme and all they learnt throughout. Although originally from Bandura's social learning theory (1977), transitional objects are used in mindfulness programmes to reduce reliance on the facilitator and sessions themselves (Boudette, 2010; Kelly, 2015; Lanyado, 2008). This exercise is also included in MBCT, as a way of finishing the programme (Segal et al., 2013), and mindfulness interventions which have included transitional objects result in increases in psychological wellbeing and decreased perceived stress (Goldstein, 2007). In the MBSP handbook, Niemiec suggests giving participants each a pebble with a character strength painted on for this gift. In all MBSP sessions described in this thesis, the 'sacred object' was a small jar, with a written character strength suspended inside on a piece of string. The guided meditation starts with a beginner's mind meditation; fully exploring the object as if for the first time. Then the facilitator briefly describes each session of the programme and the meditations or themes taught. The exercise finishes with describing the object as a reminder of the programme, inviting participants to place it somewhere they will see it each day.

Golden Nuggets. The final exercise asks participants to consider the piece of learning they have received from MBSP, and to share this with mindful speaking and listening, similar to MBSR in which participants share what has been most salient to them from the programme (Kabat-Zinn, 1979).

As session eight is the final session, there is no formal homework, and the session is closed with the group's favourite meditation.

Facilitator Training

All cohorts of MBSP within this thesis were delivered by trained MBSP practitioners. Although no official accreditation process is yet available for MBSP, the facilitator was trained following the good practice guidelines outlined by the British Association of Mindfulness-Based Approaches (BAMBA, 2020). The first guideline states that facilitators should have personal participation and in-depth understanding of the course they wish to teach. In this case, the facilitator first took part in the programme as a participant, fully engaging with each in session and out of session practices. Following this, the facilitator studied the handbook (Niemiec, 2014) and created a separate, shorter 'facilitator's notes' booklet for use when leading sessions as way of establishing thorough understanding. The next guideline outlined by the BAMBA is that facilitators undergo rigorous teacher training and supervision. This began with the facilitator co-facilitating a programme alongside a 'Master Trainer', endorsed by Niemiec. In training, the facilitator took the lead on delivering the meditations and group exercises, with the trainer filling in gaps as needed and assisting the smooth transitions between session components. This co-facilitation style involved session-by-session supervision, both before and after each session in which feedback was given and required improvements noted. Following this, the facilitator led their first independent group, under continued weekly supervision to allow for further learning and troubleshooting. The guidelines also state that clinical experience and qualifications should be held where the mindfulness course is either clinically designed or used with clinical patients. This was not applicable in this thesis. In keeping with the next guidelines, the facilitator was committed to their own personal practice of mindfulness, both formally and informally. A further BAMBA guideline is for the facilitator to keep contact with other practitioners, continue regular supervision and show commitment to ongoing development. This was fulfilled through the facilitator attending meet ups with other facilitators at conferences, having continuous supervision and completing further training of Niemiec's online 'MBSP II: Learning to Lead'.

MBSP groups included in this thesis.

All MBSP groups that were run as part of this PhD project can be seen in Table 1.4, with a clear breakdown of which facilitator delivered the programme, the population of the programme and which chapter the data is described in. After analysing groups separately in chapters, all groups were further analysed together, controlling for group effects on page 130.

Table 1.4

Summary of MBSP groups within the thesis

Time within PhD	Length (weeks)	Group size	Population	Facilitator	Chapter
January – April 2018	8	15	PSY	Director of Studies and Doctoral Candidate	N/A
May – June 2018	8	8	PGRs	Doctoral Candidate	3
May – June 2018	8	6	PGRs	Doctoral Candidate	3
October – December 2018	8	5	PGRs	Doctoral Candidate	3
October – December 2018	6	4	6^{th} Form	Doctoral Candidate	4
October – December 2018	6	5	PSY	Director of Studies	4
February – March 2019	6	14	PSY	Director of Studies	4
January – April 2020	6	22	PSY	Director of Studies	4

October – December 2019	8	7	MED	Doctoral Candidate	2
October – December 2019	8	5	FSY	Doctoral Candidate	2
January – April 2020	8	5	MED	Doctoral Candidate	2
January – April 2020	8	4	FSY	Doctoral Candidate	2

Note: PSY = Psychology undergraduates taking the Character Strength and Virtues 2^{nd} year Psychology Elective; PGRs = Post-Graduate Researchers; 6^{th} Form = 16-18 year olds enrolled in 6^{th} Form College; MED = First year medical undergraduates; FSY = Foundation Science Year undergraduates.

CURRENT RESEARCH QUESTIONS

With very few published empirical studies, there are still many questions that deserve investigation around MBSP in order to fully understand the impact of the programme and the role of each component.

Research Question One: What are the effects of MBSP on mindfulness, strengths use, self-efficacy, resilience, work engagement, wellbeing, depression, anxiety and stress? Are these effects replicable across several cohorts of MBSP and across different populations within higher education?

At the time of thesis design, only the pilot studies described by Niemiec and the first empirical study on MBSP (Ivtzan et al., 2016) were published. Therefore, in studies 1 and 2, this thesis sought to identify what effect MBSP has on outcome measures, and whether this was sustained and replicated across several different trials. This was explored using a randomised control trial design to fully explore, under controlled circumstances, what changes participants experience as a result of the programme in comparison to controls, additionally controlling for cohort effects where possible. This was examined in different populations in higher education: foundation science year students, first year medical students, second year psychology students and doctoral students. To explore whether the effects of MBSP are sustained longitudinally, effects were examined up to six months after participants completed MBSP.

Research Question Two: Beyond outcomes captured by quantitative measures, what additional benefits do participants experience? How and in what way are the practices of MBSP implemented in participants' daily lives?

Even in the most recent studies on MBSP, there is a distinct lack of devoted qualitative research, something called for in the third wave of positive psychology (Lomas et al., 2020). The feedback form that is often utilised after the final session of MBSP provides only limited insight into the personal effects experienced as a result of the programme. As such, study 2 used a focus group design to clearly identify how the programme was experienced by participants, how the exercises and lessons of the programme have been implemented in participants' lives longitudinally and also investigate the effect of the facilitator. Not only does this provide a deeper understanding of the applied impact of the programme not otherwise measured by quantitative instruments, it also offers helpful insights that can inform future adaptations of MBSP - from the format of the programme, to highlight necessary skills for effective facilitators. This focus group took place a year after some participants completed the course, to explore whether participants maintained an active practice, and how the practices of MBSP were incorporated into participants' daily lives.

Research Question Three: Can a 6-week adaptation of the programme be developed and still retain the effectiveness of MBSP-8 on self-efficacy and related outcome measures? How does this new adaptation compare to the original programme?

Due to its length, MBSP-8 is not appropriate for some British educational settings in which semesters are split into six- to eight-week blocks, to allow for vacation periods or university reading weeks. As such, there is demand for non-clinical wellbeing programmes for educational contexts in which a full 8-week adaptation of MBSP would not be applicable. Niemiec encourages adaptations of the programme to allow for these situations, so study 3 proposes a formal 6-week adaptation and provides empirical evidence for its effectiveness on self-efficacy and related measures described above. Specifically, this thesis explored whether the shorter length of the MBSP-6 reduced or eliminated effects previously observed in MBSP-8, to provide clear validation for its use in higher education.

Research Question Four: How do the individual components of MBSP (Character Strengths; Mindfulness; Integration of Mindfulness and Character Strengths) influence the outcomes of the programme?

The thesis then moves beyond intervention studies, to take a more theoretical approach to explore which aspects of MBSP were responsible for the outcomes measured. Using a structural equation model in study 4, the relationships between the identified outcomes of the programme were investigated, to explain the findings of previous intervention studies and to provide some understanding of the influence of each component of the programme on outcomes. Here, the role of self-efficacy in the relationship between mindfulness and strengths use was also tested. In study 5 the structural equation was then applied theoretically to the mechanics of the programme through short week-long interventions which identified whether mindfulness, character strengths or integration of the two are most predictive of positive outcomes.

CHAPTER TWO: MEASURES

This thesis aims to explore and understand the psychological outcomes that occur as a result of Mindfulness-Based Strengths Practice. In particular, the outcomes measured in the thesis include strengths use, mindfulness, self-efficacy, resilience, wellbeing, work engagement, depression, anxiety and stress. This chapter will introduce each outcome, justification for its inclusion in the present work, and an overview and validation of the psychometric questionnaires used to measure change in these outcomes.

Strengths Use

To measure the face validity of MBSP, strengths use was monitored, to judge whether participants use their character strengths more frequently as a result of the programme. Throughout the programme, character strengths are a focal point, with participants encouraged to practice their strengths in everyday life through structured exercises and habitual actions, using the *Aware-Explore-Apply* model from Niemiec (2013) and an understanding of strength overuse and underuse. Specific strengths activities throughout the programme, such as *Character Strengths 360* (Niemiec, 2017, CSI 7), *You at Your Best* (Niemiec, 2017, CSI 9) and *Signature Strengths in New Ways* (Niemiec, 2017, CSI 11) all target the use and recognition of one's character strengths. If the programme succeeds in this endeavour, then observable increases in strengths use would be noticed.

In order to test this, the current thesis utilised the *Strengths Use Scale* developed by Govindji and Linley (2007). This measure was chosen as the authors use the understanding of Peterson and Seligman's model (2004), but without any use of language which may be potentially alienating for participants who have no experience of the VIA framework, such as participants completing pre-intervention measures. The scale is designed to assess how frequently people use their strengths cross-situationally. Govindji and Linley distinguish this from strengths knowledge which primarily focuses on just awareness and understanding of strengths. Whilst character education is a key factor of the programme, the thesis looks to identify how this knowledge is translated to practical use of strengths. The scale was developed from a pool of 19 items, later reduced to 14 items which all load onto one factor predicting 56.2 % variance and with a high original Cronbach's alpha of $\alpha = .95$ (Govindji & Linley, 2007). Further validation of the measure also demonstrated high internal consistency, good test-retest reliability and good criterion validity as well as confirming the single factor loading (Wood et al., 2011). High reliability is consistent in studies (e.g. Proctor et al., 2010; Huber et al., 2017) and it has been used widely such as in coaching psychology (Linley et al., 2010), workplace studies (Lavy & Littman-Ovadia, 2018) and in higher education (Duan & Bu, 2017).

In the current thesis, this 14-item scale (e.g, I always try to use my strengths) was used to measure participants' use of their signature strengths, here described as 'the things that you are able to do well or best'. Participants responded on a seven-point likert scale from 1 (strongly disagree) to 7 (strongly agree) and a mean was calculated for analysis with higher scores indicating high strengths use. With an original Cronbach's alpha score of $\alpha = .95$, throughout this thesis the measure showed good reliability, with alpha scores ranging from $\alpha = .91$ to $\alpha = .97$.

Mindfulness

Similarly, MBSP teaches mindfulness skills alongside character strengths, encouraging people to develop a routine of mindfulness. Throughout the programme participants are taught several different exercises and encouraged to 'experiment' with them to establish a regular practice. As such it would be expected that participants experience significant increases in mindfulness as a result of the programme, again testing its face validity. MBSP uses well known mindfulness meditations such as the *Body Scan*, *Mindful Walking,* and *Mindful Eating*, all of which are used in MBSR (Kabat-Zinn, 1982, p.36). All these exercises focus on cultivating a mindfulness of the present moment. Participants are encouraged to practice these both in the programme and throughout homework activities.

In order to measure mindfulness, the *Mindfulness Attention Awareness Scale* (MAAS; Brown & Ryan, 2003) was utilised. The MAAS measures an individual's tendency to be mindful from moment to moment. Specifically, this scale measures simple attention and awareness of the present moment, rather than the attitude with which this is done, even though several definitions of mindfulness outline the attitude needed for mindful awareness of the present moment. During development, the authors began with a pool of 184 items and iteratively reduced items, excluding items which reflected attitudinal components of mindfulness, motivational intent, outcomes of mindfulness and items which assumed higher levels of consciousness. When exploring the final 15 item scale, factor analyses showed a strong single factor and replicated Cronbach alphas of $\alpha = .80$ and above (Brown & Ryan, 2003). This one factor solution is repeatedly supported in the literature (Black et al., 2011; MacKillop & Anderson, 2007; Osman et al., 2015).

This measure was chosen over other mindfulness measures for several reasons. When compared to another mindfulness measure, the *Freiburg Mindfulness Inventory* (Walach et al., 2006) both showed good reliability measures, but the *MAAS* demonstrated stronger correlations with work engagement and burnout (Kotze & Nel, 2016), suggesting that the *MAAS* is more appropriate for measuring mindfulness in the workplace, or in this case, education. The *MAAS* is frequently used in psychological literature, such as in positive organisational studies (Avey et al., 2008), evaluating mindfulness interventions in anxiety (Evans et al., 2008), with training clinicians (Shapiro et al., 2007), nurses (Cohen-Katz et al., 2005) and with adolescents (Bögels et al., 2008). Throughout its extensive use, the measure demonstrates good psychometric properties, receiving recurrent validation from the literature (MacKillop & Anderson, 2007), including cross-cultural validation (Black et al., 2012). However, Park et al. (2013) recommend that more content validation is needed, and that qualitative data should be used to support this.

The measure comprised of 15 items (e.g., I rush through activities without being really attentive to them), to which participants responded on a six-point Likert scale from 1 (almost always) to 6 (almost never). All items were worded positively so that high scores indicated high levels of trait mindfulness. Reliability scores throughout the thesis show this measure to have good reliability, with Cronbach alphas ranging from $\alpha =.77$ to $\alpha = .92$.

Self-Efficacy

Beyond testing face validity of the programme, this thesis seeks to identify key additional outcomes of the programme, to understand what benefits it may hold for its participants. Considering the importance of self-efficacy as highlighted in the introduction, self-efficacy will be measured as an outcome of MBSP. Within MBSP itself, several goal-directed activities are used (e.g. *Best Possible Self*; King, 2001), the success of which may depend on participant's own self-efficacy beliefs. Further to this, the application stage of the *Aware-Explore-Apply* model for strengths development used throughout MBSP is used to imagine using strengths in the future. This imagination of successful strengths use could be seen as a form of mastery experience, one of the development techniques of self-efficacy (Bandura, 1977).

In order to measure changes in self-efficacy, the *Generalized Self-Efficacy Scale* was used (Schwarzer & Jerusalem, 1995). Although newer adaptations have been created (Chen et al., 2001), the original scale has been validated cross-culturally (Scholz et al., 2002), and has been translated into Spanish (Bueno-Pacheco et al., 2018), German, Chinese (Schwarzer et al., 1997; Zhang & Schwarzer, 1995), Russian (Schwarzer et al., 1996), and Estonian (Rimm & Jerusalem, 1999). The *Generalized Self-Efficacy Scale* measures general perceived self-efficacy, with the hope of predicting the ability to cope with daily stressors and adapt to stressful life events (Schwarzer & Jerusalem, 1995). The measure defines self-efficacy as the belief to accomplish new or difficult circumstances or adversities, and self-efficacy facilitates goal setting, persistence and effort investment. The measure includes items to identify these facets but does not measure specific behavioural change.

Alternative measures include the *Self-Efficacy Survey* (Panc et al., 2012), which consists of 104 items with 10 subscales and the *New General Self-Efficacy Scale* (Chen et al., 2001); a shorter adaptation of 8-items, designed as an improvement. However, the *Generalised Self-Efficacy Scale* has received significant support which confirms its reliability and validity (Scherbaum et al., 2006), and as such was chosen for the current thesis. The scale (Schwarzer & Jerusalem, 1995) was used to measure participants' feelings of self-efficacy, and included 10 items (e.g., I can solve most problems if I invest the necessary effort). Participants responded on a four-point Likert scale from 1 (not at all true) to 4 (exactly true). The scale has demonstrated good reliability across all experimental chapters, with Cronbach's alpha scores ranging from $\alpha = .73$ to $\alpha = .89$.

Resilience

Linked to self-efficacy (Schwarzer & Warner, 2012), resilience has also previously been linked to positive psychology (Luthar et al., 2014). Resilience increases are seen clearly as a result of other mindfulness programmes (Aikens et al., 2014). Specifically, MBSR results in significant increases in resilience as seen here (Nila et al., 2016), particularly when promoting resilience for nurses and midwives (Foureur et al., 2013) and social workers (Crowder & Sears, 2017). Similarly, identifying one's character strengths has been identified as a psychosocial facet that promotes resilience (Iacoviello & Charney, 2014), and character strengths significantly predict resilience, even when accounting for predictive effects of self-efficacy and life satisfaction (Martinez-Marti & Ruch, 2016). In MBSP, resilience may be identified as a positive outcome as even simply completing the VIA survey at the beginning of the programme acts as a value affirmation activity, which leads to resilience (Creswell et al., 2005). Through the *Aware-Explore-Apply* model, value affirmation continues as a prominent theme in the programme, and so resilience should be anticipated to positively change. Specifically, Niemiec also posits overuse/underuse activities such as the *Fresh Look* exercise as an active resilience builder (Niemiec, 2017, CSI 58).

This thesis uses Smith's definition and measure of resilience (Smith et al., 2008), which explains resilience as the ability to bounce back and recover from stressful circumstances. Smith's measure focuses mainly on this aspect of resilience, whereas previous measures focus on the resources that make resilience possible, rather than the act of resilience itself. This is described by Ahern and colleagues (2006) who looked at several measures of resilience. Ahern looked closely at commonly used resilience measures and explained that the *Resilience Scale* (Wagnild & Young, 1993) measures self-reliance, perseverance, equanimity and existential aloneness, rather than resilience. Similarly, the *Connor Davidson Resilience Scale* (Connor & Davisdon, 2003) was described to include items such as self-efficacy, sense of humour, patience, faith and optimism. Although there are other measures available for measuring resilience, in a review of several resilience scales, it was the brief resilience scale that received the best psychometric ratings (Windle et al., 2011), and as such was chosen for this thesis.

The *Brief Resilience Scale* (Smith et al, 2008) was used as a short measure of resilience, comprised of 6 items (e.g., I tend to bounce back quickly after hard times). Participants responded on a five-point likert scale from 1 (strongly disagree) to 5 (strongly agree). Three of these items were negatively worded (e.g., I tend to take a long time to get over setbacks in my life) and as such were reverse scored so that high scores reflected high levels of resilience. In its original development article, the measure loaded strongly onto one factor, and demonstrated high convergent validity and discriminant predictive validity. Shown as a brief and reliable measure of resilience, the *Brief Resilience Scale* has been used widely such as in health research (Smith et al., 2010), work burnout (Colville et al., 2017), psychological capital (Meyers & van Woerkom, 2016) and has been used to measure the effectiveness of mindfulness interventions (Christopher et al., 2015) including in educational settings (Bluth & Eisenlohr-Moul, 2017). The *Brief Resilience Scale* (Smith et al., 2008) has similarly been translated into many languages such as Spanish (Rodriguez-Rec et al., 2016) and German (Chmitorz et al., 2018). Throughout the course of the thesis, the measure demonstrated consistent positive reliability scores, with Cronbach alpha scores ranging from $\alpha = .79$ to $\alpha = .92$.

Wellbeing

Perhaps an obvious choice of outcome measure given its role in positive psychology under the pillar of positive experiences is that of wellbeing. Previous trials of MBSP show increases in components of wellbeing including flourishing as measured with the *Flourishing Scale* (Diener et al., 2009), engagement measured by the engagement subscale of the *Positive Psychotherapy Inventory* (Rashid, 2008), and meaning and positive relationships captured by case studies and participant qualitative feedback (Ivtzan et al., 2016; Niemiec & Lissing, 2016; Niemiec, 2014). Although these outcomes were not measured by using the *PERMA Profiler* (Butler & Kern, 2016) or even using quantitative measures, they are all aspects of the conceptual profile. More general measures of wellbeing used in MBSP studies include the *WHO 5 Wellbeing Index* (Johansen, 1998; used by Pang & Ruch, 2019) and the *Satisfaction with Life Scale* (Diener et al., 1985; used by Ivtzan et al., 2016). At the time of thesis design, no studies had used the *PERMA Profiler* as is used in the current work. Since then, published papers show further improvements in all aspects of the profile (Wingert et al., 2020).

The PERMA model of flourishing (Seligman, 2011) describes flourishing as a composite of five components. Firstly, positive emotion, which sees the pathway to wellbeing as hedonic and involves increasing positive emotions such as happiness about the past, present and future. This is similar to many other measures of wellbeing which focus on concepts such as happiness. MBSP is a positive psychology intervention, with a focus on increasing human flourishing, and as such should increase positive emotion. Secondly, engagement in which individuals use the full breadth of their strengths, skills and focus to produce ‘flow’. Throughout MBSP, participants are encouraged to fully engage with both the present moment and the programme, with daily homework encouraging regular, repeated engagement with the activities taught in the programme. Following this, Seligman highlights relationships as fundamental to wellbeing, stating that humans are social beings and our relationships bring purpose to life. Several activities within MBSP focus on relationships, such as the Strengths Interview (Niemiec, 2014), which encourage improved relationships both with other participants of the group and personal relationships. Fourthly, The PERMA includes the concept of meaning, belonging to something bigger than the self. In MBSP, meaning is targeted through encouraging the use of strengths not just for the self, but for the good of those around them. Finally, the PERMA profile includes accomplishment. This is conceptually related to the self-efficacy and is targeted in the same way as self-efficacy in MBSP.

The *PERMA Profiler* was chosen as a measure of wellbeing, which not only provides an overall score of wellbeing, but subscale scores of the different facets including positive emotion, engagement, relationships, meaning and accomplishment. This allowed for a deeper understanding of how MBSP improves wellbeing, rather than a short measure on life satisfaction. Although it is a relatively new psychometric, the profiler demonstrates good internal and cross-time consistency as well as good validity (Butler & Kern, 2016; Umucu et al., 2019), and cross-cultural translations and validity (Giangrasso, 2018; Iasiello et al., 2017; Wantanabe et al., 2018). This wellbeing profiler consists of 23 items measuring positive emotion (3 items; e.g., "In general, how often do you feel joyful?"); engagement (3 items; e.g., "how often do you become absorbed in what you are doing?"); relationships (e.g., "How satisfied are you with your personal relationships?"); meaning (e.g., "In general, to what extent do you lead a purposeful and meaningful life?"); and accomplishment (e.g., "How often are you able to handle your responsibilities?"). This measure also included items for negative emotion, happiness, health and loneliness. To create an overall score of wellbeing, a mean of the items from the 5 main domains of the profiler was created. Participants responded on a 11-point likert scale from 0 (not at all/never/terrible) to 10 (completely/always/excellent).

In this thesis, the total wellbeing score was used to initially explore effects on wellbeing. Where significant increases were noted, further analyses on each subscale were conducted. The overall wellbeing score showed good reliability throughout, with alpha scores between .90 and .97. However, the subscales showed much lower reliability, particularly that of engagement, which had Cronbach's alphas as low as $\alpha = .56$ in some experiments.

Work Engagement

As this thesis looks to implement the programme in higher education, a measure of engagement was included, particularly focusing on academic work. A school engagement scale was not deemed suitable due to the language of 'school', which is not understood as higher education in the UK. As outlined in the literature review, character strength interventions show increases in engagement with academic activities (Madden et al., 2011), as well as increases in work-engagement (Costantini et al., 2019). Similarly, mindfulness interventions also show increases in work engagement (Coo & Salanova, 2017; Malinowski & Lim, 2015; Verweij et al., 2016). In MBSP, activities such as the *Character Strengths 360* (Niemiec, 2017, CSI 7), involve considering their strength use in work domains of their life, and discussions often revolve around the academic work participants are completing, with Niemiec also presenting the *Defining Moments* (Niemiec, 2017, CSI 25) exercise as a specific engagement booster (Niemiec 2017, p.188). Recent studies demonstrate the effectiveness of MBSP on work outcomes, particularly that of employee performance, deemed a specific outcome of MBSP over MBSR (Pang & Ruch, 2019b). As such, work engagement should be expected to increase at the post-intervention measurement points.

The work engagement scale chosen for the current study is the *Utrecht Work Engagement Scale* (Schaufeli & Bakker, 2003), which uses the definition of work engagement as "... a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption" (Schaufeli et al., 2002). The *Utrecht Work Engagement Scale* is used frequently in organisational research (e.g. Babcock-Roberson & Strickland, 2010) and has been translated into several different languages and validated cross-culturally (Hakanen, 2002; Schaufeli et al., 2003; Seppala et al., 2009; Shimazu et al., 2008; Storm & Rothmann, 2003; Yi-Wen & Yi-Qun, 2005).

The measure is comprised of 17 statements (e.g., At my work, I feel bursting with energy) and were answered in terms of frequency from 1 (Never) to 7 (Always). In this thesis we asked this to be answered specifically in relation to academic work in the question stem and the word 'work' was replaced with university in the items in the scales. Throughout the thesis, the scale showed good reliability, with Cronbach alpha scores ranging from .90 to .95. The scale provides a total score and three subscales: vigour, dedication and absorption. Vigour is described as high levels of energy and psychological resilience, investment in work and persistence in the face of difficulties; Dedication as experiencing a sense of significance, enthusiasm and pride in one's work; and Absorption as being full engrossed and concentrate on the work at hand. Similarly to the *PERMA Profiler*, the overall score is initially reported, following advice that only the total score should be used (De Bruin & Henn, 2013).

Stress, Depression and Anxiety

Although previous pilot studies of MBSP do not demonstrate decreases in depression (Niemiec, 2014), no other study of MBSP has since published findings on these three concepts. As both strengths interventions and mindfulness interventions often result in reductions in depression, anxiety and stress (e.g. Gander et al., 2012a; Woolhouse et al., 2014), it is expected that MBSP will deliver similar results, and provide further justification for its use in higher education, particularly around exam seasons. Whilst there are several measures of each of these which have been used with studies on MBSR (Gold et al., 2009; Kolahkaj & Zargar, 2015), this thesis uses the *Depression, Anxiety and Stress Scale* developed by Lovibond and Lovibond (*DAAS*; 1995). This measure was chosen as a shorter method of measuring each of these concepts in one battery, in the hope of limiting measurement burden asked of participants, whilst still administering validated psychometric instruments. In addition to this, Lovibond and Lovibond found that the *DAAS* showed better separation between depression and anxiety than the *Beck Depression Inventory* (Beck et al., 1961) and *Beck Anxiety Inventory* (Beck et al., 1988). The *DAAS* has been used commonly in literature such as studies in higher education (Bayrum & Bilgel, 2008), family and development (Barrett et al., 2004), occupational health (Nieuwenhuijsen et al., 2003), and when evaluating mindfulness interventions (Gold et al., 2019).

This measure consisted of 21 items, of which 7 items measured stress (e.g., 'I found it difficult to relax'), 7 items measured anxiety (e.g., 'I was aware of dryness of my mouth') and 7 items measured depression (e.g., 'I felt that I had nothing to look forward to'). Participants responded on a four-point likert scale from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). Depression and Stress showed relatively good reliability throughout the thesis, with Cronbach alpha scores from $\alpha = .67$ to $\alpha = .91$, however the subscale for anxiety showed notably worse reliability, with alpha scores starting as low as $\alpha = .54$ but reaching alphas of $\alpha = .90$ in some chapters.

CHAPTER THREE: STUDY ONE - THE BENEFITS OF MINDFULNESS-BASED STRENGTHS PRACTICE IN UNDERGRADUATES: A RANDOMISED CONTROL TRIAL

Rationale

Due to the limited number of studies and subsequent lack of replication, it is difficult to identify the consistent outcomes of MBSP. At the time of thesis design, the published empirical study on MBSP showed increases in satisfaction with life, flourishing, engagement, signature strength use (Ivtzan et al., 2016), with smaller pilot studies demonstrating increases in flourishing, engagement, (Niemiec, 2014), improved relationships (Niemiec & Lissing, 2016), and decreases in anxiety, depression, loneliness and negativity (Bretherton & Niemiec, 2017). The increases in strengths use are to be expected, as character strengths are a key focus of the programme, however, increases in mindfulness should also be expected, but have not yet been found. These studies provide preliminary findings but are limited by their small sample sizes and lack of randomised control trials that would create more reliable and controlled findings. The repeated findings of flourishing, strengths use and engagement are encouraging, but effects on other outcomes should be explored to fully understand how the programme might benefit individuals, providing sufficient evidence for its widespread application.

A summary chapter on MBSP trials shows the variety of settings in which MBSP has been applied, with leaders, work crews, teachers and parents in early childhood education, gifted children, older adolescents, psychotherapists, physicians and with those with disabilities (Bretherton & Niemiec, 2017). This thesis addresses the application of MBSP to the previously unexplored area of higher education, with this chapter reporting a study looking at first year medical students and foundation science year students. Research demonstrates that medical students experience a significant amount of stress even in their first year of study (Zvauya et al., 2017) and that there is a perceived lack of support (Radcliffe & Lester, 2003). Although approximately two fifths of students reported anxiety within the clinically significant range (Ashton & Kamali, 1995; Pickard et al., 2001), students perceive seeking help for mental illness as limiting to future career opportunities (Chew-Graham et al., 2003). Throughout these studies, it is clear that the stress experienced is a result of medical training rather than personal circumstances (Guthrie et al., 1995; Moffat et al., 2004). There are considerably fewer published studies exploring the experience of foundation degree students.

However, Greenbank (2007) describes that the transition from foundation to honour degrees is a source of considerable stress in students, with direct calls for more explicit ‘study skills’ programmes to be taught to foundation students, as a means of preparation (Simm et al., 2011). The foundation degree students in the current study were recruited through a study skills course on the degree, with the hope that MBSP would prepare students with tools to manage the stress of transition.

The overarching aim of Study 1 is to explore the changes individuals experience as a result of completing MBSP, using a randomised control trial which, at thesis design, had not been utilised in previously published studies of MBSP. Study 1 firstly aims to explore whether the tools of mindfulness and character strengths taught in MBSP result in measurable increases in mindfulness and character strengths use in everyday life, presumably as a result of practicing the exercises and incorporating these habits into everyday life. As previous research suggests that the programme results in increases in flourishing, engagement and positive relationships, the current study will investigate whether increases in wellbeing are experienced as a result of the programme. The *PERMA Profiler* of wellbeing (Butler & Kern, 2017) is used in the current study as it measures positive emotion, engagement, relationships, meaning, accomplishment, loneliness and negativity, and so attempt to replicate findings of flourishing, engagement and positive relationships. Study 1 will also seek to replicate the decreases in stress and depression reported from smaller, unpublished studies of MBSP, using the *Depression, Anxiety And Stress scale* (Lovibond & Lovibond, 1995). Finally, the study will explore whether the programme influences increases in resilience and self-efficacy, as a result of the problem-solving skills taught in the programme, and as seen in mindfulness interventions (e.g., Chang et al., 2004) and character strength interventions (e.g, Toback et al., 2016).

The research questions for this study are as follows:

> RQ1: Do MBSP participants experience increases in mindfulness and strengths use, affirming the face validity of the programme?
>
> RQ2: Will MBSP participants experience increases in wellbeing and decreases in

depression, anxiety and stress in keeping with previous MBSP literature?

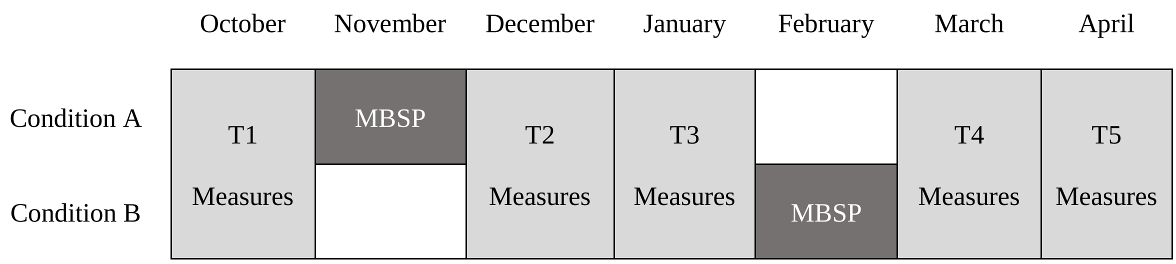
RQ3: Will additional increases in self-efficacy and resilience be observed, confirming suspicions outlined above and in the introduction?

Methodology

This study employed a randomised waiting-list control trial, where participants were randomly allocated to one of two conditions. In condition A, participants completed MBSP in the autumn term of the academic year. Condition B participants acted as waiting list controls for the first three measurement points, and then completed MBSP in the spring term. All participants completed the measures at five time points: Before and immediately after MBSP in the autumn term, before and immediately after MBSP in the spring term, and one further 6-week follow up. See Figure 3.1 for a diagram of the study design.

Figure 3.1

A diagram to show design of Study 1.



Participants

In total, 38 first year undergraduates aged between 18 and 27 (M = 18.95, SD = 2.08, *female* = 63.16% (N = 24)) took part in the experiment. Of these, 31.58% (N = 12) regarded themselves as religious (Christian = 5, Hindu = 4, Islam = 2, Pagan = 1). The study was advertised through lectures and participants were offered a £50 Amazon Gift Card as an incentive for taking part.

Measures

In the current study, participants were asked to complete The *Mindful Attention Awareness*

Scale (Brown & Ryan, 2003), the *Strengths Use Scale* (Govindji & Linley, 2007), the *Generalised Self-Efficacy Scale* (Schwarzer & Jerusalem, 1995), the *Brief Resilience Scale* (Smith et al., 2008), the *Depression, Anxiety and Stress Scale* (Lovibond & Lovibond, 1995) and the *PERMA Profiler* (Butler & Kern, 2016). All reliability scores as measured through Cronbach's alpha, can be seen in Table 3.1.

Table 3.1

Reliability scores for measures across time points of Study 1.

Measure		Time Point				
		T1	T2	T3	T4	T5
MAAS	(Brown & Ryan, 2003)	.85	.85	.85	.77	.87
SU	(Govindji & Linley, 2007)	.93	.96	.94	.97	.97
SE	(Schwarzer & Jerusalem, 1995)	.78	.77	.81	.84	.87
BR	(Smith et al., 2008)	.86	.79	.84	.84	.88
DAAS	(Lovibond & Lovibond, 1995)					
	Depression	.89	.78	.83	.90	.94
	Anxiety	.71	.54	.75	.71	.83
	Stress	.74	.83	.82	.81	.76
PERMA	(Butler & Kern, 2016)					
	Positive Emotion	.85	.91	.89	.96	.94
	Engagement	.69	.58	.62	.78	.80

Relationship	.77	.79	.82	.90	.88
Meaning	.66	.86	.92	.96	.96
Accomplishment	.90	.87	.76	.79	.91
Overall Wellbeing	.90	.94	.94	.97	.97

Note: MAAS = Mindfulness Attention Awareness Scale; SU = Strengths Use; SE = Self-Efficacy; BR = Brief Resilience; DAAS = Depression, Anxiety and Stress.

Procedure

Participants were recruited through the University of Lincoln from two cohorts of undergraduate students: first year medical students (MED) and foundation science year students (FSY). The programme was advertised through a short presentation during a lecture introducing MBSP. The programme and the project were explained fully before access was given to the sign-up form. Participants were given 14 days to sign up to the study. The sign-up questionnaire provided a full brief and consent form, followed by the validated questionnaires listed above. Randomisation took place upon completion of pre-test measures. Those allocated to Condition A took part in the programme in the autumn term, while Condition B acted as a waiting-list control group, before completing the programme in the spring term. One group from each cohort was created for both conditions, resulting in four groups (see Table 3.2).

Table 3.2

Organisation of MBSP Groups in Study 1.

	N =	Programme dates
MED	10	Autumn term 2019
FSY	5	Autumn term 2019
MED	6	Spring term 2020
FSY	4	Spring term 2020

Note: *Participant numbers exclude those who were assigned to a group but withdrew before the first session.*

All participants completed the measures before and after each MBSP programme, and again 6 weeks after the second programme, resulting in a total of five measurement points (see Figure 3.1). Participants needed to complete each set of questionnaires and complete MBSP to be eligible for the Amazon Voucher. At the end of the final measurement point, participants were fully debriefed and given a £50 Amazon gift voucher.

Attrition

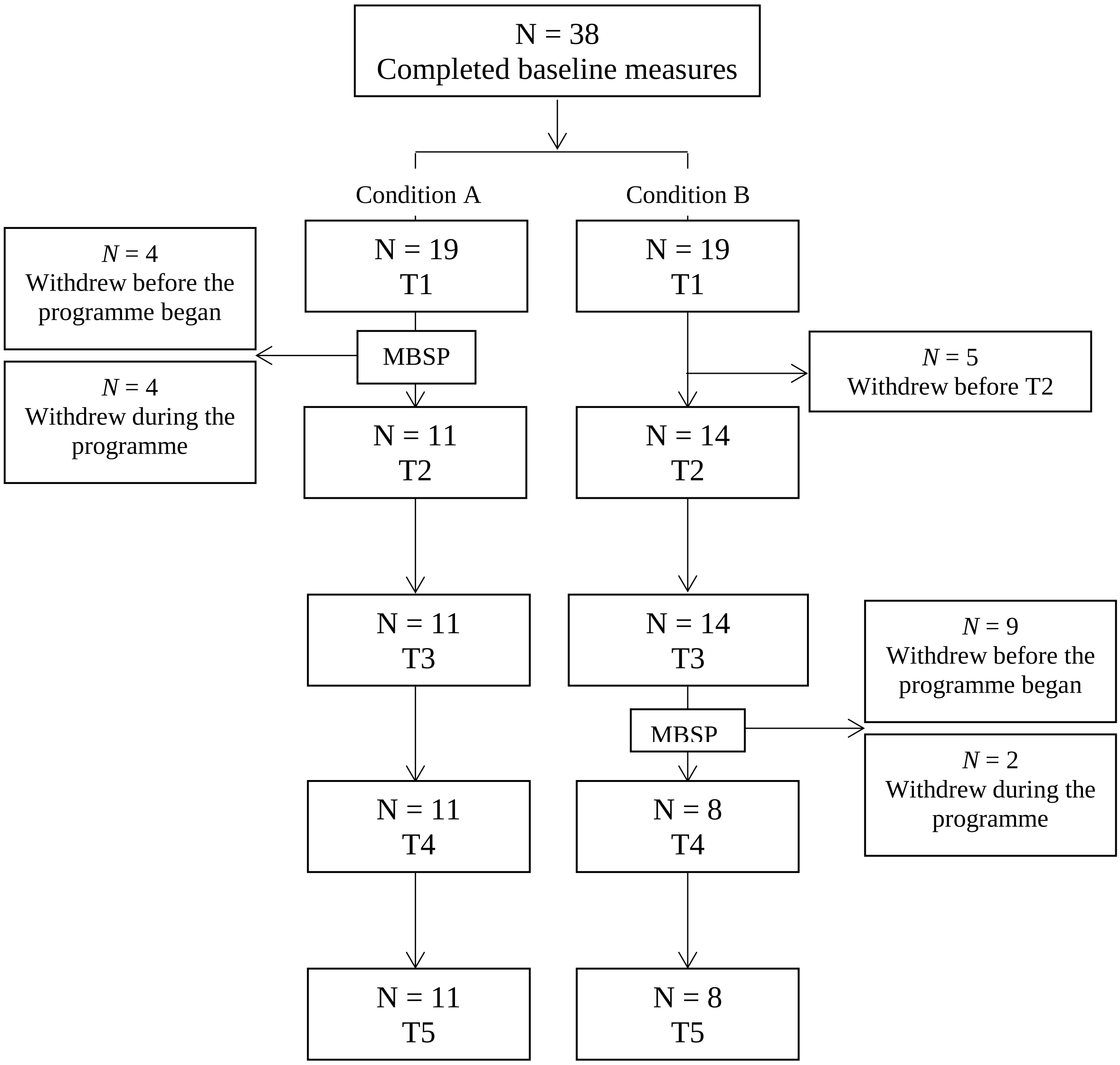
Initially, 38 participants were recruited to take part in the study and were randomly allocated to a condition. Eight individuals were allocated to condition A but withdrew before the programme started because they could not attend the programme at the given time. Five participants withdrew from condition B also prior to the second set of testing. Six participants withdrew from condition B between T3 and T4, when these participants were due to attend MBSP. See Figure 3.2 below.

Data Analysis

A series of MANCOVAs were calculated to explore the effect of condition on outcome trends, using cohort (MED or FSY) as a covariate. Mixed 2 (condition) x 2 (time) MANCOVAs were performed to explore the immediate effect of the programme on participants, and further 2 (condition) x 3 (time) mixed MANCOVAs were conducted to examine further longitudinal effects. To explore the effects of MBSP on condition B participants, repeated measures MANOVAs were conducted between T3 and T4, and finally between T3, T4 and T5. Where the test of sphericity was violated, appropriate Greenhouse-Geisser corrections were used.

Figure 3.2

A diagram to show participant retention in Study 1.



Results

Descriptive Statistics

The descriptive statistics of all measures at baseline can be found in table 3.5. Independent t-tests were conducted to explore any differences in baselines measures between conditions. Results showed that there were significant differences in baseline scores of depression, t (34) = -2.59, p = .014, Hedge's g = -0.84, with those in condition B (M = 7.33, SD = 2.44) scoring higher than those in condition A (M = 5.53, SD = 1.67). Similarly, condition B participants reported higher scores of anxiety (M = 6.74, SD = 1.74) than condition A participants (M = 5.34, SD = 1.46), t (36) = -2.67, p = .011, Hedge's g = -0.85.

Effect of MBSP on Condition A participants

Mindfulness and Strengths Use. Participants in condition A showed increases in mindfulness between T1 (*M* = 3.70, *SD* = 0.63) and T2 (*M* = 3.82, *SD* = 0.57), compared to condition B participants who showed decreases in mindfulness between T1 *(M* = 3.31, *SD* = 0.86) and T2 (*M* = 3.06, *SD* = 0.81). Similar increases in strengths use were seen in condition A participants between T1 (*M* = 4.77, *SD* = 0.90) and T2 (*M* = 5.58, *SD* = 0.58), and again condition B participants showed decreases between T1 (*M* = 4.80, *SD* = 1.05) and T2 (*M* = 4.59, *SD* = 1.08). A 2 (condition) x 2 (time) MANCOVA was conducted to test whether these changes were statistically significant, using cohort (MED/FSY) as a covariate. Results demonstrated significant interactions between time (T1 vs T2) and condition (MBSP vs Control) with increases in those who took part in MBSP in comparison to control participants in mindfulness, F (1, 22) = 5.08, p = .035, η^2_p = .18 and strengths use, F (1, 22) = 5.73, p = .025, η^2_p = .21. Additionally, a significant interaction between time (T1 vs T2) and cohort (MED vs FSY) was found in mindfulness, F (1, 22) = 6.53, p = .018, η^2_p = .23, with the FSY cohort demonstrating significant increases in mindfulness from T1 to T2 as a result of MBSP, t (3) = -4.20, p = .025, Hedges's g = - 0.78, compared to the MED cohort who showed no significant changes after MBSP, t (6) = 0.16, p = .818. However, control participants from the MED cohort demonstrated a significant decrease in mindfulness, t (8) = 2.32, p = .049, Hedges's g = 0.36, compared to FSY control participants who showed no changes in mindfulness, t (4) = 0.07, p = .947. See Table 3.3. for descriptive statistics for these changes.

Table 3.3

Mindfulness scores between conditions and cohorts between T1 and T2

Condition	Cohort	T1		T2	
		Mean	SD	Mean	SD
A	FSY	3.37	0.82	4.03	0.64
	Med	3.73	0.56	3.70	0.54
B	FSY	2.97	0.69	2.99	0.60

Med	3.47	1.12	3.10	0.80

When conducting the MANCOVA with all three time points, significant interactions between time (T1 vs T2 vs T3) and condition (MBSP vs Control) were found in strengths use, *F* (2, 44) = 4.12, *p* = .023, η^2_p = .16, but not in mindfulness, *F* (1.60, 35.23) = 2.39, *p* = .116. Post-hoc tests showed a significant increase in strengths use between T1 and T2 in condition A participants, (*p* = .037) and no significant changes between T2 and T3, (*p* = 1.000). No significant changes were observed in condition B participants between T1 and T2, (*p* = 1.000), or between T2 and T3, (*p* = .629) (see Figure 3.4). Despite the initially significant result for mindfulness, no significant differences were found in intervention participants between T1 and T2 (*p* = .481) or between T2 and T3 (*p* = 1.000).

Wellbeing, Depression, Anxiety and Stress. Initial descriptives suggested increases in wellbeing in MBSP participants between T1 (*M* = 8.05, *SD* = 1.14) and T2 (*M* = 8.48, *SD* = 0.85), and decreases in control participants between T1 (*M* = 7.48, *SD* = 1.32) and T2 (*M* = 7.29, *SD* = 1.79). However, these changes were not found to be significant when conducting the MANCOVA, *F* (1, 19) = 1.21, *p* = .285. Despite this, a significant interaction between time and cohort was identified in wellbeing, *F* (1, 22) = 7.18, *p* = .015, η^2_p = .27, with the FSY students demonstrating significant increases in wellbeing as a result of MBSP, *t* (3) = -3.27, *p* = .047, Hedges's *g* = -1.15, compared to the MED cohort who demonstrated no significant changes after MBSP, *t* (6) = 1.42, *p = .207. Control participants showed no changes in wellbeing regardless of whether they were FSY students, t (4) = 0.62, p = .569, or MED students, t (8) = 1.07, p = .315. See Table 3.4 for cohort descriptive statistics.*

When looking closer at the subscales of the PERMA, a significant interaction was seen between time and cohort in engagement, F (1, 22) = 6.18, p = .021, η^2_p = .22, relationship, F (1, 22) = 6.44, p = .019, η^2_p = .23, and meaning, F (1, 22) = 7.41, p = .012, η^2_p = .25. However, post-hoc t-tests showed no significant changes in FSY who completed MBSP between T1 and T2.

Table 3.4

Wellbeing scores between conditions and cohorts between T1, T2 and T3

Condition	Cohort	T1		T2		T3	
		Mean	SD	Mean	SD	Mean	SD
A	FSY	6.80	1.56	8.38	0.65	7.44	1.04
	Med	8.95	0.49	8.54	0.99	8.60	1.06
B	FSY	6.46	1.71	6.30	2.03	6.40	1.68
	Med	8.26	0.93	7.84	1.48	7.44	1.66

When observing changes in depression, a downward trend can be seen in MBSP participants between T1 (M = 5.53, SD = 1.67) and T2 (M = 5.14, SD = 0.87), but also in control participants between T1 (M = 7.33, SD = 2.44) and T2 (M = 6.96, SD = 2.08). The MANCOVA showed that any decreases in depression are not a result of the programme, with no significant interactions between time and condition identified, F (1, 19) = 0.13. p = .723. No observable changes in anxiety, were seen in MBSP participants between T1 (M = 5.34, SD = 1.46) and T2 (M = 5.36, SD = 1.38), although there was a decrease observed in control participants between T1 (M = 6.74, SD = 1.74) and T2 (M = 5.71, SD = 1.39). Again, no significant interactions were found when conducting the MANCOVA, F (1, 19) = 0.52, p = .481. Finally, despite hopes to the contrary, no notable changes were seen in stress in MBSP participants between T1 (M = 6.47, SD = 1.98) and T2 (M = 6.23, SD = 2.11), nor in control participants (see table 3.5). These null findings were confirmed by the MANCOVA, showing no significant interactions between condition and measurement point in stress, F (1, 19) = 0.21, p = .886.

When including all time points, no significant interactions between time (T1 vs T2 vs T3) and condition

(MBSP vs Control) were found in wellbeing, F (1.53, 27.58) = 1.16, p = .316, depression, F (1.34, 24.18) = 1.10, p = .828, anxiety, F (1.38, 27.80) = 1.94, p = .174, or stress, F (1.45, 26.10) = 0.05, p = .907. Again, a significant interaction was found between time (T1 vs T2 vs T3) and cohort (FSY vs MED) in wellbeing, F (1.53, 27.58) = 6.13, p = .010, η^2_p = .25, reflecting the significant increases between T1 and T2 in the FSY cohort, and no significant changes between T2 and T3, t (3) = 2.59, p = .081. Similarly, no significant changes were identified between T2 and T3 in MED students from Condition A, t (6) = 1.42, p = .207, or in any condition B participants, regardless of whether they were FSY students, t (4) = -.21, p = .843, or MED students, t (8) = 1.07, p = .315.

Self-efficacy and Resilience. MBSP participants showed increases in self-efficacy between T1 (M = 2.85, SD = 0.43) and T2 (M = 3.22, SD = 0.30) compared to control participants who reported a slight decrease between T1 (M = 2.92, SD = 0.36) and T2 (M = 2.86, SD = 0.28). The MANCOVA demonstrated a significant interaction between time (T1 vs T2) and condition (MBSP vs Control) self-efficacy, F (1, 22) = 5.71, p = .026, η^2_p = .21, demonstrating that the increases reported in self-efficacy can be understood as a result of the programme. No significant effect of cohort was found, F (1, 22) = .82, p = .376, showing that all MBSP participants regardless of cohort experienced these positive changes. Post-hoc comparisons showed that these increases seen in MBSP participants between T1 and T2 were significant (p = .007) and no significant change was recorded by the third time point (p = .085).

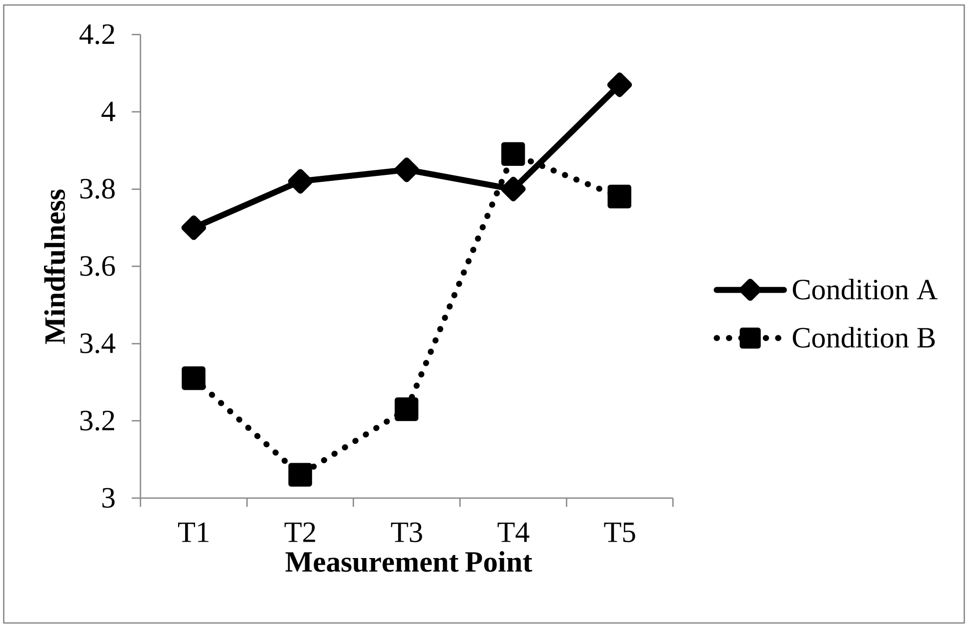
Initial trends also indicated increases in resilience as a result of the programme, with MBSP participants showing slight increases between T1 (M = 2.91, SD = 0.76) and T2 (M = 3.33, SD = 0.61) compared to control participants, (see table 3.5). However, the MANCOVA showed these changes were non-significant, with no interactions detected between condition and measurement point, F (1, 22) = 0.44, p = .514. When comparing all three time points in the MANCOVA, no significant interactions between time (T1 vs T2 vs T3) and condition (MBSP vs Control) were found for either self-efficacy, F (2, 44) = 2.70, p = .078, or resilience, F (1.44, 31.72) = 1.45, p = .247.

Effect of MBSP on Condition B participants

Mindfulness and Strengths Use. As Condition A participants had already completed

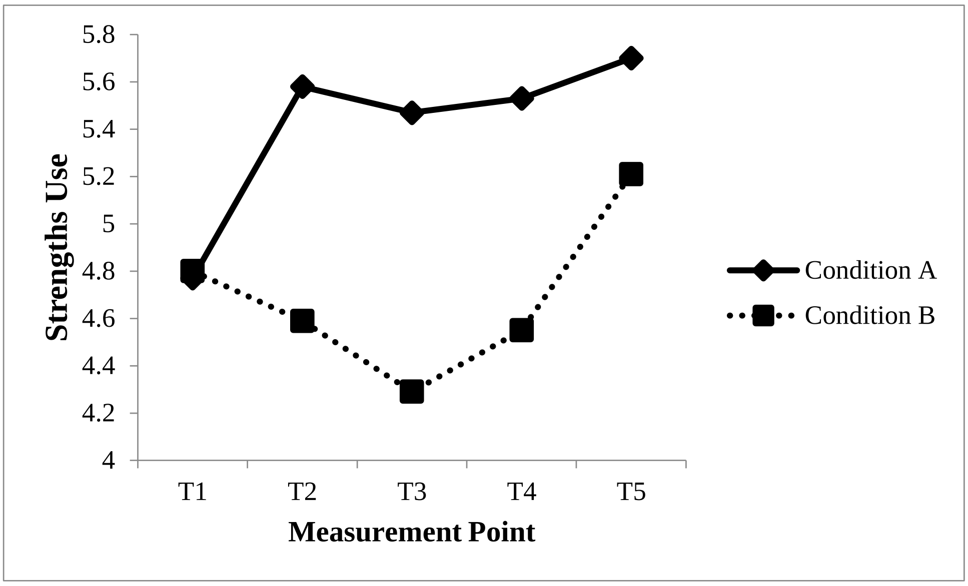
MBSP, previous mixed MANCOVAs were not appropriate and were replaced with paired t-tests. In contrast to the changes seen in Condition A, participants in Condition B did not demonstrate any significant increases in mindfulness between T3 (M = 3.38, SD = 0.66) and T4 (M = 3.89, SD = 0.87), t (7) = -2.03, p = .082. Similarly, no significant increases were observed in strengths use between T3 (M = 4.50, SD = 1.30) and T4 (M = 4.55, SD = 1.82), t (7) = -.07, p = .949.

Figure 3.3
A graph to show Mindfulness changes over time between conditions.



To explore the changes across T3, T4 and T5, a repeated measures ANOVA was conducted, split by condition. The results showed no main effect of time in condition B participants on mindfulness, F (2, 14) = 2.92, p = .087, or strengths use, F (1.04, 7.31) = 0.84, p = .394. The ANOVA also showed no changes in condition A participants in either mindfulness, F (2, 20) = 1.90, p = .176, nor strengths use, F (2, 20) = 1.80, p = .191, despite a further increase in mindfulness seen between T4 (M = 3.80, SD = 0.50) and T5 (M = 4.07, SD = 0.67). A graph of longitudinal changes in mindfulness and strengths use can be seen below in Figure 3.3 and 3.4.

Figure 3.4
A graph to show Strengths Use changes over time between conditions.



Resilience and Self-Efficacy. Participants in condition B also experienced a positive increase in self-efficacy between T3 (M = 2.95, SD = 0.45) and T4 (M = 3.21, SD = 0.52), t (7) = -3.72, p = .007, Hedges's g = -0.51. Additionally, and opposed to condition A participants, those who were in condition B experienced increases in resilience as a result of MBSP, showing higher scores at T4 (M = 3.29, SD = 1.05) than T3 (M = 2.77, SD = 0.69), t (7) = -2.67, p = .032, Hedges's g = -0.55. When conducting the ANOVA including T5, this significant main effect of time was again seen in self-efficacy, F (2, 14) = 5.98, p = .013, η^2_p = .46 and in resilience, F (2, 14) = 4.19, p = .037, η^2_p = .38, but changes between T4 and T5 were not significant in either self-efficacy, t (7) = 0.48, p = .64, nor resilience, t (7) = 0.95, p = .372. A graph of longitudinal changes can be seen below in Figures 3.5 and 3.6.

Figure 3.5

A graph to show self-efficacy changes over time between conditions.

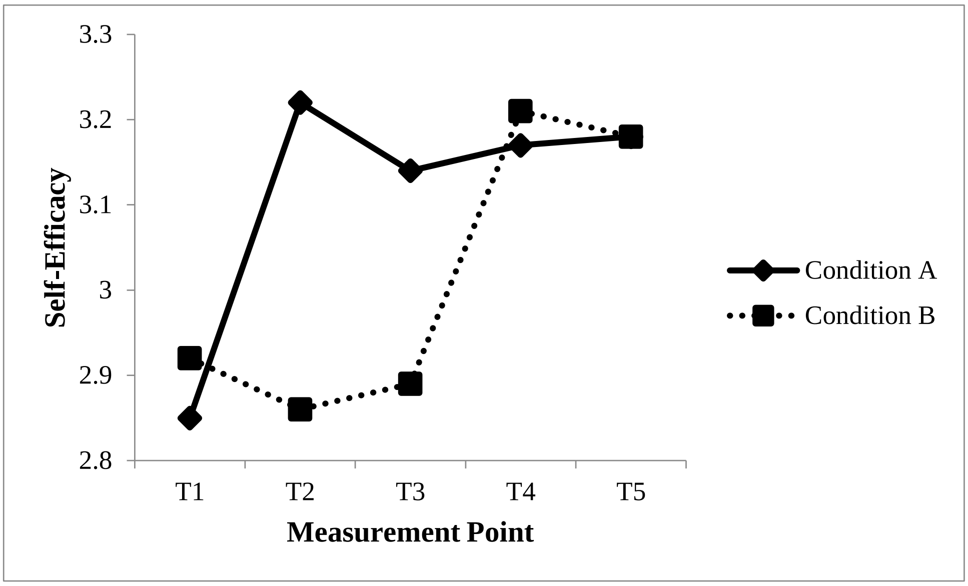
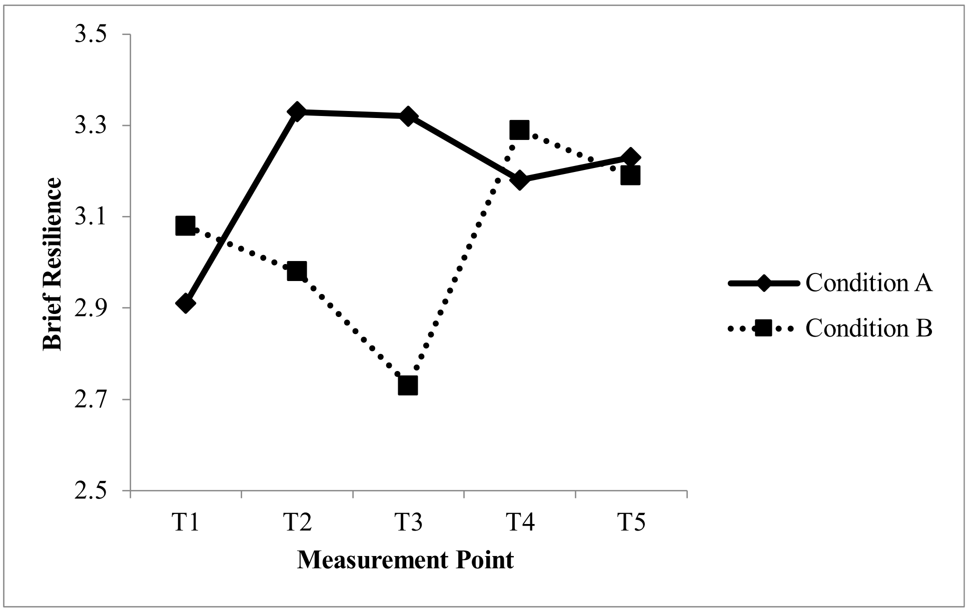


Figure 3.6

A graph to show resilience changes over time between conditions.



Wellbeing, Depression, Anxiety and Stress. As with condition A, participants in condition B showed no significant increases in wellbeing as a result of the programme, t (7) = -1.29, p = .239, nor decreases in depression, t (7) = 1.25, p = .251, anxiety, t (7) = 1.64, p = .145 or stress, t (7) = 1.99, p = .087. Similarly, no main effects of time were found when including T5 in the analysis in wellbeing, F (2, 14) = 1.30, p = .304, depression, F (2, 14) = 1.32, p = .299, anxiety, F (2, 14) = 1.68, p = .255, or stress, F (2, 14) = 2.58, p = .111.

Table 3.5

Descriptive statistics for all measures separated by condition across all time points

Measure	Condition	T1		T2		T3		T4		T5	
		Mean	SD	M	SD	M	SD	M	SD	M	SD
Mindfulness Attentional Awareness Scale	A	3.70	0.63	3.82	0.57	3.85	0.47	3.80	0.50	4.07	0.67
(Brown & Ryan, 2003)	B	3.31	0.86	3.06	0.81	3.23	0.78	3.89	0.87	3.78	0.92
Strengths Use	A	4.77	0.90	5.58	0.58	5.47	0.57	5.53	0.58	5.70	0.60
(Govindji & Linley, 2007)	B	4.80	1.05	4.59	1.08	4.29	1.28	4.55	1.82	5.21	1.77
Self-Efficacy	A	2.85	0.43	3.22	0.30	3.14	0.33	3.17	0.37	3.18	0.30
(Schwarzer & Jerusalem, 1995)	B	2.92	0.36	2.86	0.28	2.89	0.44	3.21	0.52	3.18	0.54
Brief Resilience	A	2.91	0.76	3.33	0.61	3.32	0.51	3.18	0.66	3.23	0.59
(Smith et al., 2008)	B	3.08	0.94	2.98	0.73	2.73	0.76	3.29	1.05	3.19	1.14
Depression	A	5.53	1.67	5.14	.087	5.05	1.23	5.36	1.76	5.82	1.99

(Lovibond & Lovibond, 1995)	B	7.33	2.44	6.96	2.08	6.89	1.80	5.67	3.12	7.06	3.78
Anxiety	A	5.34	1.46	5.36	1.38	5.68	1.72	5.05	1.29	4.95	1.33
(Lovibond & Lovibond, 1995)	B	6.74	1.74	5.71	1.39	5.71	2.06	4.63	1.33	5.25	2.54
Stress	A	6.47	1.98	6.23	2.11	6.09	1.66	6.41	1.80	7.05	1.89
(Lovibond & Lovibond, 1995)	B	7.50	1.61	7.35	1.94	7.18	2.11	5.63	1.64	6.38	2.20
Overall Wellbeing	A	8.05	1.14	8.48	0.85	8.32	1.07	8.80	1.16	8.80	1.06
(Butler & Kern, 2017)	B	7.48	1.32	7.29	1.79	7.07	1.69	8.10	2.53	7.80	2.41

Discussion

The results of the Study 1 demonstrate that in a randomised control trial, MBSP results in increases in mindfulness, strengths use and self-efficacy in those who took part in condition A. Additionally, in this sample, FSY students reported increases in wellbeing compared to the controls, whereas MED students experienced no such changes. Although direct comparisons cannot be made between Condition A and Condition B participants at T4 and T5, Condition B participants demonstrated additional increases in resilience after finishing MBSP. A further increase was found in strengths use between T3 and T5 in Condition B participants.

In Study 1, answering the first research question for this chapter, participants reported increases in mindfulness and strengths use occurring as a result of the programme. These increases in mindfulness have not yet been found in any other study of MBSP even when mindfulness was measured. However, increases in strengths use support earlier findings (Ivtzan, et al., 2016; Niemiec, 2014). These findings act as support for the face validity of the programme as the taught skills of mindfulness and character strengths are reflected in increases in the quantitative measures of these constructs. It is surprising that these increases in mindfulness are novel and have not yet been identified in previous literature, even when mindfulness was measured.

The null hypothesis is not rejected for research question two, as no consistent increases in wellbeing, nor decreases in depression, anxiety and stress were identified, unlike pilot studies described in Bretherton and Niemiec's chapter (2017). However, some support for positive effects on wellbeing seen in Ivtzan et al.'s (2016) study can be seen in the increases in wellbeing experienced by the FSY cohort. That the medical students did not experience the same effects could be a result of the increasing stress first year medical students experience over the course of their first year documented in the literature (e.g., Moffat et al., 2004). However, these increases in stress were not identified statistically in the study.

Although research question three concerned both self-efficacy and resilience, only increases in self-efficacy were identified, and no increases in resilience seen in the first three time points compared to control participants. When exploring the effects of the programme on participants who completed MBSP in Semester B, an additional increase in resilience seems to appear as an immediate effect of the programme.

These increases in self-efficacy are novel to this study and have not been identified in previously published MBSP studies, despite aspects of MBSP which seemingly target self-efficacy (as described in Chapter 1 and 2). Previous research demonstrates consistent relationships between mindfulness and self-efficacy, after completing MBSR (Chang et al., 2004), in counselling self-efficacy (Greason & Cashwell, 2009), maternal self-efficacy (Byrne et al., 2013; Perez-Blasco et al., 2013) and academic self-efficacy (Keye & Pidgeon, 2013). Evidence also confirms the relationship between character strengths and self-efficacy, with leadership acting as the strongest predictor of self-efficacy (Weber et al., 2013). In intervention work, a similar increase in self-efficacy was found after a character strengths coping skills intervention (Toback et al., 2016). The evidence demonstrates the effect of self-efficacy from mindfulness and character strengths, yet no previous study on MBSP has demonstrated these results.

Since the design of this study, two papers on a randomized control trial of MBSP have been published. This randomized control trial compared MBSP with MBSR, and demonstrated increases in humour (Hofman et al., 2019), wellbeing, job satisfaction and task performance (Pang & Ruch, 2019a). Mindfulness, strengths use and self-efficacy were not measured in these studies. These studies had a larger final participant number and used an active control group, providing a more robust study design, compared to the waiting list control design used here in Study 1, a design which has been criticised for overestimating intervention effects (Cunningham et al., 2013). However, together the studies highlight the many outcomes MBSP can have in individuals and present no conflicting results. Indeed, their finding of wellbeing supports other preliminary studies and supports the increases seen in the FSY cohort.

Looking at the trends in the outcomes of mindfulness, character strengths and strengths use, a notable pattern emerges in condition A participants. After the immediate post-intervention effects, T3 demonstrates a drop off effect at the 6-week follow up. However, the longitudinal trends of the programme seen at T4 and T5 demonstrate gradual increases again in all three outcome measures. Although some drop off effects are expected after the initial post-intervention measures, as seen in other trials of mindfulness-based interventions (e.g., Pang & Ruch, 2019a), later increases at T4 and T5 suggest that participants begin practicing mindfulness and strength use again, leading to increasing levels of self-efficacy. This finding has been seen after MBCT, where similar continuous increases in mindfulness were identified and explained as evidence of the cumulative practice of mindfulness (Cillessen et al., 2018). As there is no measurement of continuing practice, this longitudinal effect should be explored further in future studies.

An important consideration for Study 1 is that the measurement points at T4 and T5 took place in the midst of the COVID-19 lockdown which began in week 6 of the Spring MBSP, meaning that the last two weeks of the programme were conducted online via Blackboard Collaborate (an online learning platform). The change in delivery in itself is likely to have had an impact on the effect of the programme, as the delivery of the programme was transferred to an online video format, but additionally the lifestyle of all participants changed considerably due to distance learning and social isolation induced by government guidelines. This could explain why Condition B participants did not seem to experience the same immediate changes as a result of the programme as Condition A participants. However, for Condition A participants, it could be argued that the lockdown and pandemic provided an opportunity for participants to put the practices from MBSP into effect, resulting in the increases in mindfulness, strengths use and self-efficacy seen at T4 and T5.

The small sample size of Condition B, could suggest that the results fail to identify significant effects that are present. To combat this, the pre- post- and 6-week post measurements of both conditions are combined with the numerous MBSP trials collected throughout this thesis and are analysed in chapter 5.

Future Research

Future studies should seek to replicate the findings of mindfulness, strengths use and self-efficacy, identified in Study 1, particularly that of mindfulness and self-efficacy as these findings have not yet been found in previous MBSP trials. Furthermore, the continuous longitudinal increases in mindfulness, strengths use, self-efficacy and wellbeing beyond the initial T3 drop off should be explored using qualitative methods to identify how and in what way the exercises and habits cultivated in MBSP might be used over time and contribute to increases in these measures.

Qualitative studies should also explore the effects of MBSP in more depth than is identified in the quantitative measures, particularly the effects on wellbeing and resilience which are not consistently identified in the current study.

Conclusion

Study 1 showed that MBSP results in increases in mindfulness, strengths use and self-efficacy, but no consistent increases in wellbeing or resilience were identified. No decreases in depression, anxiety or stress are identified. Notably, after initial drop-off effects experienced at the 6-week follow up, participants then demonstrate continuous increases in mindfulness, strengths use and self-efficacy. These findings suggest longitudinal effects which continue to increase beyond the 6-week follow up which should be explored further to identify whether and in what way participants continue to apply the skills of the programme beyond its conclusion. It is concerning that wellbeing did not seem to increase as a result of the programme (except in the FSY condition A participants) as this is inconsistent with previous MBSP studies, and a deeper qualitative understanding of the subjective impact of the programme is needed to further understand how individuals might benefit from the programme, specifically to better understand the finding of self-efficacy.

CHAPTER FOUR: STUDY 2 - EXPLORING THE SUBJECTIVE EXPERIENCE OF MINDFULNESS-BASED STRENGTHS PRACTICE: A MIXED METHODS APPROACH WITH POST-GRADUATE RESEARCH STUDENTS

Rationale

Although Study 1 showed that MBSP participants reported statistically significant increases in mindfulness, strengths use and self-efficacy, no changes were observed in well-being, depression or anxiety. To replicate these results, Study 2a will conduct an independent sample, repeated measures design to test whether the results from Study 1 can be seen in a postgraduate population. The lack of changes in wellbeing and negative emotion from Study 1 are contrary to the previous research in which MBSP leads to increased wellbeing, and decreased depression (Niemiec, 2014; Wingert et al., 2020). As this did not appear in the quantitative results in Study 1, Study 2b will take a qualitative design as a means of accomplishing methodological triangulation (Thurmond, 2001), seeking to gain a better understanding of the experience of MBSP through utilising multiple methods of data collection and analysis, as has been used to understand the effects of other interventions (Steekler et al., 1992).

The population chosen for Study 2 was postgraduate research (PGR) students. With research showing a significant rise in mental health issues within doctoral students (Levecque et al., 2017), MBSP was identified as an appropriate programme to be trialled within the Doctoral School at the University of Lincoln. MBSP has previously been delivered to several different adult populations such as with leaders and work groups (for summary, see Bretherton & Niemiec, 2017) but not yet with doctoral students.

Study 2 aimed to further explore the longitudinal impact of the programme on participants' wellbeing and day-to-day life from the subjective viewpoint of the participants. Firstly, Study 2a conducted a part-replication of the experiment in chapter three, to ensure that the effects seen in this group were consistent with the previous chapter. In addition to the quantitative measures used in Study 1, a more detailed evaluation of each of the exercises used in the programme was conducted. This may help identify which exercises are most useful to participants in the programme. Although collected here, these exercise evaluations are analysed in Chapter 7. In Study 2b, MBSP alumni were invited to take part in focus groups to explore the general personal experience of the programme, if and in what way MBSP practices are maintained and implemented beyond the conclusion of the programme, and the effect of the facilitator on participant's experience of the programme. Identifying the effect of the facilitator is especially important with the postgraduate population, as it is the only sample in this thesis in which the MBSP facilitator was a peer to the participants. This was important to explore as the amount of training a facilitator has, whether they are supervised or not, whether they are clinicians, peer facilitators or researchers may all influence the effects of interventions (Stice et al., 2019). As the facilitator of MBSP was both a researcher and a peer to the participants, the impact this had on the experience of the programme was explored.

The research questions for the following studies were as follows:

RQ1: Does MBSP result in the comparable increases in mindfulness, strengths use and self-efficacy in the PGR sample as it does in the Study 1?

RQ2: What additional experiences and benefits do participants experience which are not identified through quantitative measures?

RQ3: How and in what ways are the practices from the programme integrated into daily life?

RQ4: Which attributes of the facilitator contributed to or detracted from the overall experience of the programme?

Study 2a

Methodology

This study followed a two (condition: MBSP vs. control) x three (time: pre-intervention, post-intervention, 6-week post-intervention) mixed model design, with the first factor as a between participants factor. All participants completed the measures at three time points: pre-intervention, post-intervention and 6-weeks post-intervention.

Participants. Nineteen participants were recruited to take part in MBSP through information events and a further 16 individuals were recruited to act as controls. In total, 35 participants between the ages of 22 and 50 (*M* = 30.92, *SD* = 7.88, *female* = 77.1% (*N* = 27)) took part in the experiment.

Of these, 20% (N = 7) regarded themselves as religious; all of whom identified as Christians.

Measures. Participants were asked to complete the self-report measures at three times. Reliability scores for each measure can be seen in Table 4.1.

Table 4.1

Alpha Scores at each time point

Measure	α =		
	T1	T2	T3
Mindfulness Attentional Awareness Scale (Brown & Ryan, 2003)	.77	.86	.85
Strengths Use (Govindji & Linley, 2007)	.93	.94	.95
Self-Efficacy (Schwarzer & Jerusalem, 1995)	.88	.85	.73
Brief Resilience (Smith et al., 2008)	.90	.86	.92
Work Engagement (Schaufeli & Bakker, 2003)	.93	.93	.95
Depression (Lovibond & Lovibond, 1995)	.90	.93	.91
Anxiety (Lovibond & Lovibond, 1995)	.65	.82	.84
Stress (Lovibond & Lovibond, 1995)	.67	.76	.78

Procedure

The programme was delivered in three separate groups. The number of people in each group and when they were delivered can be seen in Table 4.2. Participants were recruited through a series of information events which took the form of taster sessions, advertised on social media through the University's Doctoral School. During the information event, postgraduate students were given an overview of the programme and led through the *You at Your Best* exercise and the *Body Scan* meditation. The programme and the project were explained fully before participants were given an information sheet. Participants were able to provide consent at the event or else they were given 14 days in which to decide whether they wanted to take part in the experiment.

Once consent was given, the first set of questionnaires was e-mailed and participants were asked to select another PGR to act as a control. Both MBSP and control participants completed the questionnaires prior to the first session. Throughout the 8-week programme, those who took part evaluated each of the exercises from the preceding week; this was usually collected as they arrived, before the opening meditation and are analysed in Chapter 7.

Table 4.2
Organisation of MBSP Groups

	N =	Programme dates
1	8	May – June 2018
2	6	May – June 2018
3	5	October – December 2018

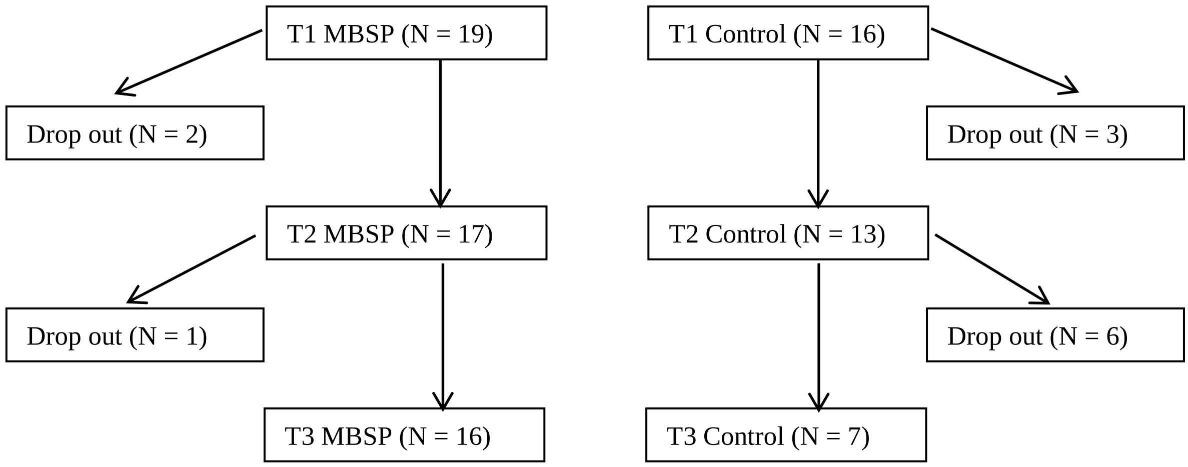
Once the 8-week programme was concluded, all PGRs completed the questionnaires for a second time, and again 6-weeks following the conclusion of the programme. Once the final set of questionnaires was completed, participants were provided with a full debrief, with the controls being offered the chance to take part in the programme at a later date.

Attrition

One MBSP participant completed the programme but did not complete the second set of questionnaires and another MBSP participant dropped out part way through the programme. Although MBSP participants were asked to identify another doctoral student from the same institution to act as a control, several people struggled to identify someone. As a result of this, sample sizes varied slightly between conditions, with 16 participants in the control group and 19 participants in the experimental group. However, at the second point of testing, three controls and two MBSP participants did not complete the second measurements, resulting in 17 MBSP participants and 13 controls. At the final point of testing, this dropped again to 16 MBSP participants and a drop to 7 controls. Overall, this resulted in a 15.79% attrition rate of intervention participants, and a 56.25% attrition rate of control participants.

Figure 4.1

A diagram to show participant retention



Data Analysis Plan

A series of independent t-tests were used to explore any initial differences between groups in baseline scores. Following this, a series of MANOVAs were conducted to explore the effect of condition on outcome variables. Considering the drop out of participants between post-intervention and 6-weeks follow up measures, 2 (condition) x 2 (time) mixed MANOVAs were carried out with those who completed both pre- and post- measurements, and further 2 (condition) x 3 (time) mixed MANOVAs were conducted with participants who completed all three time points. Paired sample t-tests were also completed where MANOVA assumptions were not met.

Results

Descriptive Statistics. The descriptive statistics of all measures at baseline can be found in Table 4.3. Independent t-tests were conducted to explore any differences in baselines measures between conditions. Results showed that there were significant differences in baseline scores of mindfulness, t (33, 29.13) = -2.68, p = .011, Hedge's g = -0.90, and strengths use, t (33, 32.87) =

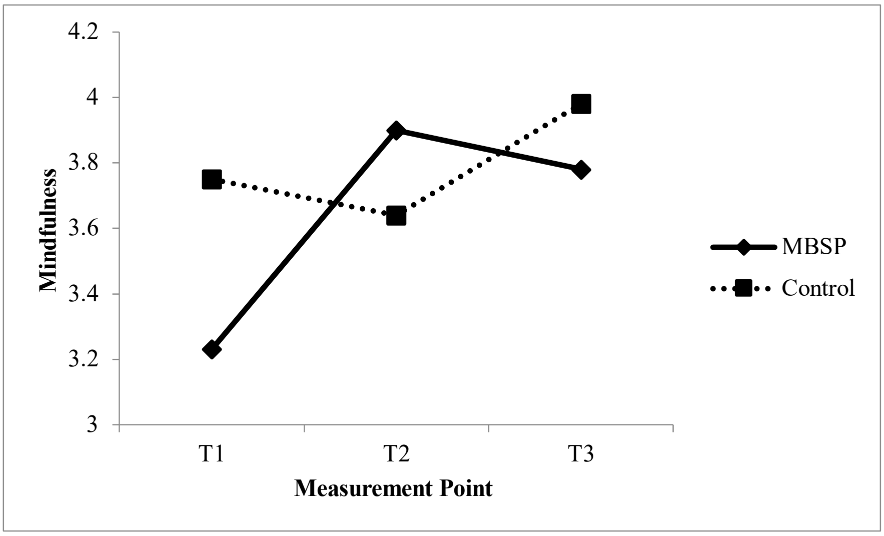
- 2.19, p = .036, Hedge's g = -0.73, with the control group scoring higher than the intervention group.

Inferential Statistics.

Mindfulness and Strengths Use. Those who took part in MBSP showed an increase in mindfulness from T1 (M = 3.23, SD = 0.55) and T2 (M = 3.90, SD = 0.57) compared to control participants who experienced a slight decrease between T1 (M = 3.75, SD = 0.64) and T2 (M =3.64, SD = 0.80). A 2 (condition) x 2 (time) MANOVA showed a significant interaction between time and condition, F (1, 28) = 6.83, p = .014, η^2_p = .20. When including all three measurement points, this significant interaction remained, F (1.34, 28.12) = 3.55, p = .038, η^2_p = .15. Post hoc tests showed a significant increase in mindfulness between T1 and T2 in MBSP participants (p = .005). Although MBSP participants reported a lower score at T3 (M = 3.80, SD = 0.66), compared to T2, these changes were not significant, (p = .661).

Figure 4.2

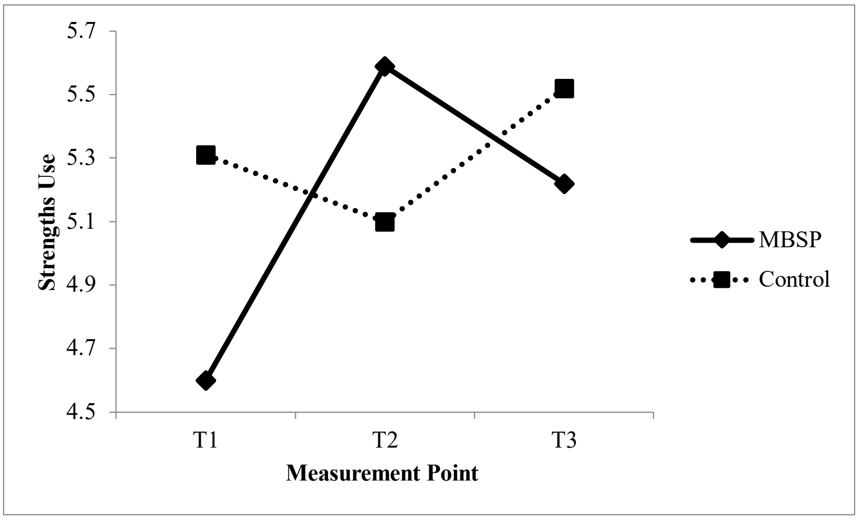
A graph to show changes in mindfulness between conditions



Similar increases were seen in strengths use in MBSP participants between T1 (M = 4.60, SD = 0.95) and T2 (M = 5.59, SD = 0.93) compared to controls who showed little change between T1 (M = 5.31, SD = 0.67) and T2 (M = 5.10, SD = 0.63). The MANOVA showed a significant main effect of time, F (1, 28) = 5.21, p = .030, η^2_p = .16, and a significant interaction between condition and time, F (1, 28) = 12.56, p = .001, η^2_p = .31. When including all three time points, this significant interaction remained, F (2, 42) = 2.83, p = .070, η^2_p = .12, but there was no longer a significant main effect of time, F (1.34, 28.12) = 1.99, p = .166. Post-hoc tests showed that MBSP participants experienced a significant increase between T1 and T2 (p = .004) and no significant decrease at T3 (p = .215).

Figure 4.3

A graph to show changes in strengths use between conditions

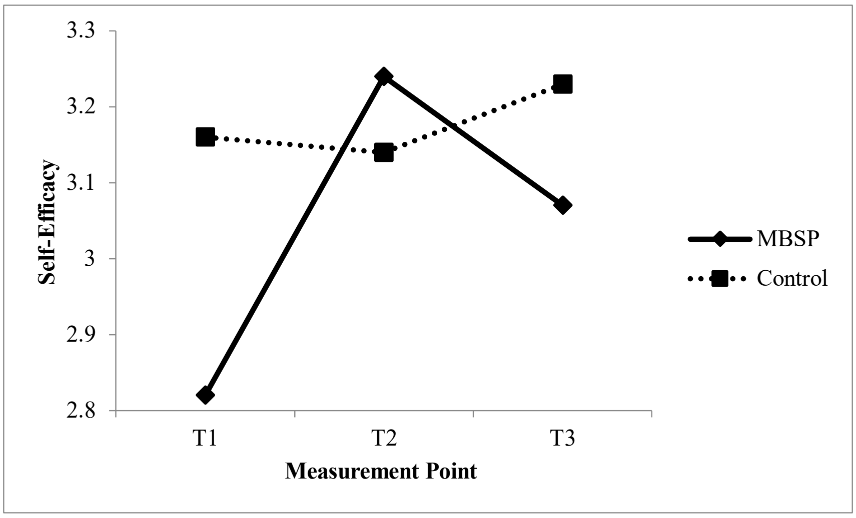


Self-Efficacy and Resilience. Those who took part in MBSP also showed increases in self-efficacy between T1 (M = 2.82, SD = 0.50) and T2 (M = 3.24, SD = 0.45) compared to control participants demonstrated very little change between T1 (M = 3.16, SD = 0.39) and T2 (M = 3.14, SD = 0.36). The MANOVA showed a significant interaction between condition and time, F (1, 28) = 5.13, p = .031, η^2_p = .16. However, when including all three time points, this interaction became non-significant, F (1.53, 32.02) = 0.26, p = .715. Additionally, when including all three time points, a main effect of time was found, F (1.53, 32.03) = 5.11, p = .018, η^2_p = .20, with all participants experiencing an overall increase in self-efficacy between T1 and T2 (p = .050). Post-hoc comparisons showed that MBSP participants experienced a significant increase in self-efficacy between T1 and T2 (p = .026), and no significant decrease at T3 (p = .208).

Initial trends in resilience showed that MBSP participants experienced a slight increase between T1 (M = 2.90, SD = 0.73) and T2 (M = 3.13, SD = 0.83) and control participants reported decreases between T1 (M = 3.44, SD = 0.75) and T2 (M = 3.11, SD = 0.72). Despite these differences in scores, the MANOVA demonstrated no significant interaction, F (1, 28) = 3.23, p = .083, nor when including all three time points, F (2, 42) = 0.90, p = .416.

Figure 4.4

A graph to show changes in self-efficacy between conditions



Work Engagement. Similarly, MBSP participants experienced some increases in work engagement between T1 (*M* = 4.64, *SD* = 0.80) and T2 (*M* = 4.95, *SD* = 0.92), compared to controls who experienced some decrease between T1 (*M* = 5.25, *SD* = 1.02) and T2 (*M* = 5.14, *SD* = 0.79). The ANOVA showed no significant interaction, *F* (1, 28) = 0.66, *p* = .422, nor when including all three time points, *F* (1.14, 23.96) = 1.44, *p* = .247.

Stress, Depression and Anxiety. All participants showed decreases in stress, with intervention participants showing decreases between T1 (*M* = 7.34, *SD* = 1.88) and T2 (*M* = 6.28, *SD* = 1.09) and control participants also increased between T1 (*M* = 7.23, *SD* = 1.68) and T2 (*M* = 6.50, *SD* = 2.19). However, no main effect of time was observed, *F* (1, 27) = 3.48, *p* = .073, nor a significant interaction between condition and time, *F* (1, 27) = 0.12, *p* = .733. When including all three time points, no significant interaction was found, *F* (2, 36) = 0.39, *p* = .680.

MBSP participants demonstrated little change in anxiety between T1 (*M* = 4.84, *SD* = 1.14) and T2 (*M* = 4.72, *SD* = 1.11), but control participants reported an increase between T1 (*M* = 4.88, *SD* = 1.00) and T2 (*M* = 5.50, *SD* = 2.22). Despite these changes between conditions, no significant interaction between condition and time was found, *F* (1, 27) = 1.36, *p* = .255. Again, when including all three time points, this remained non-significant, *F* (2, 36) = 2.30, *p* = .115.

When comparing scores in depression, MBSP participants showed a small decrease between T1 (*M* = 5.78, *SD* = 2.58) and T2 (*M* = 5.50, *SD* = 2.22), with control participants showing increases between

T1 (M = 5.27, SD = 1.44) and T2 (M = 5.54, SD = 2.49). Again, these changes were not significant, F (1, 27) = 0.65, p = .427, nor when including all three time points, F (2, 36) = 0.11, p = .898.

Table 4.3

Descriptive statistics for all measures separated by condition across all time points

Measure	Condition	T1		T2		T3	
		M	*SD*	*M*	*SD*	*M*	*SD*
Mindfulness Attentional Awareness Scale (Brown & Ryan, 2003)	MBSP	3.23	0.55	3.90	0.57	3.78	0.68
	Control	3.75	0.64	3.64	0.80	3.98	0.69
Strengths Use (Govindji & Linely, 2007)	MBSP	4.60	0.95	5.59	0.93	5.22	0.93
	Control	5.31	0.67	5.10	0.63	5.52	0.82
Self-Efficacy (Schwarzer & Jerusalem, 1995)	MBSP	2.82	0.50	3.24	0.45	3.07	0.34
	Control	3.16	0.39	3.14	0.36	3.23	0.31
Brief Resilience (Smith et al., 2008)	MBSP	2.90	0.73	3.13	0.83	2.95	0.88
	Control	3.44	0.75	3.11	0.72	3.38	0.74

Work Engagement (Schaufeli & Bakker, 2003)	MBSP	4.88	0.98	4.95	0.92	4.85	0.95
	Control	5.01	0.78	5.14	0.79	4.71	1.13
Depression (Lovibond & Lovibond, 1995)	MBSP	5.78	2.58	5.50	2.22	5.87	2.74
	Control	5.27	1.44	5.54	2.49	4.80	1.15
Anxiety (Lovibond & Lovibond, 1995)	MBSP	4.84	1.14	4.72	1.11	4.67	1.57
	Control	4.88	1.00	5.50	2.22	4.20	0.84
Stress (Lovibond & Lovibond, 1995)	MBSP	7.34	1.88	6.28	1.09	6.57	1.98
	Control	7.23	1.68	6.50	2.19	6.00	1.37

Study 2b

Study 2a demonstrated that PGRs experienced the same increases in mindfulness, strengths use and self-efficacy as seen in Study 1. However, this quantitative data only provides a limited insight into how participants experience the programme. As a result of this, the following study aimed to explore the subjective experience of MBSP to identify any additional effects of the programme not previously identified by the quantitative measures, how and in what way participants integrate tools from the programme into their daily lives, and which attributes of the facilitator contribute to, or detracted from the experience of the programme.

Methodology

Participants. From the existing pool of doctoral candidates who had taken part in MBSP during 2018 (N = 17), 11 candidates (64.71%) opted into the focus group study. Of these eleven candidates, all participants were female and all except one were still completing their PhDs.

Procedure. The study was advertised to participants who took part in MBSP in 2018 via email. Interested participants were given an information sheet for more detail and asked to indicate their availability. This was done so that there could be a focus group for each of the MBSP groups, to ensure that group members all knew each other already and were comfortable talking with each other.

Three, one-hour focus group meetings ($N_1 = 4$, $N_2 = 3$, $N_3 = 4$) were facilitated by a moderator who was not the researcher nor the programme facilitator, in order to reduce researcher bias. Refreshments including hot drinks and food were provided for the participants. Once everyone had arrived, the researcher welcomed them and introduced the group moderator. An information sheet was provided again and individuals were reminded that they could not withdraw their data once the focus group had concluded. Once participants were given the opportunity to ask questions, written consent was collected. The researcher checked that the recording equipment was working and then left the room.

The moderator began by asking participants to introduce themselves and name their signature strength in order to make it easier to identify individuals during transcription. The focus group lasted one hour, and the moderator followed the focus group guide, using prompting and reserve questions where needed. This focus group guide can be seen in appendix 2.6. Following the conclusion of the group, the participants were thanked for their time and the researcher returned to collect the audio equipment.

Materials. Participants were asked several exploratory questions, which were grouped into 5 topics of conversation.

Experience of the Programme. Participants were initially asked about their general opinion of MBSP, by being asked the general question, ‘how did you find the experience of MBSP?’ From this, three further prompting questions, to be used at the moderator’s discretion, included prompts for participants to identify their a) favourite aspect, b) least favourite aspect of the programme, and c) whether there were any aspects of the programme that they particularly found difficult. Participants were then asked two further questions about their opinion of the group format and how they thought the programme could be improved.

Maintaining Practice. Following the overall opinions of the programme, the moderator then asked participants several questions about their continuing practice of the exercises, meditations and tools that they were taught throughout the programme. These included questions such as ‘which exercises do you still use regularly?’, with further prompts concerning tools they might have continued for the few weeks after the programme but do not continue to use long term. Participants were also asked about the obstacles they face to maintaining their practice, and what motivates them to continue the practice. Similarly to the final question of the previous block, participants were then asked their opinion of how the programme could be improved to facilitate greater maintenance of practice, including a call for suggestions of any resources that could be developed.

Impact of MBSP. In this cluster of questions, participants were asked to discuss how they felt MBSP had a) affected their wellbeing, b) helped them face problems and c) impacted their PhD journey. In addition to this, participants were asked which aspects of MBSP were not useful to them and what they felt was more important to learn from the programme: mindfulness or character strengths.

Impact of Peer Researcher. These questions were designed to explore the impact of having the programme facilitated by a fellow PGR. Participants were asked specifically about the role of the facilitator in their experience of MBSP, whether there was anything the facilitator did to limit their engagement, and how they felt about the programme facilitator also being a) a PGR and b) the primary researcher of the project.

Closing Questions. To conclude the group, participants were given the opportunity to share any other thoughts or views they did not already have the opportunity to share. Lastly, to check that the experience of the focus group was pleasant, participants were asked 'what did you make of taking part in a focus group?'

A full copy of the focus group guide can be found in appendix 2.6.

Method of Analysis. The researcher transcribed each focus group and analysed the data using Interpretative Phenomenological Analysis using guidance from Smith et al. (2009). Following transcription, each transcript was read several times and initial descriptive, linguistic and conceptual comments were made. These comments were then grouped into themes, which were then grouped again to create clusters of themes under one 'super-ordinate theme'. Following this, transcripts were coded independently by a second research and discrepancies resolved through discussion.

Results

The codes fit neatly within each of the research questions, with two superordinate themes identified: 'The Toolbox Effect' and 'Social Support of MBSP'. A full copy of themes within research questions can be seen in Table 4.4.

Table 4.4

A summary of the themes identified in the data

Research Question	Theme	Description
Experience of the Programme (1)	Enjoyment of MBSP	Participants expressed an overall enjoyment of taking part in the programme.
	Content	Participants positively received the content, both mindfulness and character strengths, they learnt in the programme.
	Break From the PhD	Participants found the programme provided a welcome break from the PhD.
	Group Format	Participants enjoyed the group format of the programme.
	Time Commitment	A negative experience of the programme was the time commitment involved in the length of the programme and amount of homework involved.
Maintenance of Practice (2)	Discontinue of practice	Participants expressed that they no longer continued practicing mindfulness and strengths use on a regular basis.
	S.O.S. Use	Most participants did not continue a routine of mindfulness, but use mindfulness informally 'as and when' they need to.
	Refresher	Participants suggested that having a refresher session or reminder e-mails to help sustain their practice.

Role of the Facilitator (3)	Authenticity	Participants suggested that the facilitator should be an active participant in the programme, and live out the content of the course themselves.
	Character	The facilitator should be approachable and personable, as well as being passionate about the programme itself.
	Shared Experience	Participants expressed that it was helpful to have shared experiences with the facilitator.
Superordinate themes	The Toolbox Effect	The strength of MBSP is that it provides a 'toolbox' of exercises, for participants to try and learn which exercises work well for them. These exercises then create a 'repertoire' from which participants can use them as and when they find it helpful.
	Social Support	Participants highlighted the value of the group format of the programme and the role character strengths had in their relationships both within the group and outside it.

The experience of the programme.

Enjoyment of the programme. When asked about the general experience of MBSP, there was a large consensus that participants simply enjoyed taking part in the programme, with six explicitly stating their enjoyment and others non-verbally agreeing:

"I thought it was good I enjoyed it" (2)

"I really enjoyed it as well" (3)

"I quite like yeah I quite enjoyed the sessions" (5)

"I really I just enjoyed it I think" (7)

"I enjoyed it really enjoyed it" (9)

Beyond enjoyment, one participant expressed a feeling of luck and being grateful:

> "I just feel very lucky to have been a PhD student here at the time when it was being piloted and to have got onto the first one so I do feel lucky" (11)

Content. Aside from a general sense of enjoyment from the programme, participants made several positive comments about the content of the group. Namely the structure: "the structure of the er group was brilliant I thought the exercises were really good there was a real mix of things to do" (11); "I thought it was well structured so it kind of led you through" (9) and the positive atmosphere that the group created:

> "It's really nice to say oh you have done this um and not focus on the negatives" (4)

> "It was really positive" (2)

> "to have that positive space and it was always positive conversation and even if you were feeling a bit low you we've already said you would get that positive reinforcement and it was just so nice to be in an environment where everything was so positive and I'm not I'm sitting here thinking what other parts of my life do you get that where you just sort of focus on the positive you don't really so yeah" (11)

> "And here it was it was less enforced being positive but it was still it was also the the focus was on positive but it wasn't um forced onto us and we were not forced to act absolutely happy" (8)

Whilst some participants spoke about learning the mindfulness exercises (e.g., 'I think also learning like all the different mindfulness techniques is really interesting and helpful' (1)) and having the 'space to reflect' (6), it seemed that participants found learning about the character strengths the most impactful part of the programme:

> "It was um- it was really nice just to prioritise like people's strengths (.) that's that for me was the nicest bit" (4)

"I got the most out of the character strengths in that situation because I already kind of knew the mindfulness stuff and it was just like you say cementing it a bit" (3)

"I I probably got the most out of the strengths" (4)

Other participants preferred the more active exercises of the course "so I really enjoyed any of the more sort of interactive activities that we did so when we did sort of like little brain storms and things on the board...but it's I did enjoy some of the meditations so I enjoyed the like the walking ones and the ones where you got to move around" (6).

Break from PhD. A key theme spoken about when asked about the initial experience of the programme is that the weekly session of the programme provided a period of time out of the PhD, away from their work and to reflect on their week. When asked about their favourite part of the programme, one of the key things reported was "it was like the break out of the PhD" (3).

"...it definitely reminded me anyway to taking time for yourself is okay like I do that anyway I would still take time for myself but to feel less guilty about those sort of things yeah it helped n the PhD journey just to kind of relax a bit" (4)

"...it was just nice to not do anything PhD related for 2 hours during the week and just sit back and reflect on what you've done that week and how you've got on with everything it was like it was a little break of of the chaos that was that is the PhD I think yeah" (5)

"...really nice to just switch off and be in the moment and not really think about PhD or anything else that's going on in that day um and you know the non-judgmental atmosphere to just kind of sit there and be yeah that was" (7)

"...it was just a nice break cause you I feel like your phd you never know how much you're supposed to be working and you always feel like you should be doing more but for these two hours you just couldn't do any work and just had to relax so that was I quite enjoyed that" (5)

Group Format. Along with the break from the PhD, one of the participant's favourite parts of the programme was the experience of meeting other PhD students and the group format of the programme:

> "I think not just the the stuff that you did it was just kind of meeting other PhD students coz it's quite an isolating experience or can be isolating...to have a session each week that you knew you were gonna see people that you kind of got to know and actually speak to as well as well as doing the activities was also like an added bonus I found" (10)

> "to have a session each week that you knew you were gonna see people that you kind of got to know and actually speak to as well as well as doing the activities was also like an added bonus I found" (7)

> "For me probably getting to know other people was a big thing for me" (2)

> "just having 2 hours a week where we just did something different...But yeah together so" (3)

> "Because you'd sometimes don't want to I mean I've got I I've got a really good relationship with my supervisor but there's still things I'd perhaps wouldn't wanna discuss with him or show vulnerability if you like but I could show that vulnerability with the group and we also worked one to one with everybody didn't we" (11)

Time Commitment. Despite all of these positive comments, participants also expressed a difficulty with the amount of time commitment involved in taking part of the course. One participant expressed that "I didn't really have much interest in going massively out of my way I don't wanna give myself just one more thing to do every day" as it "felt like too much too much of a commitment" (6).

Another participant commented that the practices were "a big time commitment" (5). This time commitment of the practice was a continuing theme throughout, with this sometimes resulting in experiencing stress:

> "I struggled to get into a routine during the course as well and I al- every week I'd set myself I was so determined right I'm gonna set myself a timetable or a routine never ever

> did it but and it started to ef- started to stress me out a little bit that I wasn't doing that" (9)

Others suggested that "maybe just some of the tasks like outside of the 2 hours" (the homework) was the problem. The general time commitment of the programme "was a bit stressful" (5) and "feels like such a big commitment which is the opposite of what you want it to be" (6). Another suggestion was to shorten the length of each session to one hour, but have the programme length as 12 weeks, which would reduce the feeling of time commitment in one day and still benefit from of "always reinforcing those things you learnt ...building on from last week" (7).

Maintenance of practice. The second section of the focus group focussed on identifying how, if at all, participants were continuing their practices taught from the programme. It is important to note that the focus groups took place approximately one year after the first two groups took part in MBSP, and 6 months after the third group. Whilst this may have been strange for participants, it provided a useful insight to the long-term use of the tools.

Discontinuance of practice. The most apparent theme here was that participants no longer continued their formal routine practices, and that they faced difficulties in maintaining practice:

> "I try to keep on doing mindful daily life activities and then life hit hits one and then you forget to do it but like keeps resurfacing again" (8).

When asked, one participant noted that the things which stop them maintaining their practice was "time, life, work" (11). Overwhelmingly, participants were clear about having stopped their practice:

> "when you were doing things mindfully I was much more aware of that at the end I'm not now" (2)

> "carried on a few weeks after the programme I can't remember specifically when that stopped" (4)

> "Like all your life you've been like living one way and then you do like a mindfulness course but then yeah obviously if you- you just go back to how you've always been... Just like old habits kind of thing so it's hard to keep up" (3)

"I don't feel I've necessarily taken [the exercises] forward in like a structured manner" (7)

In one particular focus group, when asked if there were any exercises that they still practiced regularly, participants expressed awkwardness as indicated by a long pause, followed by laughter. One participant (6) then continued to ask for clarification on this by asking if the moderator meant specific meditations, to which the moderator invited anything. The participant continued to talk about the time commitment of the practices as an obstacle to continuing their practice (see previous theme).

S.O.S. use of activities. Even though participants did not continue a routine of mindfulness and strengths use, they described using the activities as and when they needed to, in an 'S.O.S' fashion and that "it wasn't really something that I had to do every day", but something they could "just drop in and out of as and when you need it" (10). This was a continuous thread throughout this period of questioning, with another participant saying that they "think we all have found times that we need it to dip into that knowledge" (8) and that they "can use when I feel like I need them but I wouldn't plan on having like every morning 20 minutes of meditation" (5).

It was clear to some participants that the value in the programme wasn't "necessarily about getting into a routine with it it's about knowing what the best tools were to take for me on a day to day" (9). The concept of using these tools in the moment when people feel stressed was echoed among participants:

"when I feel really stressed its it genuinely is my go to now" (2)

"I'm definitely using it when I'm overly stressed or needing to cope" (1)

"especially on a day when I'm a bit stressed and I can feel myself sort of flapping about something or worrying it's really nice to think actually take a minute" (6)

Although the majority of participants did not maintain a routine, one participant had a regular practice using one of the audio files provided in the programme. This participant gave a relatively detailed account of how they were practicing mindfulness regularly:

"I downloaded one of the one of my favourite meditations onto my phone and I listen to that most days if I wake up early I I keep it my phone next to my bed with my earphones

> so if I do wake up early I'll do it f- morning before I get up so it tries to put me in the right frame of mind for the day but if I don't do it then I will maybe just before bed go up and do it during the day when I'm when I'm just flat out I do sometimes think hang on (laughs) and I'll just take a step back you know and as you say and either make myself nip out of work for 10 minutes or something like that" (11)

Refresher. The most common piece of feedback was the desire for some kind of refresher session after the course "to keep that motivation". Whilst some groups had maintained a group chat, there was still a desire for "something more formal" to "offer a bit of re- refreshers now and then" (8). The idea of reminders was consistently approved of by the group:

> "reminder e-mails but maybe (pause) yeah that could be developed like what happens after coz it was easy just to forget about it and carry on with normal life" (3)

> "meeting up in the future to maybe have a mindfulness session or just to chat about what we've been doing that would be good it almost wouldn't when you're when you're by yourself you almost feel a bit self-indulgent carrying on some of the mindfulness practices even though you're not um I guess when you're with a group you feel kind of justified in doing it" (4)

Others suggested that "even just to message or something once in a while just to kind of make you think about it again" (1) would be welcome, with another suggestion that "it could be really enjoyable as sort of a one day course" (6) to combat the time commitment issue. However, this was not agreed by others who suggested that "to get the most out of the session you needed that time" (2).

Role of the Facilitator. The final section of questions in the focus groups was dedicated to exploring the influence of the facilitator on their experience of the programme. From these discussions, three subthemes were identified: the authenticity of the facilitator, the character of the facilitator and the shared experiences between facilitator and group members.

Authenticity. Participants placed a high value on the facilitator being someone who isn't just delivering the programme from a book, but is engaged in their own mindfulness and strengths practice as this allowed the facilitator to give "really detailed information um for us to understand what it’s all about and giving um very er relatable examples of things um it- it really really helped” (8). Having the trust in the facilitator to be experienced and knowledgeable in each of the practices and that they weren’t “watching us do it you know she- she’s sat with her eyes closed although she’s talking she seemed to know what she’s saying you know she’s just not staring at us kind o- do you know what I mean she’s doing it with us” (10). This engagement with the programme meant that participants could “see her getting out of it as much as everyone else” (6) and acted “less of an observer and she was more kind of participating... which made you feel really comfortable” (4).

The importance of not only taking part in the programme, but also being passionate about the topic was spoken about several times in the focus groups:

> “you can tell it’s [the facilitator]’s passion and it’s not just a job for her” (5)

> “[The facilitator]’s really passionate about it and I think that’s that is really infectious it’s really nice to have somebody who um really believes in what they’re doing knows a lot about it and is really enthusiastic to share that with you um so that I think that really her enthusiasm really helped” (6)

Character. These conversations moved onto talking about the personality and character of the facilitator. With one participant commenting:

> “I don’t think I’d have engaged very much if it was someone just like I’ve got this MBSP thing on a wad of paper... Um not be very human and again that’s why I think it works so well with [the facilitator]’s character” (7)

The warmth of character seemed to make it easier for participants to open up about their experiences in the group:

> “[The facilitator] being such a kind of bubbly person in general that was also really helpful and she’s quite easy to open up to as well” (1)

> “Yeah I’d agree with that yeah (non-verbal agreement) some people I think some people it would’ve been harder to feel comfortable to talk open up” (2)

"She's casual, she's bubbly happy didn't feel like a super formal thing which was nice" (3)

"You want that warmth don't you and that relatability which I think is what [the facilitator] had rather than someone who is just um gonna sit there as this authority figure and dictate what you're going to do and that isn't really gonna be the mindfulness experience I think most people would want" (6)

The leadership style of the facilitator also seemed to be important to participants as suggested by the last comment above. Others mirrored these feelings:

"[the facilitator] was very calm when we did the meditation [they were] able to take us to wherever and I thi- and it's the way [they] conducted um the session so that for me was more of [their] impact" (11)

"She walked such a fine line between like she kept everybody together and lead it in such a skilful way that she wasn't it- you didn't feel like she was leading it I can't I can't really" (9)

"It wasn't an overpowering leadership or anything like 'right you do this now' kind of thing it was just like right 'so we're gonna do this' do you know what I mean like just very yeah just not overpowering" (10)

"She was like led it didn't she...but from the inside" (2) (laughter from others) "But yeah from the inside I thought that was nice" (3)

Shared Experience. Whilst it seems that the facilitator characteristics are key in participant's experience of the programme, participants also commented on the effect of the facilitator being a peer:

"It brought us on the same level... and I think that wh- also helped everybody to open up bit more and share their experiences" (8)

"I think it was nice to have a fellow PhD student do it because they can relate to a lot of the things you were talking about" (1)

> “It was easy to talk to her during the session as well cause we knew she was in a similar situation” (5)

> “I I think if it if it was her supervisor or someone else like you know a higher academic like I’d I’d struggle to like talk about it...I think just cause she yeah cause she knows what we’re going through and she knows what’s going on then maybe it was easier” (4)

This peer relationship meant that it felt “like a group of friends or people in a similar situation” (3) and that they were supporting a peer which “was really nice and rewarding to to know that somebody’s getting something out of it... and being a PhD student yourself you kind of ‘yay I’m helping a fellow PhD student” (8)

Although the shared experiences played a role in the relatability of the facilitator, some participants said that it was “more the fact of the way she is...rather than the fact she was a a PhD student” (11). This suggests that while it was beneficial to the participants to have a peer-led group, it would still be effective if this wasn’t the case, due to the character of the facilitator themselves.

Superordinate Themes. Having explored the answers to each block of questions, two overarching superordinate themes were identified as ‘The Toolbox Effect’ and the ‘Social Support of MBSP’.

‘The Toolbox Effect’. Throughout the focus groups, it became clear that what the programme did best, and where the most impact of the programme was had, was in giving individuals a ‘toolbox’ of exercises which they could use as and when they needed to. As described earlier, participants felt that they only used the exercises when facing stress or find themselves in negative situations. For example, one participant described using their understanding of strengths overuse and underuse to resolve fights in their relationships. Similarly, another participant reflected on strengths when they felt anxious about the future “particularly kind of re- thinking back to character strengths and remembering things like gratitude or appreciation beaut- beauty excellence that kind of thing and thinking about how you can do that at the time” (6), and had created their own gratitude jar to go to in these moments. This sentiment of using the skills in the face of stress was echoed by other participants:

> “If I can feel myself panicking about something or getting stressed it’s just about taking

those breaths and taking a little bit of time and then looking at the kind of positives of the situation or thinking about the right what strengths do I need to use in this situation" (9)

"yeah not regular but um yeah if if I do feel stressed that is um yeah what I do" (2)

Participants continued to say that the result of the programme included feeling that it "became easier to accept things that didn't go well enough" (8) and they had a "more positive outlook on it as well" (10). In the same focus group another participant commented that they had become more "non-judgemental for me as well for myself" (9) and that they realised "it's alright to make a mistake" (9). Similarly, another participant commented on being able to approach things "in a much calmer way" (11). This was confirmed by another participant who said they felt 'a lot calmer' about the PhD and felt that they are "dealing with it and [they] feel like [their] more in control of [their] own self and like...[they're] more independent as a researcher" (10).

The concept of the programme offering different options and exercises that can be used was appreciated by participants, with one saying: "maybe...the overall strength of the programme in itself is that there's something for everyone" and that these differences were enjoyed in discussion times:

"[The facilitator] would always ask that oh sort of how did you find that task and after each activity and it'd be interesting coz don't think there any disagreements as such or I don't agree with that ((all laugh)) but someone would say well I really enjoyed that one because I pulled on that that and that and I was thinking well I didn't really but I thought this and I think that probably helped like that we were quite a diverse groups and had different experiences." (7)

Social Support. The second superordinate theme highlights the importance of the group format of the programme and provides an argument against online facilitation of MBSP. It was clear that one thing all participants benefited from was doing the programme with peers who all share the experience of being post-graduate researchers:

"I really enjoyed... meeting other PhD students coz it's quite an isolating experience or can be isolating...just to have a session each week that you knew you were gonna see people that you kind of got to know and actually speak to" (10)

"...how we were all different but dealing with the same thing in different ways but it was all um er it was all constructive and it all worked so they the- it- it kind of gave me comfort in knowing that there's just not one way to do [the PhD] (9)

This led to one participant who "felt like I belonged there" and another who appreciated that they "could show that vulnerability with the group". They went on to say:

"We paired up with a different person each week...so it wasn't just sitting in a group so...actually when you asked me the question the thing that sprung to my mind was friendship I was as excited as coming today to see everybody as I was you know coming to to help with this coz it made me go back to a time that was really good" (11)

Aside from sharing the experience of post-graduate research, the general group format of the programme played a large role, and that this led to a sense of accountability in attending and completing the exercises:

"And I made time to make sure I'd done [the homework]... co- I didn't wanna turn up and actually let the rest of the group down as well" (11)

"I...went coz I didn't want to let [the facilitator] down let the group down...you're committed with other people...It's accountability isn't it whereas when you're just committing to yourself it it definitely is not the same" (2)

Along with the format of the group, the exercises in the programme also encouraged relational connections which were enjoyed by the participants:

"I particularly liked the thing where we had to ask our friends and family" (11)

"I think I really enjoyed um actually engage my family into it cause I think I kind of went into it thinking oh it just benefit myself" (10)

Strengths spotting was a key feature in these conversations which had an impact on their relationships as “looking at other people and being non-judgemental and understanding what their strengths were and what their lesser strengths are there and just being accepting... [made them] more appreciative of the strengths not just taking them for granted” (9). This was echoed by another participant who commented on how their husband “was so pleased when I was talking about what was nice about him” (11). Strengths spotting helped participants “realise that that again character strengths [and helped them] appreciate different people and differences” (7). Participants noted that “it was also so much easier to support each other using the...words we used from the MBSP” (8), emphasising the “common language” of character strengths (Niemiec, 2014, p. 27).

Brief Discussion

This chapter firstly highlights that the effects of MBSP seen in the first randomised-control trial with undergraduates (Study 1) are also seen when post-graduate researchers take part in the study. Study 2a showed that across three groups of MBSP, intervention participants reported increases in mindfulness, strengths use and self-efficacy in comparison to controls. Study 2b explored the subjective experience of the programme and identified key superordinate themes of the ‘toolbox’ effect of MBSP and the social support model. When asked about the role of the facilitator, participants commented that the facilitator needed to be personable, have shared experiences with the participants and act as an active participant by taking part in meditations themselves. The impact of the programme was predominantly found in using mindfulness in the face of stressors and using character strengths in their relationships with others and with themselves.

Study 2a confirmed the main changes that people experience after taking part in MBSP, highlighting again that mindfulness, strengths use and self-efficacy all increase as a result of the programme. These increases in mindfulness and strengths use again support the face validity of the programme, as in Study 1. Further to this, the finding of increased self-efficacy hints at the ‘toolbox’ effect that rose from the qualitative analysis. It is encouraging that the attendees felt the programme gave them tools for handling stressful situations and resolving relational issues. With participants claiming that these tools are their ‘go-to’, it is clear that the programme, while not having immediate changes on negative emotions, gave them tools to enable them to better handle stressors when they arose. This theme of using the exercises as tools is not all together novel, with a qualitative study on

MBSR showing a similar finding of using meditation as a tool (Tarrasch, 2015) rather than a permanent lifestyle routine. In agreement with Study 1, PGRs also reported significant increases in self-efficacy, showing that the effect of the programme on self-efficacy is consistent in both undergraduates and postgraduates.

Previous research on mindfulness practices identify a key theme of acceptance after completing a programme when also conducting qualitative analysis, with participants stating that mindfulness helped them to become more accepting of themselves and of their circumstances (Chadwick et al., 2011; Cohen-Katz, 2005; Malpass, 2012; Tarrasch, 2015). This was something that was also mentioned by the participants as highlighted in the toolbox effect. Published literature also confirms the theme of group effects that occur when completing group programmes as was identified in Study 2b. In a meta-analysis from Morgan, the theme of group cohesion and gaining support from the group was found throughout many qualitative studies of mindfulness interventions (Morgan et al., 2015).

Alongside this group cohesion, participants also identified the role that character strengths played in their relationships both within and outside the group. This is a key function of character strengths, and has been highlighted by Seligman's work, which demonstrates that displaying one's signature strengths results in better relational outcomes (Seligman, 2011). Recognising strengths in partners improves relational satisfaction, intimacy and commitment (Kashdan et al., 2017) and can improve communication and marital satisfaction (Goddard et al., 2016; Veldoral-Brogan et al., 2010). The character strengths used provide a good 'common language' (Niemiec, 2014, p. 27) that participants could use to personally benefit their relationships.

There has been limited research into the effects of facilitators of mindfulness, however Himelstein (2011) highlights authenticity as a key characteristic required of facilitators, a characteristic which the participants in Study 2b appreciated in the facilitator. Participants clearly stated the value they found in the facilitator being authentic and acting as an active participant. In addition to this, participants enjoyed the peer-facilitation style, something which is identified in other research (Jennings & Jennings, 2013). However, the quality of training given to the facilitator might affect the role of a peer-facilitator (Crane et al., 2010), with some preferring external instructors because they are subject experts and have the authority to keep discussions on topic, resolve conflict and motivate student participation (Hew, 2015). With this in mind, MBSP groups here were facilitated by a trained practitioner of MBSP, who happened to be a peer of the participants, rather than training a peer specifically. One could argue that this could either enhance or reduce the benefits experienced by the participants, and a meta-analysis of interventions suggests that programmes delivered by either an external facilitator or an internal individual trained specifically for the study both yielded benefits for the participants, although amount of training given was not specified (Felver, 2015). The participants in the Study 2b made it clear that they did not find the peer facilitation style hindered their experience, but that it in fact made it easier to relate to the facilitator and speak more honestly, due to the shared experience of PGR study.

The literature in the field of mindfulness interventions show conflicting attitudes towards facilitation style, with some studies showing that although there is no difference between face-to-face and DVD facilitation in outcome measures, participants still enjoyed having the facilitator present (Swain & Trevena, 2014). Other research notes that delivering mindfulness with the use of technology may provide a cost-effective alternative (Fish et al., 2016) and, in an online study, participants suggested that they would prefer online over face-to-face delivery of mindfulness (Wahbeh et al., 2014). This may provide an option in reducing the workload expected of participants, and may make the programme easier to administer in a COVID-19 world, but alternatively may reduce the sense of accountability which helped participants in the current study see the programme through. Participants struggling with the time demands expected of them was again not a novel finding and is something that often is expressed in other mindfulness interventions (Cohen-Katz, 2005; Tarrash, 2015).

The results of Study 2b provide an interesting insight into the participants' experience of MBSP and provide excellent guidance for running future groups. Arguably the most important guidance is around the active participation of the facilitator, and the passion the facilitator showed for the programme. This helped individuals to engage more fully and relate to the facilitator through this shared experience.

Implications

Study 2 highlighted several characteristics which the participants felt were key to the success of the facilitation style. This included (1) the authenticity of the facilitator, in which the facilitator took part in all the meditations and engaged in their own practice; (2) the personable character of the facilitator – that they were friendly and approachable, but also enthusiastic and passionate about the programme; and (3) the shared experience of the facilitator, which the participants felt allowed them to relate more closely to the facilitator and share more freely with the group.

The qualitative results also make the case for delivering in group settings to allow participants to experience the group support and use the accountability of the group to maintain their commitment to the programme. The social support of the programme is beneficial to the participant experience of MBSP, which would not be possible in online applications to the same extent. However, the qualitative results highlight the difficulties participants experienced with the time commitment of the programme, especially with the length of the programme (8 weeks) and the amount of homework assigned each week. Future adaptations of the programme could explore shortening the programme and reconsidering the amount of homework assigned each week. There are, of course, limitations to Study 2a and 2b, such as the lack of randomisation and small sample sizes. These limitations are discussed more in the discussion (Chapter 8).

Conclusion

Study 2a replicates the findings of Study 1, showing consistent results across both studies on the 8-week original MBSP with increased ratings of mindfulness, strengths use and self-efficacy in those who took part in MBSP in comparison to controls. Study 2b demonstrated that people benefited from a 'toolbox effect', in which participants were able to selectively use exercises and practices taught in the programme to manage stressors in an S.O.S. fashion, rather than maintaining daily routines. Participants also highlighted the importance of the group setting on accountability, social support and general enjoyment of the programme, and the key outcome of improved relationships. Finally, participants stated the importance of a facilitator who actively engages and completes the exercises, is friendly and approachable and has shared experiences with the attendees. However, participants also explained the difficulties found with the time commitment and amount of homework involved in completing the programme.

CHAPTER FIVE: STUDY 3 - EVALUATING A 6-WEEK ADAPTATION OF MBSP IN UNDERGRADUATE STUDENTS (MSBP-6)

Rationale

Studies 1 and 2 have identified and replicated some clear increases in mindfulness, strengths use and self-efficacy as a result of MBSP. The focus group study in Study 2b provided detailed insight into the subjective experience of the programme, including a common theme among participants to be the difficulties with the length of the programme. Participants felt that at eight weeks, MBSP was perhaps too big a commitment, particularly when also committing to out-of-session practices. As such, this chapter looks to adapt MBSP to a shorter 6-week format.

Non-clinical interventions have become popular in education, with literature calling for schools to not only teach academic skills, but also skills for wellbeing and for health (Bonell et al., 2014). Previous application of positive psychology interventions in schools demonstrate increases in life satisfaction (Proctor et al., 2011), decreased anxiety, depression and increases in self-esteem and self-efficacy (Shoshani & Steinmetz, 2013). The need for positive education in schools is highlighted strongly by psychologists (eg., Pala, 2011) and teaching professionals (e.g., Bulach, 2002) and has begun to be integrated into school both through school ethos' or values, and through the use of specific programmes. Seligman et al. (2009) suggest that wellbeing should be modelled and taught in schools for three reasons: to increase life satisfaction, reduce or prevent depression and to encourage creative thinking (p. 295). As such, any adaptations of MBSP that improve its accessibility for use within different educational settings should be encouraged, whilst ensuring its key components and effectiveness are maintained.

The existing eight-week format of MBSP is problematic in these settings because of the half-term structure in British education, in which students have a one-week break in the school term after 6 to 8 weeks of school, which would inevitably lead to a week break in the programme. Even in adult populations, participants sometimes struggle to commit to attending all eight weeks, with participants in the focus group in Study 2b suggesting that this was a stressful level of commitment to maintain. As such, a shorter version of MBSP would increase its applicability not only in education, but in other settings where MBSP-8 might not be possible.

Niemiec encourages adaptations of MBSP to make it applicable for specific contexts, but none have been explored empirically, to identify if these new adaptations maintain the effectiveness of MBSP-8. A four-week intensive version of MBSP was created but did not achieve the same effects of MBSP-8 (Niemiec, 2017). This mirrors evidence which demonstrates that 4-weeks of mindfulness does not result in any outcomes, compared with 8-weeks of mindfulness which decreased negative mood, anxiety and fatigue (Basso et al., 2019). This evidence casts doubt on the effectiveness of a 4-week adaptation of MBSP but leaves the possibility of a less extreme condensing of the programme. Mindfulness-Based Stress Reduction (Kabat-Zinn, 1994) has been adapted several times to suit a variety of settings and demonstrates that a 6-week MBSR can result in significant increases in anxiety, depression and stress (Hou et al., 2019). This evidence supports the exploration of a 6-week adaptation of MBSP.

This chapter encompasses three studies. Firstly, a pilot study designed to investigate the feasibility of the programme with a new structure and gauge the initial response to the programme in order to gather preliminary support for a 6-week MBSP (here titled MSBP-6). Secondly, Study 3a explored the outcomes of MBSP-6 on undergraduate students compared to control participants, to identify whether the programme would result in the same outcomes as the MBSP-8, thus maintaining the effectiveness of MBSP so-far identified within this thesis. Finally, Study 3b looked to identify whether there are any differences in effectiveness between MBSP-6 and the original MBSP (MBSP-8) by conducting a comparison between the programmes. Study 3b also performed retrospective analysis on all cohorts of MBSP, both MBSP-6 and MBSP-8, to identify the main effects of MBSP compared to controls using all intervention data in this thesis. The research questions are as follows:

RQ1: Does MBSP-6 result in the same increases in mindfulness, strengths use and self-efficacy consistently identified in MBSP-8? (Study 3a)

RQ2: Does MBSP-6 replicate the increases in wellbeing seen among the FSY cohort and the increases in resilience identified in condition B participants in chapter 3? (Study 3a)

RQ3: Is MBSP-6 less effective than MBSP-8 as a result of the condensed programme?

(Study 3b)

RQ4: When combining all cohorts of MBSP, what are the observed effects of the programme on participants compared to control participants? (Study 3b)

MBSP-6 (adaptation and structure)

The MBSP-8 programme was condensed to a 6-week structure by identifying two sessions from the original MBSP which could be dispersed throughout the other sessions. As a result, session four of MBSP-8 is dispersed throughout the other sessions, and MBSP-8 session eight is combined with session seven. In order to make space for these integrations, some exercises were allocated to different sessions as described below.

The theme of session four of MBSP-8, 'Mindfulness in Everyday Life', was identified as a theme that is integrated throughout the programme and could be dispersed throughout. As such, several exercises from session four were merged into session three. The focal meditation, the *Walking Meditation*, was added onto the end of the *Statue Exercise* in session three. As the *Walking Meditation* begins with a *Statue Meditation* in MBSP-8, this creates a smooth transition between the two exercises. Completing two meditations together is seen again in MBSP-8 in session five, in which *Loving-Kindness Meditation* is immediately followed by the *Strengths Exploration* mediation, and likewise in session seven where the *Best Possible Self* exercise is immediately followed by the *Defining Moments* meditation.

The *Using Signature Strengths in New Ways* exercise from session four was also moved to session three. This exercise provides an opportunity for participants to explore new ways to express their signature strengths, building on the introduction to character strengths in session two. Finally, the *Strengths Gatha* was introduced as homework for session three, as a means of accelerating understanding of the integration between character strengths and mindfulness. To make room for these new exercises in session three, the '*Strengths and Outcomes*' discussion and whiteboard activity was moved into session two, as a means of further establishing the importance of strengths and understanding them as means to achieving goals.

The final session from MSBP-8 is combined with session seven, to create the last session of MBSP-

6. As a result, *Sacred Object Meditation* here takes place after discussion of future support, and the *Golden Nuggets Exercise* was used just before the virtue circle. To allow time for this, the *Strengths Branding Exercise* from session seven is moved into session six (session five of MBSP-6), after introducing the golden mean and using mindfulness to guard against overuse and underuse, which is utilised in the *Strengths Branding Exercise*.

Besides the rearrangement of sessions and exercises, the *Raisin Exercise* from the original MBSP was removed for the MBSP-6 and replaced with the *Pebble Meditation* (an adaptation of the *Leaf Meditation*), which serves the same purpose as the *Raisin Exercise*, of introducing beginner's mind in mindfulness meditation. Anecdotes from previous attempts of using MBSP-8 with adolescents show that using the *Raisin Exercise* often led to laughter from the students and provided a distraction from beginner's mind awareness of the raisin (Stephenson & Bretherton, 2017). As such it was replaced with the *Pebble Meditation*, which offers the same introduction to beginner's mind awareness.

The resulting structure of the MBSP-6 can be seen below in Table 5.1.

Table 5.1

Structure of the MBSP-6

Session	Theme	Key Exercises	Homework
Session One	Mindfulness and Autopilot	Pebble Meditation Body Scan	VIA survey Mindfulness in a routine activity
Session Two	Your Signature Strengths	You at Your Best Strengths and Outcomes Character Strengths Breathing Space	Signature Strengths in New Ways Strengths Interview
Session Three	Managing Obstacles	Signature Strengths in a Flash Exercise Statue and Walking meditation	Strengths Activity Mapping Speak Up

		Strengths Gathas	
Session Four	Valuing Others and Self	Loving Kindness Strengths Exploration Character Strength 360	Strength Worksheet Character Strength 360
Session Five	Mindfulness of the Golden Mean	Fresh Look Meditation Strengths Branding Signature Strengths Breathing Space	Goal-Setting Worksheet Mindless-Mindful
Session Six	Authenticity and Goodness	Best Possible Self Defining Moments Sacred Object Meditation	

Pilot study

The 6-week adaptation of MBSP was originally created for use within British educational contexts. Anecdotal reflections on previous attempts of using MBSP-8 in schools showed significant attrition rates in participation numbers after the mid-term vacation (Stephenson & Bretherton, 2017). The first pilot of MBSP-6 was used with 16-18 year olds as a means for the facilitator to pilot the structure of the group and ensure that the content of each session was accessible and achievable for participants. At the end of the pilot study, participants completed a qualitative feedback form for researchers to gain an understanding of the experience of the programme. Overall, the pilot looked to establish the feasibility of MBSP-6 delivery in education and to identify preliminary findings that reflect increases mindfulness, strengths use and self-efficacy as seen in the MBSP-8 studies in Chapter 3 and 4.

Methodology

Participants. Participants were enrolled onto MBSP-6 following a recruitment presentation at the beginning of the school term at LSST Priory Academy in Lincoln. They were aged between 17 and 18 years old (N = 10; M = 17.10, SD = 0.32). Four of the original ten participants completed the programme, with reasons for dropout including job commitments, and the inability to attend after school hours. Only three participants completed questionnaires post-intervention (T2), although four participants completed the end of course qualitative evaluation.

Measures. Participants were asked to complete qualitative feedback on their experience of MBSP, which included reviews of specific aspects of MBSP (such as the virtue circle), guided questions on the effect of MBSP on relationships, and more open-ended questions (‘What struck you most about the programme?’). The measures described in Chapter 2 were initially used in an attempt to observe any quantitative measures, however due to low sample size, this was not subjected to analysis.

Procedure. All students received an information event in an assembly, which provided an overview of the programme along with a guided *Body Scan* meditation and *You At Your Best* exercise, to provide a taster of the programme. For those interested, sign-up sheets were available to be collected, which included a full information sheet and consent forms for both the student and their legal guardian to complete and return. The programme was originally advertised to take place within school hours, after discussions with the school leadership, however this was not possible due to timetabling clashes, and as such the sessions began at 2pm and finished at 4pm, one hour after the school timetable had finished. This meant that of those who signed up, over half withdrew from the study as they were unable to stay for the hour after school had finished. Participants completed the online questionnaires prior to the first session. In the final session, time was allocated for the qualitative forms to be completed. Post-intervention questionnaires were completed in the week following the completion of the programme, and again 6-weeks later. Participants were fully debriefed upon conclusion of the study.

Data Analysis

In the absence of control participants and sufficient sample size, no statistical analyses were conducted on the quantitative data. The qualitative feedback form was subjected to thematic analysis. These forms were read multiple times to gain familiarity with the participant responses before codes were applied.

Results

Three key themes were identified throughout the data which highlighted the impact of MBSP on participants: strengths awareness, stress relief, and future motivation.

Strengths awareness. The first theme identified from the thematic analysis, 'strengths awareness', can be defined as the effect of MBSP on increasing participant's awareness of their strengths, and diminishing strengths blindness. Consistently throughout the participants' answers, it was clear that MBSP brought a new focus to their character strengths:

> "Finding my character strengths and finding my lowest made me realise a lot about myself" (3)

> "I have noticed I have tried changing up my use of character strengths for different situations" (1)

In addition to this, participants reported an understanding of overuse and underuse of strengths (taught in session five of MBSP-6) and used this to evaluate behaviour:

> "I know my character strengths and which aspects of my personality I overuse and underuse and what effect this can have on my daily life/how I can appear to be." (2)

> "What struck me most about the course was how often you would use your strengths in everyday activities and also how they could be hold you back." (4)

Another key area of strengths awareness was awareness of others' strengths and its importance in relationships:

> "I am able to recognise the signature strengths in friendships and can focus on these" (2)

> "I find it easier to recognise strengths in group projects and don't get as annoyed when people do it a different way to the plan" (4)

These comments confirm the results of quantitative measures in previous chapters, which indicate an increase in strengths use as a result of the programme.

Facing stress. Another recurrent theme throughout the qualitative data, 'facing stress', refers to the participants' use of tools taught in MBSP to handle stress. Some participants explicitly commented on stress relief:

> "[I] have learned good techniques that work when it comes to stress and challenges." (4)

> "It has been a positive experience and has helped with stress" (2)

> "[MBSP was] very beneficial and fun during time of stress" (1)

Others expressed different ways that the programme had helped them face difficulties:

> "I have noticed I overcome challenges quicker and appreciate other people's ways of doing things more and understand their actions because of it." (4)

> "[I] don't get as annoyed when people do it a different way to the plan" (4)

Impact on everyday and future thinking. The final identified theme, 'Impact on everyday and future thinking', refers to what participants learned through the programme to better themselves further, and ways in which they reported change as a result of the course. Some participants focused on how the course increased character strengths:

> "I feel like my bravery may have increased by talking in front of people and on sharing things which are more personal" (3)

> "They gave me more courage to input into the discussions and reflect on my character strengths" (2)

> "It has also made me work harder and being my best for other using a variety of character strengths in order to improve my experience and myself" (1)

> "Benefits I have gained more confidence to open up character strengths and help others and myself more." (1)

Participants also expressed commitments to using these skills in the future:

"I will definitely use these skills to keep less stress and overcome challenges in the future" (4)

"I shall try to be more kind to myself." (3)

"So I know what can be done to balance these to ensure a better environment around me." (2)

"[I] realised that some things need to be changed and I shall try to do this in the future." – (3)

"I'm hoping to change this" (3)

These statements indicate future intent to continue self-improvement using tools from the MBSP programme. As part of the general MBSP evaluation form, participants were also asked to identify their favourite exercises. *Defining Moments*, *Best Possible Self*, *Fresh Look Meditation*, *Body Scan, Character Strengths Breathing Space*, and *Reframing* exercises were all listed.

Brief Summary

The pilot study provided a successful feasibility check, which indicated that the programme can be condensed into six weeks and conducted within one half term without feeling too rushed or condensed. Participants stated that the amount of time per session, and the amount of sessions in the programme were well adapted to their context, but that the required homework was excessive. However, the small number of participants prohibited any quantitative analysis being conducted. Future applications of MBSP-6 in education should consider carefully the scheduling of the sessions and the possibility of timetabling sessions within school hours, to maximise participation and accessibility for more participants.

Study 3a

The pilot study showed that the content of MBSP-6, whilst more concise, is still achievable in the time given and shows some evidence of the same positive changes that participants experience as a result of MBSP seen in previous chapters. The qualitative data from the pilot study hints towards increases in strengths use, problem-solving techniques and self-efficacy that was also identified in previous chapters. As MBSP-6 potentially evokes similar changes as those reported in 8-week MBSP, a thorough quantitative independent samples design is required to explore the statistical changes that occur in outcome measures as a result of the programme. In order for MBSP-6 to be deemed effective, the quantitative results should demonstrate comparative results to those seen in MBSP-8, to provide solid justification for its application in future settings.

Methodology

Study 3a employed a simple independent samples design, where intervention participants were compared with control participants to identify the effects of the programme. All participants completed measures three times: pre-intervention, post-intervention and 6-weeks post-intervention.

Participants. Seventy-three participants took part in the study (Female = 78.08% *(N* = 57), aged between 18 and 66 years (*M* = 20.66, *SD* = 5.70). Of these participants, eight (10.96%) identified as religious (Christian = 5, Orthodox = 2, Muslim = 1). Forty-one participants were second-year undergraduate psychology students recruited from a second-year elective on character strengths and virtues and were asked to identify a control participant (*N* = 32). Students were recruited in three cohorts over the course of two academic years: cohort 1 (*N* = 10), cohort 2 (*N* = 23) and cohort 3 (*N* = 40).

Measures. Measures used in Study 1 and Study 2 were again utilised in Study 3 in order to replicate the previous findings. Reliability scores for all measures can be seen below in Table 5.2.

Procedure

Participants were recruited through the University of Lincoln in a lecture in a second year psychology elective on character strengths, and were invited to take part in MBSP-6. A cohort of MBSP was recruited from this population during three consecutive years, resulting in three cohorts. Control participants were nominated by intervention participants. Participants were briefed and gave informed consent before the first measures were completed and questionnaires were completed again after the conclusion of the programme, and 6-weeks afterwards.

Table 5.2

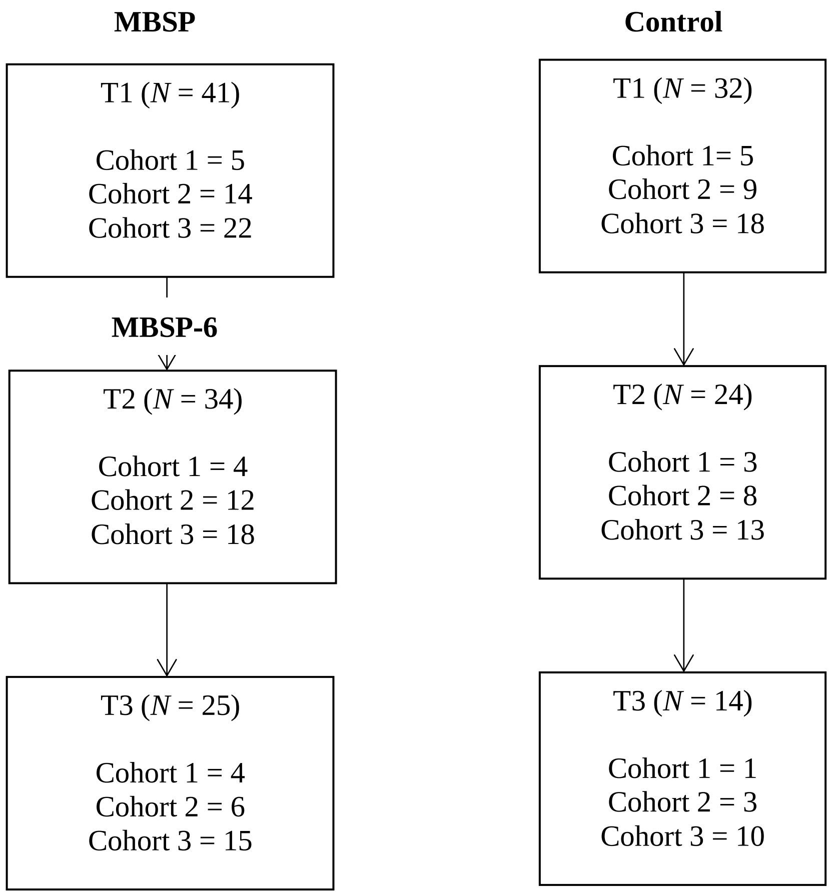
Reliability scores across time points using Cronbach's Alpha.

Measure		Time Point		
		T1	T2	T3
MAAS	(Brown & Ryan, 2003)	.83	.84	.88
SU	(Govindji & Linley, 2007)	.91	.94	.97
SE	(Schwarzer & Jerusalem, 1995)	.86	.82	.84
BR	(Smith et al., 2008)	.90	.87	.90
WE	(Schaufeli & Bakker, 2003)	.90	.90	.93
DAAS	(Lovibond & Lovibond, 1995)			
	Depression	.85	.87	.88
	Anxiety	.80	.70	.75
	Stress	.83	.79	.82
PERMA	(Butler & Kern, 2016)			
	Positive Emotion	.81	.83	.80
	Engagement	.56	.68	.63
	Relationship	.73	.80	.77
	Meaning	.80	.82	.94
	Accomplishment	.79	.65	.79
	Overall Wellbeing	.91	.92	.95

Attrition. As seen in previous trials of MBSP, bigger attrition rates were seen in control participants (56.25%) compared to intervention participants (29.02%). Figure 5.1 demonstrates the attrition at each stage of the study, indicating specific cohort numbers.

Figure 5.1

Sample size over time, split by cohort and condition



Data Analysis. A series of 2 (Time: T1 vs T2) x 2 (Condition: MBSP vs Control) MANCOVAs were conducted using cohort as a covariate to explore the changes in mindfulness, strengths use, self-efficacy, resilience, work engagement, wellbeing, depression, anxiety and stress that occur immediately after completing the programme. Further 3 (Time: T1 vs T2 vs T3) x 2 (Condition: MBSP vs Control) MANCOVAs were used to identify effects of the programme that continue 6-weeks after the programme. Where sphericity was violated, appropriate Greenhouse-Giesser corrections were applied.

Results

Descriptive Statistics. Independent samples t-tests were first conducted for baseline measures, and revealed no significant differences between MBSP participants and control participants in mindfulness (p = .107), strengths use (p = .208), self-efficacy (p = .522), resilience, (p = .437), stress (p = .522), anxiety (p = .152), depression (p = .535), wellbeing (p = .890) or work engagement (p = .347). Descriptive statistics for all measures and time points can be seen in Table 5.3, split by condition.

Table 5.3.

Descriptive statistics for all measures separated by condition across all time points

Measure	Condition	T1		T2		T3	
		M	*SD*	*M*	*SD*	*M*	*SD*
Mindfulness Attentional Awareness Scale (Brown & Ryan, 2003)	MBSP	3.25	0.83	4.11	0.58	4.04	0.67
	Control	3.47	0.67	3.46	0.62	3.05	0.48
Strengths Use (Govindji & Linley, 2007)	MBSP	4.43	0.96	5.76	0.77	5.35	1.15
	Control	4.68	0.78	4.70	0.80	4.76	0.99
Self-Efficacy (Schwarzer & Jerusalem, 1995)	MBSP	2.72	0.55	3.26	0.41	3.17	0.39
	Control	2.72	0.36	2.83	0.26	2.82	0.28
Brief Resilience (Smith et al., 2008)	MBSP	2.83	1.08	3.41	0.80	3.49	0.81
	Control	2.94	0.71	2.87	0.64	3.04	0.66
Work Engagement	MBSP	4.12	0.86	4.61	0.81	4.68	0.66

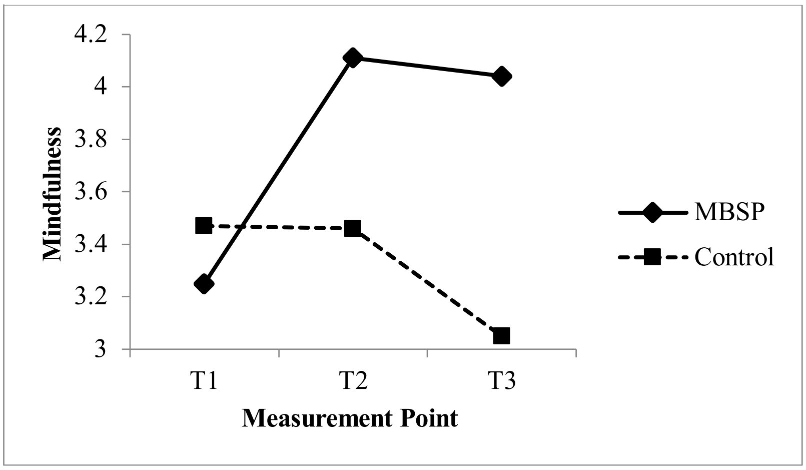
(Schaufeli & Bakker, 2003)	Control	3.86	0.74	4.08	0.72	3.82	0.74
Depression (Lovibond & Lovibond, 1995)	MBSP	6.58	2.06	5.62	1.87	5.74	1.95
	Control	7.10	2.21	6.93	2.47	7.80	2.52
Anxiety (Lovibond & Lovibond, 1995)	MBSP	6.85	2.36	5.27	1.36	5.13	1.28
	Control	6.36	2.38	5.57	1.81	5.75	1.87
Stress (Lovibond & Lovibond, 1995)	MBSP	7.79	2.27	6.03	1.58	6.43	1.52
	Control	7.69	2.22	7.05	2.16	8.50	2.78
Overall Wellbeing (Butler & Kern, 2017)	MBSP	7.43	1.41	8.57	1.16	8.29	1.21
	Control	3.39	1.33	7.79	1.04	7.13	1.65

Inferential Statistics

Mindfulness and Strengths Use. Those who completed MBSP-6 reported an increase in mindfulness between T1 (M = 3.25, SD = 0.83) and T2 (M = 4.11, SD = 0.58), compared to controls who reported very little change between T1 (M = 3.47, SD = 0.67) and T2 (M = 3.46, SD = 0.62). The MANCOVA identified a significant interaction between condition and time, F (1, 55) = 30.92, $p <$ .000, η^2_p = .36, with MBSP participants demonstrating significantly higher scores than control participants at T2 in mindfulness ($p < .001$) and strengths use ($p < .001$). When including all three time points, this significant interaction remained, F (2, 66) = 18.19, $p < .001$, η^2_p = .36. Post-hoc comparisons revealed significant increases between T1 and T2 in mindfulness in MBSP participants ($p < .001$), and no significant difference between T2 and T3 (p = .660) with intervention participants still demonstrating significantly higher scores at T3 compared to controls, ($p < .001$).

Figure 5.2

A graph to show changes in mindfulness between conditions



Similarly, MBSP participants reported an increase in strengths use between T1 (M = 4.43, SD = 0.96) and T2 (M = 5.76, SD = 0.77), with the MANCOVA revealing a significant interaction between time and condition, F (1, 55) = 53.18, $p < .001$, η^2_p = .49. A significant interaction between time (T1 vs T2) and cohort (1, 2, 3) was additionally identified, F (1,55) = 5.49, p = .023, η^2_p = .09. When including all three time points, the significant interaction between time and condition remained, F (1.48) = 10.31, p = .001, η^2_p = .24, and the significant interaction between time and cohort remained, F (1.48) = 7.94, p = .003, η^2_p = .19. Post-hoc t-tests showed significant increases between T1 and T2 in MBSP participants from cohort 2, t (11) = -6.28, $p < .001$, Hedge's g = 1.39, and cohort 3, t (17) = -8.67, $p <$

.001, Hedge's $g = 1.84$, but not in cohort 1, t (3) = -2.56, $p = .083$. A further significant main effect of time was found when including all three time points, F (1.48) = 6.33, $p = .007$, with all participants experiencing an increase in strengths use between T1 ($M = 4.53$, $SD = 0.89$) and T2 ($M = 5.32$, $SD = 0.94$), t (57) = -6.31, $p < .001$, Hedge's $g = 0.86$, and a slight decrease at T3 ($M = 5.15$, $SD = 1.12$), t (35) = 2.10, $p = .043$, Hedge's g =- 0.37.

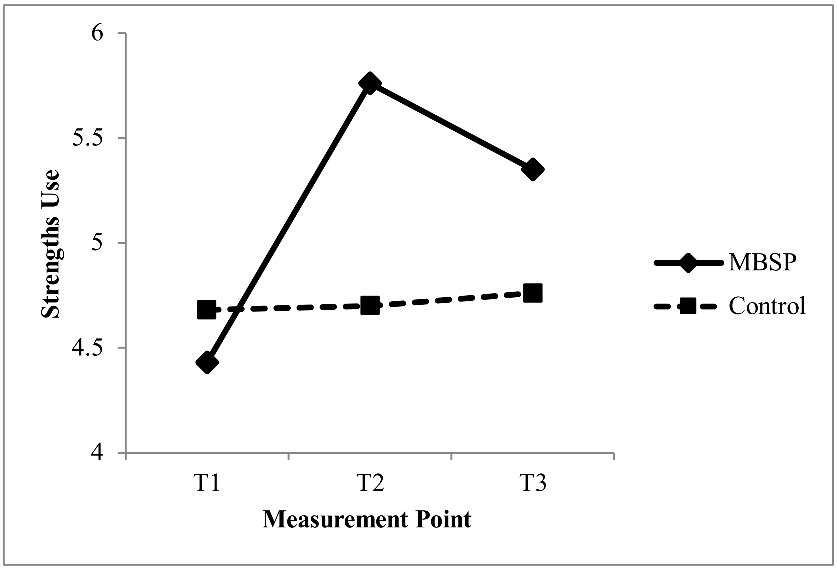
Table 5.4

Strengths Use scores between conditions and cohorts between T1, T2 and T3

Condition	Cohort	T1		T2		T3	
		M	SD	M	SD	M	SD
MBSP	1	5.73	0.49	6.44	0.27	4.33	2.79
	2	4.35	0.95	5.63	0.81	5.37	0.70
	3	4.19	0.83	5.69	0.76	5.55	0.80
Control	1	4.86	0.38	4.55	0.72	4.14	N/A
	2	4.46	1.06	4.38	0.78	4.60	0.22
	3	4.76	0.66	4.92	0.82	4.90	1.20

Figure 5.3

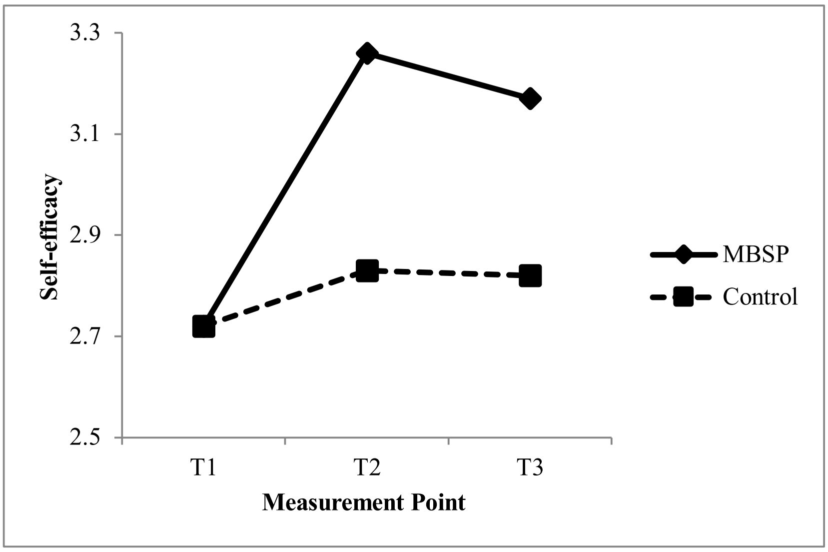
A graph to show changes in strengths use between conditions



Self-Efficacy and Resilience. Intervention participants experienced an increase in self-efficacy between T1 (M = 2.72, SD = 0.55) and T2 (M = 3.26, SD = 0.41) compared to control participants who showed little change between T1 (M = 2.72, SD = 0.36) and T2 (M = 2.83, SD = 0.26). The MANCOVA revealed a significant interaction between time and condition, F (1, 55) = 23.77, p < .001, η^2_p = .30, with MBSP participants showing significant increases in self-efficacy between T1 and T2 (p < .001), compared to control participants (p = 1.000). When including all three measurement points, this significant interaction remained, F (2, 66) = 6.91, p = .002, η^2_p = .17, demonstrating no significant drop off in self-efficacy between T2 and T3 in MBSP participants (p = .138).

Figure 5.4

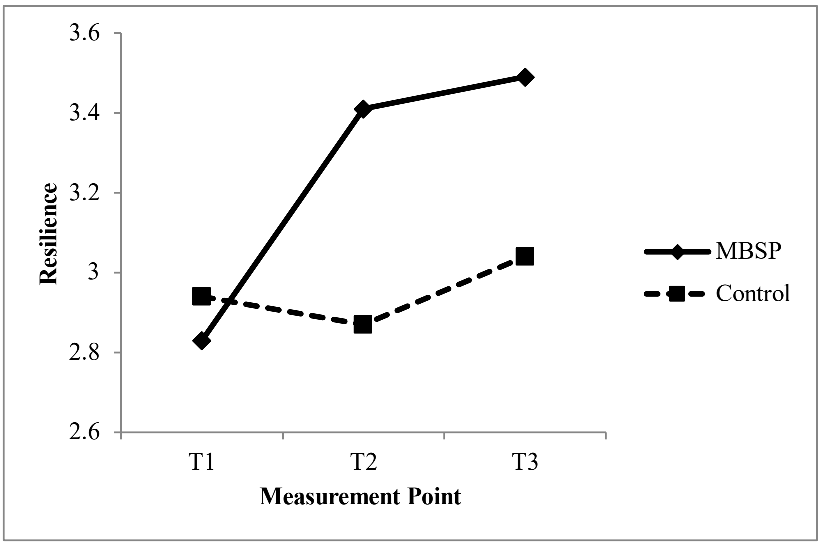
A graph to show changes in self-efficacy between conditions



Similarly, MBSP participants reported significant increases in resilience between T1 (M = 2.83, SD = 1.08) and T2 (M = 3.41, SD = 0.80) compared to control participants who experienced little change between T1 (M = 2.94, SD = 0.71) and T2 (M = 2.87, SD = 0.64). The MANCOVA showed a significant interaction between time and condition was found in resilience, F (1, 55) = 15.09, $p <$ .001, η^2_p = .22, with MBSP participants showing significant increases, ($p <$ .001) compared to controls (p = .599). When including the 6-week follow up measures, this significant interaction remained, F (1.96, 64.81) = 8.20, p = .001, η^2_p = .20. No significant drop off was identified between T2 and T3 for MBSP participants, (p = .611).

Figure 5.5

A graph to show changes in resilience between conditions



Work Engagement. MBSP participants showed some increases in work engagement between T1 (M = 4.12, SD = 0.86) and T2 (M = 4.61, SD = 0.81). Similarly, control participants reported increases between T1 (M = 3.86, SD = 0.74) and T2 (M = 4.08, SD = 0.72). The ANCOVA revealed a main effect of time, F (1, 55) = 4.72, p = .034, η^2_p = .079, with an overall significant increase between T1 and T2 ($p <$ .001). However, no interaction effects were found between condition and time, F (1, 55) = 2.79, p = .101. When comparing all three time moment there was no longer a significant main effect of time, F (2, 32) = 1.27, p = .295, and there was no significant interaction between time and condition including T3, F (2, 66) = 2.96, p = .059.

Depression, Anxiety and Stress. Initial trends demonstrate that MBSP participants experienced a decrease in depression between T1 (M = 6.58, SD = 2.06) and T2 (M = 5.62, SD =

1.87) and controls who also experienced small decreases between T1 (M = 7.10, SD = 2.21) and T2 (M = 6.93, SD = 2.47). However, the MANCOVA showed no significant interactions between time and condition, F (1, 51) = 2.01, p = .162. When including all three time points, this interaction remained non-significant. F (2, 60) = 0.92, p = .405.

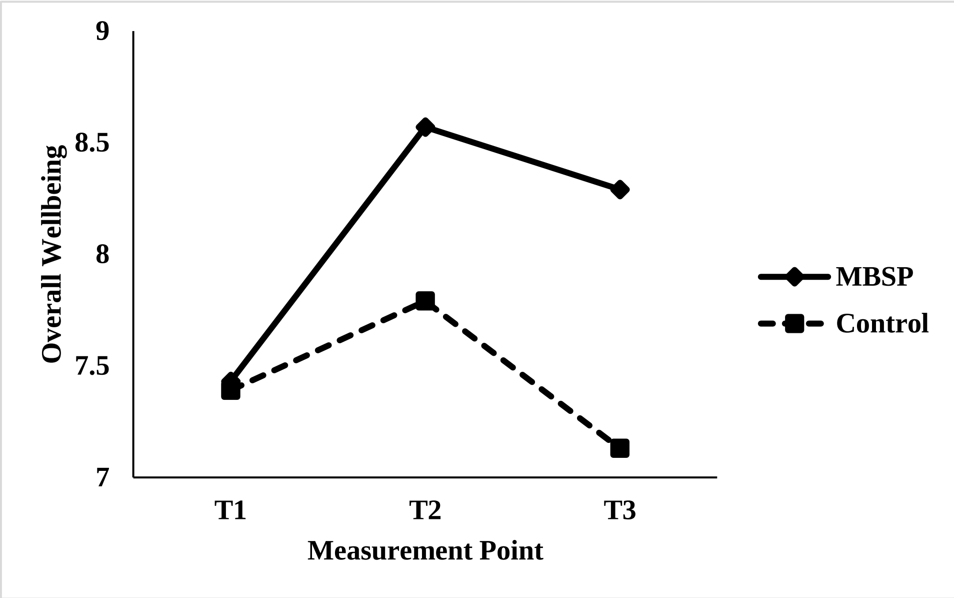
Similarly, trends suggested decreases in anxiety for intervention participants between T1 (M = 6.85, SD = 2.36) and T2 (M = 5.27, SD = 1.36) and also potential decreases in control groups between T1 (M = 6.36, SD = 2.38) and T2 (M = 5.57, SD = 1.81). Despite this, no significant interaction was revealed by the MANCOVA when comparing T1 with T2, F (1, 51) = 1.92, p = .172, nor when including all three time points, F (2, 60) = 1.48, p = .237.

Finally, MBSP participants reported a decrease in stress between T1 (M = 7.79, SD = 2.27) and T2 (M = 6.03, SD = 1.58), similar to control participants who reported some decrease between T1 (*M* = 7.69, *SD* = 2.22) and T2 (*M* = 7.05, *SD* = 2.16). However, no significant interaction was found when comparing pre- and post, *F* (2, 60) = 3.99, *p* = .051, or when comparing all three time points, *F* (2, 60) = 1.36, *p* = .266.

Wellbeing. MBSP participants showed an increase in wellbeing between T1 (*M* = 7.43, *SD* = 1.41) and T2 (*M* = 8.47, *SD* = 1.16). Control participants experienced smaller increases between T1 (*M* = 7.39, *SD* = 1.33) and T2 (*M* = 7.79, *SD* = 1.04). The MANCOVA revealed a significant main effect of time on wellbeing, *F* (1, 55) = 4.54, *p* = .039, η^2_p = .082, showing an overall increase in wellbeing between T1 and T2, *t* (57) = -5.45, *p* <.001, Hedge's *g* = 0.58. A significant interaction between time and condition was also found, *F* (1, 55) = 6.55, *p* = .014, η^2_p = .11, with a significant increase seen between T1 and T2 in MBSP participants, (*p* < .001), but not in control participants, (*p* = 1.000). When including all three time points, a significant interaction between time (T1 vs T2 vs T3) and condition was found in wellbeing, *F* (1.55, 46.34) = 4.16, *p* = 031, η^2_p =.12. No significant changes were identified in wellbeing between T2 and T3 in MBSP participants, (*p* = .255), but a significant increase in wellbeing was seen in controls (*p* = .015).

Figure 5.6

A graph to show changes in wellbeing between conditions



When looking at the subscales of the PERMA, a main effect of time was seen on positive emotion, F (1, 55) = 6.04, p = .017, η^2_p = .10, and on meaning, F (1, 55) = 5.00, p = .029, η^2_p = .08. Further to this, a significant interaction was seen between time and condition on positive emotion, F (1, 55) = 6.85, p = .011, η^2_p = .11, meaning, F (1, 55) = 7.11, p = .010, η^2_p = .11, and accomplishment, F (1, 55) = 6.06, p = .017, η^2_p = .10. Post-hoc comparisons showed significant increases in MBSP participants compared to control participants in positive emotion, t (18) = -2.65, p = .016, engagement, t (18) = -2.44, p = .025, meaning, t (18) = -3.03, p = .007, and accomplishment, t (18) = -4.35, p < .001. When including all three time points, a significant interaction was found between time and condition on relationships, F (2, 66) = 3.67, p = .031, η^2_p = .10 and accomplishment, F (2, 66) = 3.17, p = .048, η^2_p = .09.

Table 5.5

Changes in PERMA subscales over time between conditions

		T1		T2		T3	
		M	*SD*	*M*	*SD*	*M*	*SD*
Positive Emotion	MBSP	7.54	1.44	8.31	1.36	7.92	1.36
	Control	7.39	1.75	7.22	1.53	6.78	1.72
Engagement	MBSP	8.00	1.37	8.47	1.01	8.06	1.44
	Control	8.06	1.15	7.70	1.15	7.44	1.62
Relationships	MBSP	8.19	1.56	8.83	1.56	8.80	1.28
	Control	8.53	1.78	9.06	1.59	7.95	2.19
Meaning	MBSP	7.15	1.94	8.39	1.60	8.36	1.89
	Control	6.69	1.71	7.14	1.78	6.72	1.50
Accomplishment	MBSP	7.36	1.50	8.26	1.27	8.06	1.21
	Control	7.58	0.94	7.56	1.24	7.53	1.45

Brief Summary

This trial of MBSP-6 across three cohorts of undergraduates demonstrated that MBSP-6 resulted in similar increases in mindfulness, strengths use and self-efficacy as seen in previous trials of MBSP-8, providing evidence that MBSP can be condensed into six weeks without losing its effectiveness, supporting the qualitative data of the pilot study. Further to this, MBSP-6 solidifies previous findings on resilience seen in one cohort of MBSP-8 (Study 1), demonstrating a statistically significant increase in resilience as a result of the programme. This finding is consistent with previous trials on MBSP (Wingert et al., 2020) and reflects the qualitative data from Chapter 4. Similarly, wellbeing also increased as a result of MBSP-6, as was found in the FSY cohort of

MBSP-8 in Study 1. Specifically, MBSP-6 participants experienced increases in positive emotion, relationships, meaning and accomplishment. Consistent with previous studies, no significant changes in depression, anxiety or stress were identified. Work engagement increased over time for all participants, regardless of condition, with no specific effect of MBSP found.

Study3b

Rationale

Study 3a showed that MBSP-6 results in increases in mindfulness, strengths use and self-efficacy as is seen in MBSP-8. Here, Study 3b will explore how the effects of MBSP-6 compare to MBSP-8. Specifically, whether the increases in mindfulness, strengths use and self-efficacy, seen in all previous trials within this thesis, are smaller in MBSP-6 compared to MBSP-8 as a result of the condensed programme. Additionally, MBSP-6 demonstrated clear increases in resilience and wellbeing, unlike MBSP-8 which only indicated these increases in one cohort of the programme (Study 1). Study 3b will first whether MBSP-6 results in significantly stronger increases in resilience and wellbeing compared to MBSP-8. Following this, Study 3b will combine all cohorts of MBSP, both MBSP-6 and MBSP-8 and compare these results to control participants in order to explore again what the key outcomes of MBSP are. Here, Study 3b aims to replicate previous findings within the thesis and provide consistent evidence of the effects that are influenced by MBSP.

Methods

Participants. Participants (female = 73.42% (N = 58)) were between the ages of 18 and 66 years (M = 22.67, SD = 7.34). Of these, 25 (31.65%) identified as religious (19 = Christian, Hindu = 3, Islam = 3). The final dataset resulted in 79 intervention participants (MBSP-6 = 41; MBSP-8 = 38) and 67 control participants. The cohort of each participant was also coded (MED = 24; FSY = 14; PGR = 35; PSY = 73), to be used as a control variable to negate any population effects.

Measures. For MBSP-8 undergraduate participants and MBSP-6 participants, all measures listed previously were used, except for work engagement, which was not measured in Chapter 3 with MED and FSY students, and MBSP-8 doctoral participants (Chapter 4) who were not asked to complete the PERMA.

Procedure and Data Analysis. For this retrospective analysis, all datasets from MBSP experiments within this thesis were combined into a single dataset. Each participant was coded with a condition (MBSP vs Control), programme (MBSP-6 vs MBSP-8 vs Control), and cohort (MED, FSY, PGR, PSY). For this analysis, only the Semester A MBSP participants from the randomised control trial of MBSP-8 (Chapter 3) were included as intervention participants, and Semester B participants were entered as controls. Three data points for each participant were included in the analysis, pre-intervention, post-intervention and 6-weeks post-intervention. To explore whether these changes differ depending on the form of MBSP, a 2 (Condition: MBSP-6 vs MBSP-8) x 3 (Time: T1 vs T2 vs T3) MANCOVA was conducted. Control participants were excluded from this analysis. To explore the overall effect of MBSP programmes on outcomes, a MANCOVA was conducted between condition (MBSP vs Control) and time (T1 vs T2 vs T3) was conducted, with cohort used as a covariate to control for potential group effects.

Results

Descriptive statistics. Independent sample t-tests were conducted between MBSP-6 and MBSP-8 baseline scores, to indicate whether participants had statistically different scores. Results revealed no significant differences in mindfulness, t (77) = -1.38, p = .172, strengths use, t (77) = -1.43, p = .157, self-efficacy, t (77) = -1.40, p = .167 or resilience, t (77) = -0.80, p = .421. However, significant differences were identified in stress, t (77) = 2.06, p = .042, Hedge's g = 0.46, depression, t (76) = 2.09, p = .040, Hedge's g = 0.47, anxiety, t (70.061) = 4.36, p < .001, Hedge's g = 0.96, wellbeing, t (63) = -2.93, p = .005, Hedge's g = -0.75, and work engagement, t (58) = -2.36, p = .022, Hedge's g = -0.65, with MBSP-6 participants recording significantly higher levels of stress, depression and anxiety, and lower levels of wellbeing and work engagement compared to MBSP-8 participants.

Independent sample t-tests were also conducted between all MBSP participants and control participants. Results show no significant differences between baseline scores in mindfulness, t (143) = -1.34, p = .183, strength use, t (143) = -1.95, p = .053, self-efficacy, t (143) = -1.56, p = .122, resilience, t (143) = -1.25, p = .214, stress, t (142) = -0.10, p = .922, depression, t (139) = -1.35, p = .178, anxiety, t (143) = 0.13, p = .894, wellbeing, t (118) = 0.97, p = .336, or work engagement, t

(105) = -0.45, p = .651.

Table 5.6

Descriptive statistics for all measures separated by programme across all time points

Measure	Condition	T1		T2		T3	
		M	*SD*	*M*	*SD*	*M*	*SD*
Mindfulness Attentional Awareness Scale (Brown & Ryan, 2003)	MBSP-6	3.33	0.81	4.47	0.63	4.04	0.67
	MBSP-8	3.42	0.58	3.87	0.57	3.82	0.59
	MBSP (total)	3.37	0.69	4.04	0.61	3.92	0.63
	Control	3.48	0.80	3.31	0.70	3.32	0.74
Strengths Use (Govindji & Linley, 2007)	MBSP-6	4.50	0.93	5.91	0.74	5.35	1.15
	MBSP-8	4.74	0.91	5.55	0.78	5.32	0.80
	MBSP (total)	4.63	0.92	5.72	0.77	5.33	0.97
	Control	4.88	0.92	4.78	0.92	4.72	1.16
Self-Efficacy (Schwarzer & Jerusalem, 1995)	MBSP-6	2.76	0.55	3.31	0.40	3.17	0.39
	MBSP-8	2.84	0.47	3.22	0.39	3.10	0.33
	MBSP (total)	2.80	0.51	3.26	0.37	3.13	0.36
	Control	2.84	0.38	2.93	0.35	2.94	0.39
Brief Resilience (Smith et al., 2008)	MBSP-6	2.98	1.07	3.65	0.69	3.49	0.81
	MBSP-8	2.90	0.72	3.17	0.74	3.10	0.76
	MBSP (total)	2.94	0.90	3.32	0.77	3.28	0.80

	Control	3.03	0.80	2.97	0.67	2.98	0.74
Work Engagement (Schaufeli & Bakker, 2003)	MBSP-6	4.23	0.85	7.79	0.67	4.68	0.66
	MBSP-8	4.61	0.82	4.92	0.94	4.85	0.95
	MBSP (total)	4.38	0.85	4.84	0.78	4.75	0.78
	Control	4.43	1.12	4.34	0.94	4.15	0.97
Depression (Lovibond & Lovibond, 1995)	MBSP-6	6.24	2.04	5.59	1.90	5.74	1.95
	MBSP-8	5.60	2.29	5.44	1.81	5.54	2.26
	MBSP (total)	4.54	2.60	4.19	2.31	4.26	2.39
	Control	5.67	3.42	5.54	3.09	5.79	3.20
Anxiety (Lovibond & Lovibond, 1995)	MBSP-6	6.28	2.37	5.07	1.32	6.13	1.28
	MBSP-8	5.00	1.11	5.02	1.28	5.10	1.71
	MBSP (total)	4.46	2.78	3.92	2.13	4.01	2.25
	Control	4.99	2.65	4.60	2.16	4.42	2.47
Stress (Lovibond & Lovibond, 1995)	MBSP-6	7.57	2.41	5.91	1.61	6.43	1.52
	MBSP-8	7.10	2.11	6.24	1.61	6.46	1.80
	MBSP (total)	5.63	3.16	4.62	2.50	4.91	2.50
	Control	6.34	3.03	5.94	3.06	6.11	3.37
Overall Wellbeing (Butler & Kern, 2017)	MBSP-6	7.67	1.27	8.47	1.20	8.26	1.20
	MBSP-8	8.46	1.40	8.62	0.89	8.40	1.24
	MBSP (total)	7.99	1.36	8.53	1.08	8.31	1.20

Control	7.70	1.25	7.64	1.46	7.37	1.58

Comparison between MBSP-6 and MBSP-8. In order to compare MBSP-6 and MBSP-8, control participants were removed from the following analysis, to explore the differences between MBSP-6 and MBSP-8, between pre- and post- measures, and between all-time points.

Mindfulness. Initial trends show that participants who completed MBSP-6 showed a greater increase in mindfulness between T1 (M = 3.33, SD = 0.81) and T2 (M = 4.47, SD = 0.63) compared to MBSP-8 participants who experienced a smaller increase between T1 (M = 3.42, SD = 0.58) and T2 (M = 3.87, SD = 0.57). A MANCOVA revealed a significant interaction between time and programme, F (1, 60) = 4.25, p = .044, η^2_p = .07, but not when including all three time points, F (1.61, 78.65) = 2.59, p = .093. Post-hoc comparisons showed no difference between programme at T2, (p = .086) or T3 (p = .218). Significant increases in mindfulness between T1 and T2 was seen in both MBSP-6 participants (p < .001) and MBSP-8 participants (p < .003).

Strengths Use. Similarly, MBSP-6 also showed larger increases in strengths use between T1 (M = 4.50, SD = 0.93) and T2 (M =5.91, SD = 0.74) compared to MBSP-8 participants who experienced a smaller increase between T1 (M = 4.74, SD = 0.91) and T2 (M = 5.55, SD = 0.78). The MANCOVA revealed this to also be a significant interaction, F (1, 60) = 4.88, p = .031, η^2_p = .08, but not when including all three time points, F (1.64, 80.15) = 1.97, p = .154. No significant difference between programme was found in strengths use at T2 (p = .401), or T3 (p = .905). Both programmes resulted in significant increases in strengths use in MBSP-6 (p < .001) and MBSP-8 (p < .001).

Self-efficacy. There was no significant interaction between programme (MBSP-6 vs MBSP-8) and time (T1 vs T2) on self-efficacy scores, F (1, 60) = 1.97, p = .166, or resilience, F (1, 60) = 2.47, p = .121. When including all three time points, again no interaction effect was found on self-efficacy, F (1.73, 84.79) = 1.34, p = .267, or resilience, F (2, 98) = 2.26, p = .110.

Depression, Anxiety and Stress. No significant interactions were identified between time (T1 vs T2) and programme (MBSP-6 vs MBSP-8) in depression, F (1, 59) = 3.30, p = .074, but a significant interaction was found in anxiety, F (1, 59) = 12.04, p = .001, η^2_p = .17, and in stress, F (1, 59) = 6.94, p

= .011, η^2_p = .11. When including all three time points, no significant interaction effect was identified in depression, F (2, 94) = 0.92, p = .487, and the interaction effect seen on stress was no longer significant, F (1.62, 76.07) = 2.91, p = .071. However, the significant interaction observed in anxiety, F (1.54, 72.58) = 5.66, p = .009, η^2_p = .11. Post-hoc comparisons showed that MBSP-6 participants experienced significant decreases between T1 and T2 in anxiety (p = .001) and stress (p < .001), compared to MBSP-8 who did not experience these same decreases in anxiety (p = .1.000) and stress (p = .733). No significant changes were observed at T3 in either anxiety (p = 1.000), and stress (p = 1.000).

Wellbeing. Descriptive statistics showed a great increase in MBSP-6 participants between T1 (M = 7.67, SD = 1.27) and T2 (M = 8.47, SD = 1.20) compared to MBSP-8 participants who showed little change between T1 (M = 8.46, SD = 1.40) and T2 (M = 8.62, SD = 0.89). A significant interaction effect was found between time and programme, F (1, 48) = 7.37, p = .009, η^2_p = .13, with MBSP-6 participants experiencing a significant increase in wellbeing as a result of the programme (p < .001) compared to MBSP-8 participants (p = .507). When including all three time points, this interaction effect was no longer significant, F (1.51, 57.19) = 2.84, p = .081.

Work Engagement. No significant interaction effect was found in work engagement between time (T1 vs T2) and programme, F (1, 49) = 0.43, p = .513, nor when including all three time points, F (1.29, 48.92) = 0.48, p = .538.

Effect of all MBSP groups.

Mindfulness. Overall, a clear increase was found in mindfulness in those who completed an MBSP programme between T1 (M = 3.37, SD = 0.69) and T2 (M = 4.04, SD = 0.61) compared to controls who experienced little change (M_{T1} = 3.48, SD = 0.80; M_{T2} = 3.31, SD = 0.70). The MANCOVA demonstrated a significant interaction effect was identified between time and condition, F (1, 110) = 39.83, p < .001, η^2_p = .27, with MBSP participants demonstrating significantly higher scores in mindfulness at T2 compared to control participants (p < .001). This effect was also seen when including all three time points, F (1.74, 141.23) = 22.65, p < .001, η^2_p = .22, with MBSP participants still showing significantly higher scores in mindfulness at T3 compared to control participants (p < .001).

Strengths Use. In keeping with previous chapters, MBSP participants showed higher scores at T2 (M = 5.72, SD = 0.77) than at T1 (M = 4.63, SD = 0.92), compared to controls (M_{T1} = 4.88, SD 0.92; M_{T2} = 4.78, SD = 0.92). This interaction effect was significant, F (1, 110) = 63.49, p < .001, η^2_p= .37, with MBSP participants demonstrating significantly higher scores than control participants in strengths use at T2 (p < .001). This effect was seen again when including T3 in the MANCOVA, F (1.72, 139.03) = 15.75, p < .001, η^2_p = .16, with MBSP participants still showing significantly higher scores at T3 compared to control participants (p = .011), despite the significant decrease in MBSP participants between T2 and T3 (p = .017).

Self-efficacy. MBSP participants also showed a greater increase in self-efficacy between T1 (M = 2.80, SD = 0.51) and T2 (M = 3.26, SD = 0.37) compared to controls who reported little change over time (M_{T1} 2.84, SD = 0.38; M_{T2} = 2.93, SD = 0.35), F (1, 110) = 32.19, p < .001, η^2_p = .23, with MBSP participants demonstrating higher scores in self-efficacy at T2 compared to controls (p < .001). This effect was consistent when including T3, F (1.79, 144.71) = 8.98, p < .001, η^2_p = .10, with MBSP showing higher levels at self-efficacy also at T3, p = .022, despite the significant decrease between T2 and T3 in MBSP participants, p = .013.

Resilience. MBSP also showed increases in resilience between T1 (M = 2.94, SD = 0.90) and T2 (M = 3.32, SD = 0.77) compared to controls (M_{T1} = 3.03, SD = 0.80; M_{T2} = 2.97, SD = 0.67). The MANCOVA showed this to be a significant interaction between time and condition, F (1, 110) = 13.69, p < .001, η^2_p = .11, and when including the 6-week follow up, F (1.60, 148.98) = 6.45, p = .003, η^2_p = .07. MBSP participants demonstrated significantly higher scores of resilience than the control participants at T2 (p = .012), but not at T3 (p = .082), even though MBSP participants did not experience a significant change in scores at T3 (p = .471).

Depression, Anxiety and Stress. Consistent with previous findings in this thesis, no significant interaction effects in depression between T1 and T2, F (1, 102) = 1.72, p = .193 or when including T3, F (1.81, 128.55) = 0.29, p = .752. Similarly, no interaction effects were identified in anxiety between T1 and T2, F (1, 102) = 1.49, p = .225, or when including T3, F (1.69, 120.17) = 0.29, p = .730. Again, no significant interaction effect was found in stress between T1 and T2, F (1, 102) = 2.86, p = .094, or when including T3, F (1.77, 125.51) = 1.35, p = .262.

Wellbeing. Increases in wellbeing were also seen in MBSP participants between T1 (M = 7.99, SD = 1.36) and T2 (M = 8.53, SD = 1.08) compared to controls (M_{T1} = 7.70, SD = 1.25; M_{T2} = 7.64, SD = 1.46). This was shown as a significant interaction between T1 and T2, F (1, 90) = 8.27, p = .005, η^2_p = .08, and when including the 6-week follow up, F (1.67, 113.85) = 3.98, p = .028, η^2_p = .06, with MBSP participants demonstrating significantly higher scores of wellbeing than controls at T2 (p = .004) and at T3 (p = .005).

Work Engagement. Finally, no significant interaction was found between time and condition in work engagement when comparing T1 and T2, F (1, 85) = 2.50, p = .118. An additional main effect of time on work engagement, F (1, 85) = 5.98, p = .017, η^2_p = .07, with all participants demonstrating a slight increase between T1 and T2 (p = .010). Contrary to the 2 (condition) x 2 (time) ANCOVA, when including all three time points a significant interaction was found between time and condition, F (1.43, 79.84) = 3.79, p = .041, η^2_p = .06, and no significant main effect of time was seen, F (1.43, 79.84) = 1.77, p = .186. Post-hoc comparisons revealed that MBSP participants reported significant higher levels of work engagement at T2 (p = .037) and at T3 (p = .014) compared to control participants, with further comparisons showing that MBSP participants experienced a significant increase in work engagement as a result of completing the programme (p = .019). The discrepancies seen in results when only including pre- and post- measurements compared to including all three measurements is likely to be a result of the removing participants who did not complete T3 measures.

Brief Summary

The current study explored whether there were any statistically significant differences between MBSP-6 and MBSP-8 on outcomes, to identify whether MBSP-6 is less effective than MBSP-8 as a result of the condensed format. Contrary to the assumption that greater intervention lengths would lead to greater outcome effects, the opposite was seen, with significant interactions found in both mindfulness and strengths use when including the first two time points, suggesting MBSP-6 resulted in larger increases, however these effect sizes were small and no significant difference between the two programmes was found in post-hoc comparisons. There was also no difference between self-efficacy, resilience, depression, or work engagement between the two programmes. This is surprising considering the strong effects of resilience found in MBSP-6 not seen consistently in MBSP-8. However, MBSP-6 did result in significant decreases in both anxiety, and stress compared to MBSP-8 participants who did not experience these effects. Additionally, results suggested that MBSP-6 was significantly more effective at increasing wellbeing than MBSP-8, but only when comparing pre- and post- intervention and not including the 6-week follow up.

When combining all existing cohorts of MBSP, both from MBSP-8 and MBSP-6, results demonstrated that MBSP participants experienced increases in mindfulness, strengths use and self-efficacy as a result of the programme, as seen in all previous trials of MBSP within this thesis. The changes in mindfulness were stable at the 6-week follow up, whereas significant decreases in strengths use and self-efficacy were identified in MBSP participants between post-MBSP and the 6-week follow up. Despite these decreases, MBSP participants still had significantly higher scores than control participants. Interestingly, when combining all MBSP participants, the finding of resilience identified in MBSP-6 and one group of MBSP-8, is replicated between pre- and post- intervention scores. Whilst the interaction effect is again significant when including the 6-week follow up, this is a very small effect size ($\eta^2_p = .07$), and post-hoc comparisons revealed that MBSP participants did not experience significantly higher scores than control participants at T3. MBSP additionally resulted in significant increases in wellbeing between T1 and T2, with MBSP participants showing significantly higher scores than controls at both T2 and T3. Null effects in depression, anxiety and stress were again reported, replicating the previous findings from Study 1 and 2. For the first time within this thesis, MBSP was seen to result in increases in work engagement between pre- and post-measurements, but only when comparing all three time points, and as such only including participants who completed all three time points.

Brief Discussion

The current study presents MBSP-6 as an accessible adaptation of MBSP which maintains the core aspects of the programme but is presented in a compact six-week format. The pilot study supported the feasibility of the programme and provided promising qualitative results which implied participants experienced positive benefits of the programme such as strengths awareness, stress management and potential for longitudinal effects. Study 3a demonstrated that MBSP-6 resulted in the same increases in mindfulness, strengths use and self-efficacy seen in Chapters 3 and 4, solidifying these results as positive outcomes of the programme. Additionally, increases in resilience and wellbeing, seen only quantitatively in one cohort of MBSP-8 (Study 1). Consistent with previous studies within this thesis, no changes in depression, anxiety or stress were identified. Study 3b drew comparisons between MBSP-6 and MBSP-8 and identified no large differences in effectiveness between the two programmes, although very small effects were seen on mindfulness and strengths use, with MBSP-6 reporting slightly higher scores than MBSP-8. However, a larger, but still small effect was found on wellbeing, suggesting that in this sample MBSP-6 is more effective at increasing wellbeing than MBSP-8. These changes were not significant when including all three time points. Further to this, significant interactions were seen in anxiety and stress, with MBSP-6 participants reporting decreases in anxiety and stress compared to MBSP-8 participants. Finally, Study 3b combined all cohorts of MBSP, and when controlling for cohort, demonstrated again that MBSP results in increases in mindfulness, strengths use, self-efficacy, resilience and wellbeing. Interestingly, there was a significant increase in work engagement compared to controls.

This chapter fully replicates previous trials of MBSP and demonstrates that the consistent outcomes of MBSP are mindfulness, strengths use and self-efficacy. Smaller and less consistent increases are also found in resilience and wellbeing. These increases in resilience are encouraging, and when coupled with self-efficacy present MBSP as a good preventative measure against mental health difficulties, as called for by Wickramaratne et al. (1989), through equipping individuals with skills to face difficulties. Resilience increases are seen clearly as a result of other mindfulness programmes (Aikens et al., 2014). Specifically, MBSR results in significant increases in resilience as seen here (Nila et al., 2016), particularly when promoting resilience for nurses and midwives (Foureur et al., 2013) and social workers (Crowder & Sears, 2017). Identifying one's character strengths has been identified as a psychosocial facet that promotes resilience (Iacoviello & Charney, 2014), and character strengths significantly predict resilience, even when accounting for predictive effects of self-efficacy and life satisfaction (Martinez-Marti & Ruch, 2016).

The findings on wellbeing are encouraging, given the increases seen in the FSY cohort in Study 1, and qualitative data from the focus group study in Study 2. Now these increases in wellbeing are identified in quantitative data as well as qualitative, our research supports new studies on MBSP which also use the PERMA profiler and demonstrate similar increases in wellbeing as a result of the programme

(Wingert et al., 2020). Wellbeing increases in mindfulness interventions are common (e.g., Mak et al., 2015) and in character strength programmes (e.g., Proyer et al., 2012), but this study solidifies previous findings of MBSP which until this point in the thesis, could not be replicated securely in the quantitative data. However, the results in this chapter demonstrate much smaller effects than seen on other outcomes, suggesting only minimal increases. This is intriguing in the context of the qualitative results from in Study 2, which suggested that wellbeing could be a longitudinal gain of MBSP, rather than a strong, immediate impact.

The minimal effects seen on work engagement are unique to Study 3b, despite work engagement being measured in all studies except Study 1. However, workplace outcomes have previously been identified as a result of MBSP (Pang & Ruch, 2019a). Previous research shows the links between mindfulness and work engagement (e.g., Silver et al., 2018) and character strengths and work engagement (Huber et al., 2019; Gander et al., 2012b). One paper demonstrates that mindfulness significantly predicts work-engagement, but that this is moderated by psychological capital, a combination of hope, optimism, resilience and self-efficacy (Malinowski & Lim, 2015). This could be an early indication of how character strengths and mindfulness would work together to increase work engagement, as is seen in MBSP trials. However, the effect size on work engagement in the Study 3b is minimal and an outlier compared to previous trials in the thesis, so no strong claims can be made.

When comparing MBSP-6 and MBSP-8, MSBP-6 was marginally more effective at increasing mindfulness and strengths use than MBSP-8, and also more effective at increasing wellbeing. The null differences in other measures suggest that both programmes affect self-efficacy and resilience in similar ways, with neither programme affecting depression. This provided support for the use of MBSP-6, demonstrating that the programme can be shortened to six weeks and retain its effectiveness.

Some caution is needed in interpreting these results as MBSP-6 participants were recruited from a second year psychology elective on character strengths and virtues and as such these participants had more knowledge of strengths as well as additional teaching compared to more naïve populations used in Study 1 and 2. This may have resulted in the greater increases seen in mindfulness and strengths use as participants may be exploring their strengths more deeply than other cohorts of MBSP. Further to this, the facilitator of MBSP-6 was the lecturer for this elective increasing the likelihood of desirability bias (Grimm, 2011). This is explored in more detail in the discussion.

Implications

The current study provides good evidence for the effectiveness of MBSP-6, consequentially broadening the applicability of MBSP in different contexts. With the new six-week structure, MBSP can be used within educational settings in which an eight-week programme would be too long. Depending on the age group intended, further adaptations may be necessary to make the programme more age-appropriate. However, for emerging adults of 16 years and over, this programme could be integrated into a school timetable or offered as an extracurricular opportunity. The replicated findings of self-efficacy and new findings of resilience, anxiety, stress and wellbeing also provide good support for the use of MBSP-6 as a preventative tool in education, to equip participants with resilience skills and improve self-efficacy, as suggested by Wickramaratne et al. (1989), fulfilling the call for non-clinical programmes in educational settings.

Conclusion

Study 3a provides a six-week adaptation of MBSP and demonstrates its effectiveness by replicating the key findings found in previous trials and solidifying smaller effects of resilience and wellbeing presented in smaller cohorts of MBSP-8. Study 3b demonstrates that MBSP-6 is marginally more effective than MBSP-8 at decreasing anxiety and stress and increasing wellbeing, though this could be a result of population and facilitator differences. Finally, Study 3b also provides a full dataset of all MBSP trials within this thesis, which demonstrate that MBSP results in increases in mindfulness, strengths use, self-efficacy, resilience and wellbeing. A logical development for further research would be to explore the underlying mechanisms of MBSP to identify which aspects of MBSP are most active in producing these effects.

CHAPTER 6: STUDY FOUR - CHARACTER OVER MINDFULNESS: A STRUCTURAL EQUATION MODEL OF THE RELATIONSHIPS BETWEEN MINDFULNESS, CHARACTER STRENGTH USE, SELF-EFFICACY AND WELLBEING.

Rationale

All trials of MBSP within the thesis have shown consistent increases in mindfulness, strengths use and self-efficacy as a result of taking part in the programme. As the programme teaches skills related to both mindfulness and character strengths, these outcomes are to be expected, but the self-efficacy finding is novel in the MBSP literature and supports the 'toolbox' theme from the qualitative results in Study 2. The 6-week adaptation of MBSP in Study 3 additionally demonstrated increases in resilience, which as has not previously been tested or reported in any other trial of MBSP, within this thesis, in published research (Ivtzan et al., 2017; Pang & Ruch, 2019a) or unpublished data (e.g., Morales Cueto 2017, as cited in Bretherton & Niemiec, 2017).

Here, Study 4 aimed to understand the relationships between the three consistent outcomes of MBSP: mindfulness, strengths use and self-efficacy. The self-efficacy findings raised concerns that increased strengths use and increased self-efficacy are both outcomes of MBSP because they measure a similar construct. Strengths use was defined as "how much people use their strengths" (Govindji & Linley, 2007, p. 147), and self-efficacy defined as the belief you can effectively achieve your goals (Bandura, 1986). This concern of conflating the two constructs was raised as part of the development of the *Strengths Use Scale* by Govindji and Linley (2007), who found that strengths use was significantly correlated with self-efficacy but that strengths use still significantly predicted wellbeing when controlling for self-efficacy. Study 4 looks to confirm that these two are indeed separate constructs, using a factor analysis, before exploring the relationships between them in the context of mindfulness and wellbeing.

Study 4 also explored the relationships between character strengths and the *PERMA Profiler*, taking the opportunity to replicate the work by Wagner et al. (2019) on the VIA-IS and the *PERMA Profiler*, exploring which character strengths have greatest predictive power for each of the facets of wellbeing measured. Although character strengths were not measured in the MBSP trials, exploring how different character strengths influence each of these variables may highlight which individuals are more likely to experience change as a result of the programme, or suggest character strengths that are specifically developed as part of the programme, and thereby contribute to the increased self-efficacy finding.

A further aim of Study 4 was to explore how mindfulness and strengths use relate to self-efficacy, to identify whether this increase could be a result of mindfulness, strengths use, or whether there is a significant interaction between the two. As MBSP is centred around two ways of integrating character and mindfulness (strong mindfulness and mindful strength use), perhaps one of these is more effective in increasing self-efficacy. Understanding this may make it possible to extract specific aspects of the programme for more intensive use, character development training exercises and shorter interventions. At the same time, the study explored how these outcome variables relate to wellbeing, as measured using the *PERMA Profiler* (Butler & Kern, 2017), used in the previous trials within this thesis. This will provide an indication as to whether these outcome variables are related to this specific measure of wellbeing at all and explain the inconsistent increases in wellbeing measured throughout the thesis, or whether these variables do relate to wellbeing but perhaps in a way which does not change over time.

In Study 4 here, a structural equation model was developed, focusing on the relationships between these outcomes in a general population sample. There were not enough participants within MBSP samples in this thesis to successfully create a structural equation model but identifying the relationships between these variables in a general, intervention naïve, population may explain the consistent results of previous MBSP studies and provide some understanding of the effective mechanisms at work in MBSP. The opportunity of exploring this separately from the intervention, allows us to specifically examine the additional relationships to wellbeing – something which has not been identified in the trials of MBSP in this thesis. Once these variable relationships are understood outside of the programme, a theory of how the programme affects these relationships and uses them to have the impact described by the qualitative and quantitative results can be developed.

Overall, the study explored the different relationships between the key variables of mindfulness, strengths use, self-efficacy and wellbeing. The specific questions were as follows:

RQ1: Are strengths use and self-efficacy loaded as two separate constructs?

RQ2: Which character strengths are significant predictors of each outcome?

RQ3: Is self-efficacy predicted by mindfulness or strengths use, or by an interaction of the two together?

RQ4: Are mindfulness, strengths use and self-efficacy predictive of wellbeing as measured by the PERMA profiler?

RQ5: Does self-efficacy have a role in the relationship between mindfulness or strengths use and wellbeing?

Methodology

This study adopted a cross-sectional design for the purposes of comparing these variables and providing some understanding of the relationship between them.

Participants

In total, 537 participants were recruited (51.2% = female, 47.7% = male, 0.4% = transgender, 0.2% = agender, 0.2% = gender fluid) between the ages of 18 and 50 (M = 30.04, SD = 8.68). Of the 537, 31.3% (N = 168) stated that they were religious, with the majority of religious participants identifying as Christians (84.3%) or Muslims (7%). When asked about employment status, 65.7% were employed in some respect, 22% were students (either undergraduate or postgraduate), 7.3% identified as homemakers and 4.8% were unemployed.

306 participants were recruited through the survey distribution website, Prolific, and were rewarded £1.09 for their time in accordance with Prolific’s minimum payment per hour policy. Some were also recruited through the University of Durham’s participant research scheme and the remaining participants were collected through opportunity sampling on social media platforms including Facebook and Twitter. As incentive for taking part in the study, all participants were given a copy of their personalised character profile as measured by the VIA upon completing the study.

Measures

The variables were measured with the same psychometric battery as in previous chapters. This included the *Mindful Attention Awareness Scale* (Brown & Ryan, 2003), the *Strengths Use Scale* (Govindji & Linely, 2007), the *Self-Efficacy Scale* (Schwarzer & Jerusalem, 1995) and the PE*RMA Profiler* (Butler & Kern, 2016). All of these measures were found to be reliable, except for the engagement subscale of the *PERMA Profiler* (see Table 6.1)

Table 6.1

Reliability results for each measure

Measure	α =
Mindful Attention Awareness Scale (Brown & Ryan, 2003)	.84
Strengths Use Scale (Govindji & Linley, 2007)	.94
Self-Efficacy Scale (Schwarzer & Jerusalem, 1995)	.89
PERMA Profiler (Butler & Kern, 2016)	
Positive Emotion	.88
Engagement	.61
Relationships	.78
Meaning	.90
Accomplishment	.77
Overall Wellbeing Score	.93

In addition to these outcome variables, the VIA-IS-M (McGrath, 2017) was also administered. This condensed measure of character strengths calculated each character strength using 4-items per character strength instead of the 8-tems used in the VIA-IS-R (McGrath, 2017). Participants responded on a five-point likert scale from 1 (*Very much unlike me*) to 5 (ver*y much like me*). Participants were encouraged to answer honestly, using the stem: ‘Many of the questions reflect statements that many people would find desirable, but we want you to answer only in terms of whether the statement describes what you are like. Please be honest and accurate!’ For each character strength subscale, two items were negatively worded and two items positively worded, to reduce acquiescence bias. The negative items were reverse coded so that high scores indicate high levels of the character strength. Item examples and reliability analysis for each character strength can be found in Table 6.2. Five of the subscales (gratitude, humility, judgement, leadership and self-regulation) did not reach reliability as tested by Cronbach's Alpha, which, as a rule of thumb should attain a minimum level of α = .70. Two of these subscales reported also did not attain threshold reliability in the original validation of the measure (McGrath, 2017): humility (.69) and judgement (.62).

Table 6.2

Item examples and reliability analysis for each of the 24 character strengths from the VIA-IS-M

Character Strength	Item Example	α =
Appreciation of Beauty and Excellence	Beauty in the world is not that important to me.	
Bravery	I am a brave person.	.72
Creativity	I am always coming up with new ways to do things.	.77
Curiosity	I have many interests.	.76
Fairness	I treat people unfairly if I do not like them.	.80
Forgiveness	There are things I've resented for a long time.	.72
Gratitude	I often take things for granted.	.58
Honesty	I often break my promises.	.78
Hope	People would call me a pessimist.	.76
Humility	I like to let people know about my accomplishments.	.58
Humour	I often allow a bad situation to take away my sense of humour.	.73
Judgement	I make decisions only when I have all of the facts.	.53
Kindness	I always try to help people in need.	.72
Leadership	In a group setting, I rarely take the lead role.	.67
Love	It is difficult for me to accept love from others.	.83
Love of Learning	I am a true life-long learner.	.79
Perseverance	I have a hard time finishing what I start.	.74
Perspective	Others consider me to be a wise person.	.75
Prudence	I always make careful choices.	.71
Self-regulation	I tend to make impulsive decisions.	.66

Social Intelligence	I often find it difficult to understand new people.	.74
Spirituality	I am a spiritual person.	.87
Teamwork	It is important to me to respect decisions made by my group.	.74
Zest	I rarely feel energetic.	.81

Procedure

Once recruited, participants were given a copy of the participant information sheet, containing a thorough brief of the experiment, and were asked for their consent. Once given, participants were asked to provide demographic information including age, gender, employment status and religion, followed by the aforementioned measures. At the end of the experiment, participants were given a list of their character strength outcomes for their interest, and a full debrief. All materials, procedure and design were granted ethical approval by the Lincoln Ethical Approval System.

Results

Descriptive Statistics

For means and standard deviations, please see Table 6.3. All variables were normally distributed.

Table 6.3

Descriptive statistics for all variables

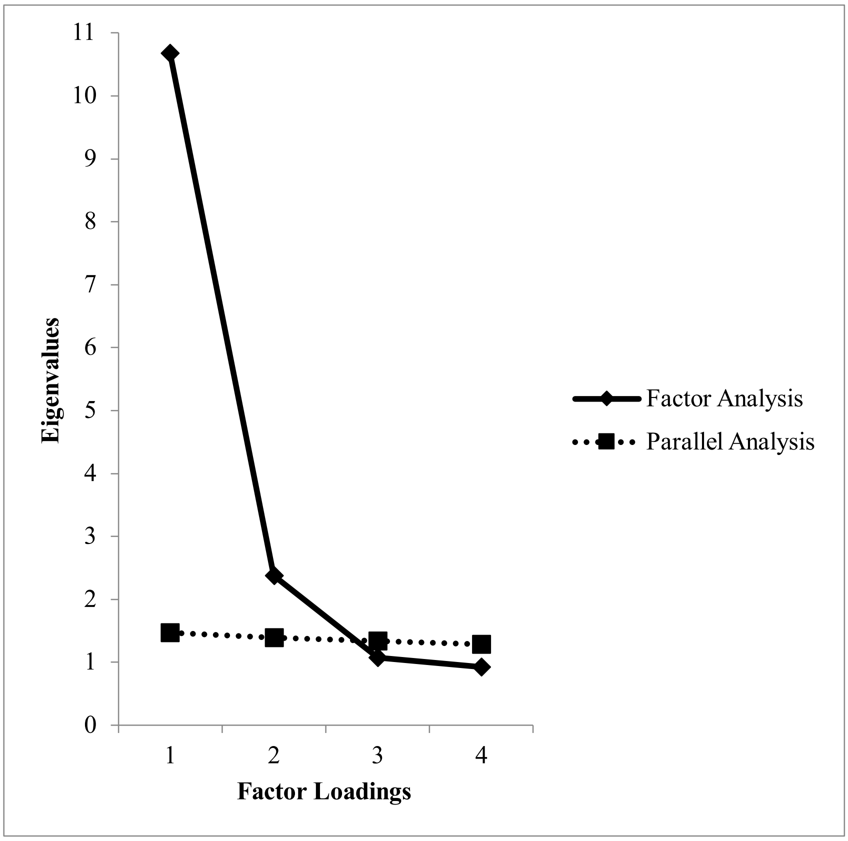
Variable	*M*	*SD*
APPRECIATION OF BEAUTY	3.50	0.84
BRAVERY	3.24	0.76
CREATIVITY	3.39	0.76
CURIOSITY	3.84	0.76
FAIRNESS	3.62	0.80
FORGIVENESS	3.06	0.79

GRATITUDE	3.40	0.67
HONESTY	3.81	0.76
HOPE	3.48	0.83
HUMOUR	3.48	0.84
JUDGEMENT	3.41	0.65
KINDNESS	3.77	0.71
LEADERSHIP	3.17	0.77
LOVE OF LEARNING	4.13	0.68
LOVE	3.39	0.93
HUMILITY	3.33	0.68
PERSEVERANCE	2.96	0.81
PERSPECTIVE	3.60	0.69
PRUDENCE	3.47	0.77
SELF-REG	2.99	0.79
SOCIAL IQ	3.40	0.82
SPIRITUALITY	2.97	1.17
TEAMWORK	3.27	0.76
ZEST	2.93	0.91
MINDFULNESS	3.74	0.74
STRENGTHS USE	3.56	0.75
SELF-EFFICACY	3.64	0.67
POSITIVE EMOTION	7.13	1.95
ENGAGEMENT	7.74	1.63
RELATIONSHIPS	7.70	2.10
MEANING	7.16	2.40
ACCOMPLISHMENT	7.41	1.72
OVERALL WELLBEING	7.40	1.63

Factor Analysis for strengths use and self-efficacy

To confirm that strengths use and self-efficacy are independent constructs, a principal components analysis was conducted. When direct oblimin rotation was applied, a 3-factor solution was exposed explaining a total of 58.85% variance. The Kaiser-Meyer-Olkin measure of sampling adequace was .95, above the recommended value of .60 and Bartlett's test of sphericity was significant χ (276) = 7393.37, $p < .001$. However, when parallel analysis (O'Connor, 2000) was conducted, the third factor was shown to be non-significant (see Figure 6.1).

Figure 6.1
A graph to show the results of parallel analysis



When a two-factor model was specified, the two factors accounted for 54.39% of the variance. All items for strengths use loaded on factor one ($\alpha = .94$) and all items from the self-efficacy measure loaded on factor two ($\alpha = .89$), with the exception of SE3: 'It is easy for me to stick to my aims and accomplish my goals', which was loaded onto factor one with the strengths use scale (.50).

Table 6.4

A table to show item loadings between Factor 1 (Strengths Use) and Factor 2 (Self-Efficacy)

	Factor	
Item	1	2
SU5	**.78**	-.06
SU13	**.77**	.07
SU8	**.77**	-.07
SU14	**.75**	.09
SU6	**.75**	.06
SU10	**.75**	.09
SU1	**.72**	.00
SU9	**.71**	.11
SU4	**.71**	.13
SU12	**.70**	-.08
SU11	**.70**	.12
SU2	**.70**	.04
SU7	**.69**	-.19
SU3	**.63**	.13
SE3	**.50**	.20
SE5	-.02	**.84**
SE10	-.01	**.83**
SE9	-.07	**.83**
SE7	-.06	**.78**
SE4	.07	**.76**
SE8	.02	**.72**
SE6	.12	**.64**
SE1	.11	**.57**
SE2	.21	**.32**

Note: SU = Strengths Use;

SE = Self-Efficacy

This is the only goal-oriented question on the self-efficacy scale whereas there are two items on goal accomplishment in the strengths use measure. Although it is clear why SE3 loaded on the strengths use factor, as both alphas for each scale are highly reliable and the measures are standardised tests, for the remainder of the analysis the items are kept within their original measures.

Character Strengths and the PERMA

Having established the distinct separate constructs of self-efficacy and strengths use, preliminary explorations into the relationships between variables began. Here, correlations were conducted between all character strengths and the PERMA while controlling for age and gender, and by computing the amount of variance predicted for each PERMA facet by character strengths. These correlations were then compared to the findings of Wagner et al. (2019). Positive emotion, meaning and accomplishment were predicted by character strengths with over 50% of shared variance, followed by engagement and relationships which were also predicted well (41.1% and 39.8% respectively).

The correlations showed that positive emotion was related most to hope, r (525) = .72, $p < .001$, zest, r (525) = .64, $p < .001$, and gratitude, r(525) = .49, $p < .001$; engagement was related most to hope, r (525) = .52, p <. 001), curiosity, r (525) = .52, $p < .001$, and zest, r (525) = .48, $p < .001$; relationship was related most to love, r (525) = .52, $p < .001$, hope, r (525) = .50, $p < .001$ and zest, r (525) = .39, $p < .001$; meaning was related most to hope, r (525) = .69, $p < .001$, zest, r (525) = .56, $p < .001$, and gratitude, r (525) = .48, $p < .001$; and accomplishment was related most to hope, r (525) = .64, $p < .001$, perseverance, r (525) = .53, $p < .001$ and self-regulation, r (525) = .50, $p < .001$. Variance can be seen in Table 6.5.

This is similar to the Wagner's findings where all character strengths except humility and prudence were positively related to all PERMA dimensions, with meaning and accomplishment among the most strongly predicted by character strengths. Our findings compliment this, and again support the relationship between character strengths and wellbeing. This is further explored in the discussion of this chapter.

Table 6.5

Correlations between character strengths and different facets of the PERMA profiler variables.

Character Strength	PERMA dimension					
	P	E	R	M	A	ΔR^2
AOB	.14*	.23**	.13*	.11*	**-.03**	.09**
BRAVERY	.30**	.33**	.15*	.36**	.38**	.17**
CREATIVITY	.31**	.34**	.16**	.33**	.31**	.15**
CURIOSITY	.39**	.52**	.26**	.36**	.32**	.28**
FAIRNESS	.21**	.17**	.20**	.16**	.15*	.05**
FORGIVENESS	.32**	.17**	.24**	.27**	.21**	.11**
GRATITUDE	.49**	.39**	.36**	.48**	.38**	.29**
HONESTY	.30**	.23**	.21**	.30**	.36**	.13**
HOPE	.72**	.52**	.50**	.69**	.64**	.60**
HUMOUR	.38**	.27**	.21**	.27**	.32**	.16**
JUDGMENT	.16**	.12*	.13*	.17**	.26**	.06**
KINDNESS	.17**	.19**	.16**	.14*	.16**	.05**
LEADERSHIP	.32**	.29**	.19**	.36**	.41**	.19**
LOL	.20**	.38**	.21**	.24**	.24**	.15**
LOVE	.44**	.30**	.52**	.41**	.27**	.30**
HUMILITY	**-.04**	**-.03**	**-.07**	**-.08**	**-.06**	**-.00**
PERSEVERANCE	.38**	.33**	.23**	.44**	.53**	.30**
PERSPECTIVE	.32**	.24**	.22**	.36**	.38**	.16**
PRUDENCE	.22**	.15*	.18**	.24**	.31**	.10**
SELF-REG	.34**	.23**	.24**	.40**	.50**	.25**
SOCIQ	.31**	.22**	.31**	.32**	.26**	.15**
SPIRITUALITY	.21**	.14*	.16**	.23**	.11*	.08**
TEAMWORK	.30**	.22**	.23**	.30**	.28**	.11**
ZEST	.64**	.48**	.39**	.56**	.49**	.44**
ΔR^2	.62**	.41**	.40**	.57**	.55**	

$^{**}p < .001$, $^{*}p < 05$

Character Strength Regressions

To explore which character strengths predicted each of the variables, a series of step-wise regressions were conducted. For mindfulness, a significant model emerged, F (5, 531) = 36.95, p < .001, ΔR^2 = .25, showing that mindfulness was significantly predicted by zest, β = .24, t (534) = 6.12, p < .001, prudence, β = .17, t (531) = 3.37, p = .001, social IQ, β = .13, t (534) = 3.24, p = .001, honesty, β = .12, t (534) = 2.90, p = .004 and judgement, β = .12, t (534) = 2.41, p = .016.

For strengths use, a significant model emerged, F (9, 527) = 58.52, p < .001, ΔR^2 = .49, showing that strengths use was significantly predicted by hope, β = .31, t = 7.90, p < .001, perseverance, β = .21, t = 5.82, p < .001, perspective, β = .18, t = 4.78, p < .001, humility, β = -.12, t = -3.84, p < .001, bravery, β = .11, t = 2.79, p = .006, leadership, β = .11, t = 2.59, p = .010, social IQ, β = -.09, t = -2.46, p = .014, teamwork, β = .08, t = 2.37, p = .018, curiosity, β = .08, t = 2.33, p = .020.

For self-efficacy, a significant model emerged, F (10, 526) = 57.01, p < .001, ΔR^2 = .51, showing that strengths use was significantly predicted by hope, β = .28, t = 7.26, p < .001, perspective, β = .19, t = 4.77, p < .001, leadership, β = -.18, t = 4.51, p < .001, perseverance, β = .15, t = 3.77, p < .001, humour, β = .13, t = 3.68, p < .001, social IQ, β = -.13, t = -3.47, p = .001, bravery, β = .11, t = 2.79, p = .005, spirituality, β = -.09, t = -2.82, p = .005 and prudence, β = .09, t = 2.28, p = .011.

For overall wellbeing, a significant model emerged, F (7, 529) = 159.04, p < .001, ΔR^2 = .67, showing that wellbeing was significantly predicted by hope, β = .44, t = 12.13, p < .001, love, β = .20, t = 7.21, p < .001, zest, β = 14, t = 3.90, p < .001, curiosity, β = .10, t = 3.47, p = .001, self-regulation, β = .10, t = 2.93, p = .004, gratitude, β = .08, t = 2.43, p = .016, and perseverance, β = .08, t = 2.21, p = .028.

Key Variable Regressions

A hierarchical multiple regression was conducted to explore the predictive capabilities of mindfulness, strengths use and self-efficacy on wellbeing scores. For this, demographic variables were centred and entered in step one. Both two-way and three-way interaction terms were computed

(M * SU, M * SE, SU * SE, M * SU * SE) and entered into the regression. The overall regression predicted 50.4% variance, and the model was significant, F (9, 527) = 59.47, p < .001, ΔR^2 = .504. The two-way interaction term for mindfulness and strengths use, the three-way interaction term, and age were not significant predictors (p = .098, p = .079, p = .127). The regression output is shown in Table 6.6.

Table 6.6

A table to show regression model results

Model	β (standardised)	*t* =	*p* =
Constant		-2.60	.009
Gender	-.178	-5.73**	.000
Age	.048	1.53	.127
M	1.35	2.75*	.006
SU	1.74	3.06*	.002
SE	1.62	3.14*	.002
M*SU	-1.40	-1.66	.098
M*SE	-1.87	-2.25*	.025
SU*SE	-2.20	-2.34*	.020
M*SU*SE	1.76	1.76	.079

***p < .001, *p < 05*

It is notable that the only statistically significant interactions are the two-way interactions that include self-efficacy, but that the interaction between mindfulness and strengths use was not predictive of wellbeing. Even though all three constructs independently predict wellbeing, the three-way interaction between all of them was not significant. This could indicate that self-efficacy may act as a proximal predictor of wellbeing, and that mindfulness and strengths use act as distal predictors.

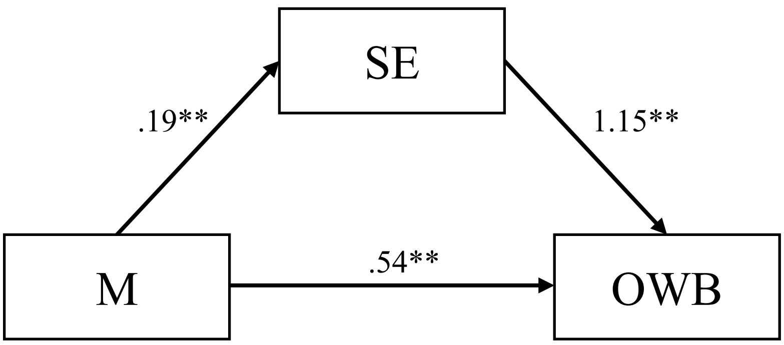
To explore this further, a multiple regression was conducted to explore mindfulness and strengths use as predictors of self-efficacy rather than wellbeing. Here, mindfulness was a significant predictor, β = .08, t (534) = 2.25, p = .025, but strengths use was a much stronger predictor, β = .62, t (534) = 18.04, p < .001. When the regression was repeated with wellbeing as the outcome, similar results were found with mindfulness being a significant predictor of self-efficacy, β = .22, t (534) = 6.48, p < .001, and strengths use being a much stronger predictor, β = .57, t (534) = 17.13, p < .001. A t-test of the difference between dependent betas confirmed that strengths use was a statistically stronger predictor of self-efficacy, t (534) = 11.41, p < .001 and of wellbeing, t (534) = 7.69, p < .001, than mindfulness. These results point towards the significant power of strengths use over mindfulness when predicting both self-efficacy and wellbeing.

Mediations and Moderations

As, in the context of MBSP, mindfulness and strengths use act as two 'inputs', which result in wellbeing, two separate mediations were carried out using Hayes Process macro (model 4, 5000 bootstrap) to explore whether these effects are mediated by self-efficacy. It could be argued that training in mindfulness or character strengths leads to an increase in self-efficacy which in turn increases wellbeing, considering the suggestion of proximal/distal predictors from the regression. The first mediation (Figure 6.2) demonstrates the mediating effect of self-efficacy on the predictive relationship between mindfulness and wellbeing. Predicting only 4.4% of variance, a total effect of B = .76, a direct effect of B = .54 and an indirect of B = .22 were found. However, the same mediation with strengths use (Figure 6.3) predicted a much bigger 40% variance, with a total effect of B = 1.35, a direct effect of B = 1.05 and an indirect effect of B = .30. It seems that while self-efficacy partially mediates the relationships between mindfulness and wellbeing, and strengths use and wellbeing, the more prominent model is the partial mediation of the relationship between strengths use and wellbeing.

Figure 6.2

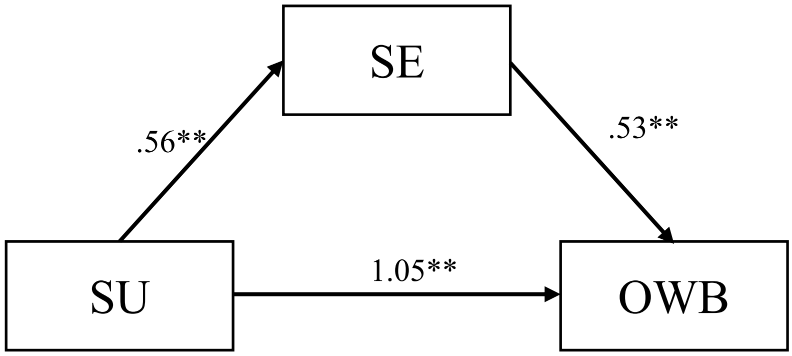
Mediation model 1, demonstrating the mediating effect of self-efficacy on the relationship between mindfulness and wellbeing.



*Note: ** p < .001.*

Figure 6.3

Mediation model 2, demonstrating the mediating effect of self-efficacy on the relationship between strengths use and wellbeing.



*Note: ** p < .001.*

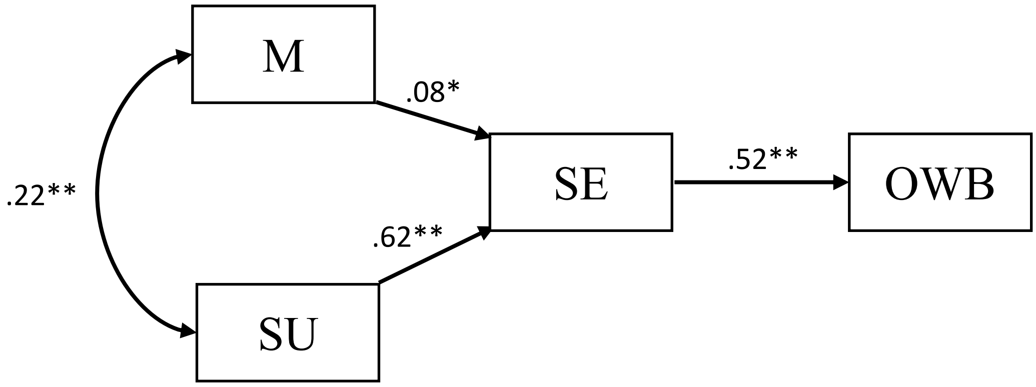
To confirm that there is no cumulative effect of mindfulness and strengths use on wellbeing or self-efficacy as first suggested in the original hierarchical regression, a moderation model was tested using Hayes process macro (model 1, 5000 bootstrap), with mindfulness as the moderator between strengths use and self-efficacy. Again, a good model was produced ($R^2 = .41$), and significant main effects of both mindfulness, $B = .07$, $SE = .03$, $p = .029$ and strengths use $B = .55$, $SE = .03$, $p < .001$ were found. However, there was no significant interaction between the two, $B = .03$, $SE = .04$, $p = .426$. As a result of the non-significant interaction effect, it is clear that there is no cumulative effect occurring between the two predictor variables.

Structural Equation Model

Following these mediations, a model was constructed using SPSS AMOS to evaluate the relationships when mindfulness and strengths use both contribute to self-efficacy which then predicts wellbeing as can be seen in Figure 6.4. Despite promising regression weights, this had a poor model fit. Fit indices can be seen in the figure footnotes.

Figure 6.4

A path analysis model (3) suggesting the development of wellbeing through self-efficacy.

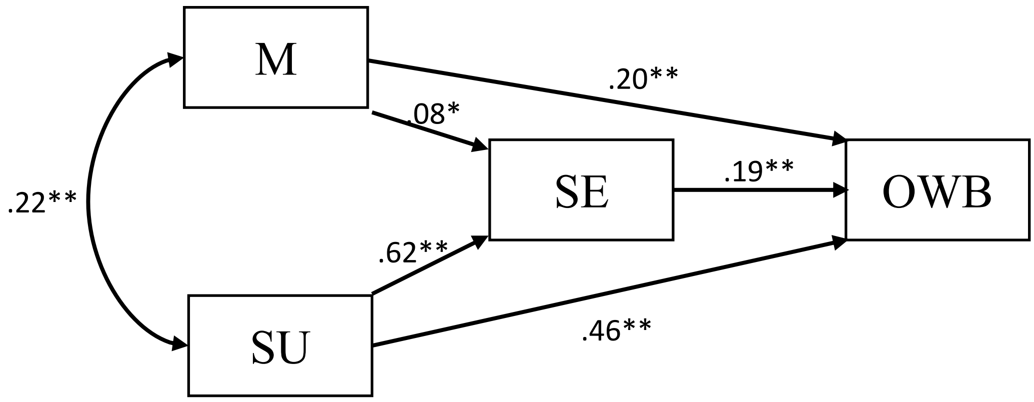


Note: ** $p < .001$. * $p < .05$. Goodness of fit: $\chi 2 = 151.14$, $p < .001$, Comparative Fit Index [CFI] = .76, root mean square error of approximation [RMSEA] = .373, Akaike information criterion [AIC] = 167.14.

Incorporating both mediations into the model as in Figure 6.5, provides a much clearer understanding of the regression weights, but produces a saturated model and so cannot produce any indication of model fit.

Figure 6.5

A saturated model (4) including both mediation models.

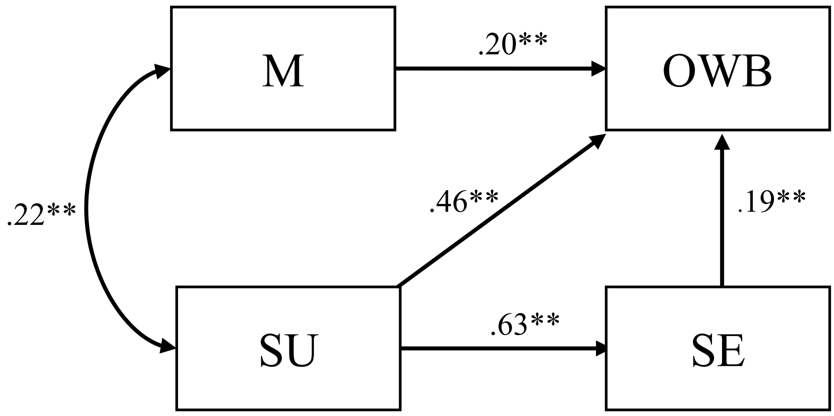


Note: ** $p < .001$. * $p < .05$.

It is clear from models 3 and 4 that a path analysis cannot be identified with the current data. Due to the smaller amount of predicted variance in mediation model 1 when compared to model 2, and the small path weight between mindfulness and self-efficacy as seen in models 3 and 4, this pathway was removed, and a single direct effect of mindfulness on wellbeing included. This can be seen in model 5. This model demonstrates the mediating effect of self-efficacy on the relationship between strengths use and wellbeing, while including the direct effect of mindfulness on wellbeing, as well as the correlation between mindfulness and strengths use. This model produced good fit indices (see Figure 5) Although the chi-square was still significant, $\chi 2$ = 5.06, p = .024, because the sample size is large and the remaining fit indices indicate good fit, model 5 is accepted following the guidelines from Hopper et al. (2008).

Figure 6.6

The final model (5), representing the relationships between mindfulness, strengths use, self-efficacy and wellbeing.



Note. ** p < .001. Goodness of fit: $\chi 2$ = 5.06, p = .024, Comparative Fit Index [CFI] = .99, root mean square error of approximation [RMSEA] = .09, Akaike information criterion [AIC] = 23.06.

Discussion

Study 4 explored the relationships between the variables highlighted as consistent outcomes of MBSP through each of the trials. Exploration through a factor analysis of the relationship between strengths use and self-efficacy confirmed that they were separate constructs. The character strengths most related to each variable were then explored, and specifically wellbeing, identifying that hope, love, zest, curiosity, gratitude, perseverance and self-regulation were most related to the different facets of the *PERMA Profiler*. The main analysis explored the key relationships between the outcome variables: mindfulness, character strengths and self-efficacy and wellbeing.

The regressions identified that both mindfulness and strength use were significant predictors of both self-efficacy and wellbeing, but that strengths use was a significantly stronger predictor of these over mindfulness. Mediation analysis also identified self-efficacy as a significant mediator of the relationships between strengths use and wellbeing. A structural equation model emerged, including the direct path between mindfulness and wellbeing and the direct path between strengths use and wellbeing, while also demonstrating the mediating effect of self-efficacy. In this model, the stronger role of strengths use over mindfulness is clear, suggesting that while mindfulness does positively influence wellbeing, it is strengths use that has a stronger positive effect, as well as significantly influencing self-efficacy, which acts as a mediator between strengths use and wellbeing.

The study confirmed that self-efficacy and strengths use were both separate constructs as suggested by Govindji and Linley's (2007) development work on the *Strengths Use Scale*. This allowed a further exploration of the relationships between these variables, without fears of multi-collinearity. The lack of multi-collinearity between strengths use and self-efficacy was also confirmed in regression assumption checks prior to the hierarchical regression. While the two are related, they are confidently separate constructs.

After conducting regressions to understand the character strengths' predictive relationship to each of the variables, the character strengths zest, prudence, social IQ, honesty and judgement were found to be significant predictors of mindfulness (surprisingly different to the suggestions of self-regulation and curiosity claimed by Bishop et al., 2004); hope, perseverance, perspective, leadership, bravery, teamwork and curiosity were significant predictors of strengths use (which was also negatively predicted by humility and social IQ); and hope, perspective, leadership, perseverance, humour, bravery and prudence were significant predictors of self-efficacy, which was also negatively predicted by social IQ and spirituality. This is again different from research which suggests that interpersonal strengths such as love, kindness and social IQ are significant predictors of self-efficacy (Martinez-Mart & Ruch, 2016).

When exploring the relationships between the character strengths and the subscales of the *PERMA Profiler*, the current findings were very similar to the research conducted by Park et al., (2004) which demonstrated that the character strengths of hope, love, zest, curiosity and gratitude were most related to life satisfaction. These character strengths were also identified throughout several pieces of research, whether looking at satisfaction with life, orientations to happiness (Buschor et al., 2013), temporal satisfaction with life (Proyer et al., 2012) or happiness (Shimai et al., 2006). However, in Study 4, perseverance and self-regulation were also important in meaning and accomplishment. These character strengths have previously been identified by other researchers for their role in subjective wellbeing (Zhang & Chen, 2018) and life satisfaction (Porto Noronha & Martin, 2016; Vela et al., 2016). Study 4 also identified that humility and prudence were not significantly related to the *PERMA Profile*, which is also echoed in other literature (Kaufman, 2015).

On the other hand, Wagner's work showed more variation in the character strengths related to each facet, including humour for positive emotion, teamwork and leadership for relationship and spirituality and leadership for meaning. Whilst Wagner recruited a larger sample, the results from Study 4 are supported well by the published literature. One explanation for why MBSP does not seem to increase wellbeing could be because it does not specifically target these strengths. Proyer, et al. (2013) ran an intervention which specifically targeted the key wellbeing strengths (but used humour rather than love) and found that individuals demonstrated significant improvements in life satisfaction, however those who completed an intervention that targeted the strengths *least* related to wellbeing still demonstrated these significant changes in comparison to control. This would suggest that MBSP participants should see increases in wellbeing, even though it doesn't specifically target these strengths, as participants are still developing their own signature strengths, a method which has demonstrated significant improvement in wellbeing in a previous meta-analysis (Schutte & Malouff, 2018).

The regressions demonstrated that strengths use is a significantly stronger predictor than mindfulness of both self-efficacy and wellbeing, and the structural equation model similarly showed the stronger pathways of strengths use to wellbeing, while still taking into account the smaller direct path of mindfulness to wellbeing. This seems to suggest that it is character strengths that are more influential over mindfulness on outcome variables of wellbeing and self-efficacy. The regressions did not indicate a cumulative effect of the two together, unlike the proposed theoretical 'mutual support' model suggested by Pang and Ruch (2019b). In MBSP, mindfulness and character strengths are taught together in two ways: ‘strong mindfulness’, in which character strengths are used to enhance mindful practice (Niemiec et al., 2012) and ‘mindful strength use’, in which mindful attention is brought to the character strengths becoming aware and mindful of the golden mean (Niemiec, 2014). Perhaps the strength in MBSP lies in teaching character strengths through the reflective lens of mindfulness, with the mindfulness producing a short-term benefit of wellbeing, and the character strengths then influencing wellbeing longitudinally through the increases in self-efficacy. The stronger benefits of character strength education can be seen in research which compares Mindfulness-Based Stress Reduction (MBSR) and MBSP. While both interventions demonstrated increases in wellbeing, MBSP was more effective in increasing task performance (Pang & Ruch, 2019a). However, there is evidence in favour of the mutual support model proposed by Pang and Ruch (2019b), such as the mediating role of character strengths in the relationship between mindfulness and flourishing (Duan & Ho, 2017). Duan and Ho’s work also suggests that while mindfulness and character strengths are conceptually related, they are functionally different. Further to this, unpublished data shows that the more time spent on character strengths, results in increased mindfulness (Jarden et al., 2012, as cited in Niemiec 2012), which again shows the collaborative relationship between these two concepts.

In this chapter, study 4 shows that self-efficacy mediates the relationship between strengths use and wellbeing. Self-efficacy has been significantly linked to wellbeing (Govindji & Linley 2007; Marcionetti & Rossier, 2016), but specifically self-efficacy has been shown to increase longitudinal wellbeing and happiness in later life (Caprara et al., 2006; Vecchio et al., 2007), implicating self-efficacy as a long-term predictor of life satisfaction. In relation to MBSP, it could be that the programme does improve wellbeing, but longitudinally through self-efficacy, which is not picked up by the 6-week follow up time point. Self-efficacy has also been correlated with strengths use (Proctor et al., 2011), and the mediating role of self-efficacy is supported by research, showing that self-efficacy mediates the relationship between leadership strengths and global life satisfaction (Weber et al., 2013); strengths-based parenting, life satisfaction and anxiety (Loton & Waters, 2017); and between the Big Five personality and wellbeing (Strobel et al., 2011). As such it is not unsurprising that self-efficacy was found to be a significant mediator of the relationship between strengths use and wellbeing. The SEM can be applied to the MBSP data, suggesting that the self-efficacy increases measured are a result of character strength education - as people become more aware of their strengths and practice using them more, they realise that they have the ability to handle much of life's difficulties. Highlighting 'mindful strength use' as a key component of MBSP rather than strong mindfulness. Whilst mindfulness is still related to wellbeing, it is the character strengths that seems to increase self-efficacy, or the 'toolbox' effect as described in the study 2, implying that mindful strength use is the active component of MBSP which results in self-efficacy, and potentially longitudinal increases in wellbeing.

Whilst this research presents some interesting theoretical implications, its application to MBSP specifically is unknown, as the participants in the study had not taken part in the programme. Participants were collected largely from social media and Prolific. In the past, crowdsourcing of participants through websites such as MTurk, has been critiqued for the potential poor quality of participants (Chandler et al., 2013), but Prolific's guidelines and mechanisms render it preferable to MTurk (Palan & Schitter, 2018). Another consideration is the gender differences found in the study. In the current work, females consistently scored significantly higher on several character strengths, and males did not score significantly higher on any strengths. This is contrary to previous research which suggests that there are strengths which males endorse more than females and vice versa (Loton & Waters, 2017). In addition to this, there were several items on the VIA-IS-M in the current study that did not reach the threshold of reliability and therefore the results of the relationships between the VIA and the PERMA, while in keeping with the vast majority of previous research, should be considered carefully.

Future Research

From these findings, future research should explore how these pathways might differ between MBSP and control participants, to identify if the pathways, and the importance of strengths use remains the same. However, this will be difficult considering the small sample size of MBSP participants. To explore whether strengths use is in fact more influential on wellbeing and self-efficacy, a randomised control trial could be conducted, comparing the separate components of MBSP: mindfulness, character strengths, and integration of the two. Specifically, future research should compare the effects of these components on self-efficacy and wellbeing. In addition to this, as self-efficacy seems to predict longitudinal wellbeing, long-term follow ups in the MBSP studies should be used to explore whether wellbeing does significantly increase over time. Being able to separate the outcomes of mindfulness and character strengths would shine light on whether mindfulness is necessary to achieve the outcomes seen in the current MBSP samples.

Conclusion

Study 4 demonstrates that strengths use is a significantly better predictor of self-efficacy of wellbeing than mindfulness. Mindfulness has a significant influence on wellbeing, as is supported by existing research, but in this analysis the pathways to wellbeing established through strengths use were much more robust. The partial mediating effect of self-efficacy on the relationship between strengths use and wellbeing suggests that character strengths may be the reason that MBSP consistently delivers increased self-efficacy, which according to existing research could then influence longitudinal wellbeing not detectable in the short-term measurement time frames reported in previous chapters. These findings help us understand that, even if mindfulness is useful as the framework in which character strengths are taught, the benefits of MBSP are principally driven by the use of character strengths. Future research could look to separate this more distinctly, to identify whether using character strengths and mindfulness is significantly more beneficial than an intervention solely involving character strengths.

CHAPTER 7: STUDY 5 - IDENTIFYING THE ACTIVE COMPONENTS OF MINDFULNESS-BASED STRENGTHS PRACTICE: A WEEK-LONG RANDOMISED CONTROL TRIAL.

Rationale

Thus far this thesis suggests that the main outcomes of MBSP are mindfulness, strengths use and self-efficacy with further smaller effects seen on resilience and wellbeing. Research into the individual components of the programme demonstrate that while both mindfulness and strengths use are significant predictors of wellbeing, it is character strengths which has the greatest predictive power. Furthermore, strengths use was strongly linked to self-efficacy, which also mediated the relationship between strengths use and wellbeing.

These findings suggest that it is the character strength education, rather than mindfulness, in MBSP that creates the effects seen on wellbeing and self-efficacy. Of the two main concepts of MBSP, 'strong mindfulness' and 'mindful strengths use', it is mindful strengths use which acts as the active component of the programme that results in increases in wellbeing and self-efficacy. To explore this further, the effects of mindfulness and character strengths should be isolated to apply this hypothesis to intervention data.

Previous research on week-long positive psychology interventions demonstrate positive and sustained effects on wellbeing after completing daily exercises (Gander et al., 2016; O'Connel, et al., 2014; Proyer et al., 2015; Seear & Vella-Brodrick, 2012; Wellenzohn, et al., 2016). As such, four week-long interventions were created: mindfulness only (MI), character strengths only (CSI), mindfulness and character strengths (M_CSI) and an active control group (CI). All interventions were created using exercises from MBSP. A list of MBSP exercises for each category can be seen in Table 7.2.

Study 5 was designed to test whether character strengths are in fact more powerful at increasing self-efficacy and wellbeing than mindfulness. As such, it is expected that the CSI to result in stronger increases in wellbeing and self-efficacy than the MI. The current study will also provide an opportunity to explore whether the M_CSI will yield stronger effects than the CSI, to support the mutual support model suggested by Pang and Ruch (2019), showing that the combination of mindfulness and character strengths is more powerful than character strength practices on their own.

The specific research questions for Study 5 are as follows:

RQ1: Will the M_CSI will elicit the same increases in mindfulness, strengths use and self-efficacy seen in previous MBSP trials.?

RQ2: Does the MI intervention demonstrate increases in mindfulness, and the CSI intervention will increase strengths use, but not vice versa (e.g., interventions only targeting mindfulness will not increase strengths use)?

RQ3: As suggested by the SEM in chapter 6, will self-efficacy increase in the CSI condition but not the MI condition?

RQ4: Will all interventions demonstrate significant outcomes, compared to the control group?

Methodology

Participants

In total, 104 participants between the ages of 18 and 50 (M = 32.86, SD = 8.92) were recruited to take part in the experiment (Female = 99.04% (N = 103)). Of these participants, 24 participants (N = 23.08%) identified themselves as religious (Christian = 21, Hindu = 1, Muslim = 1, Sikh = 1) and a further two identified as spiritual. Participants were randomised equally across the four conditions, with 26 participants in each condition.

Measures

The current study measured the effect of the interventions on mindfulness, strengths use, self-efficacy, wellbeing, depression, anxiety and stress. As such, the same measures used in previous thesis chapters were used in the current study. The reliability scores for all measures at both pre- and post- intervention time points can be seen below in Table 7.1.

Table 7.1

Alpha reliability scores for both pre-intervention and post-intervention time points

Measure	T1 (α =)	T2 (α =)
Mindfulness Attention Awareness Scale (Brown & Ryan, 2003)	.90	.92
Strengths Use Scale (Govindji & Linley, 2007)	.94	.95
Self-Efficacy (Schwarzer & Jerusalem, 1995)	.89	.89
Overall Wellbeing (PERMA, Butler & Kern, 2016)	.92	.92
Depression (Lovibond & Lovibond, 1995)	.91	.94
Anxiety (Lovibond & Lovibond, 1995)	.85	.90
Stress (Lovibond & Lovibond, 1995)	.88	.91

Procedure

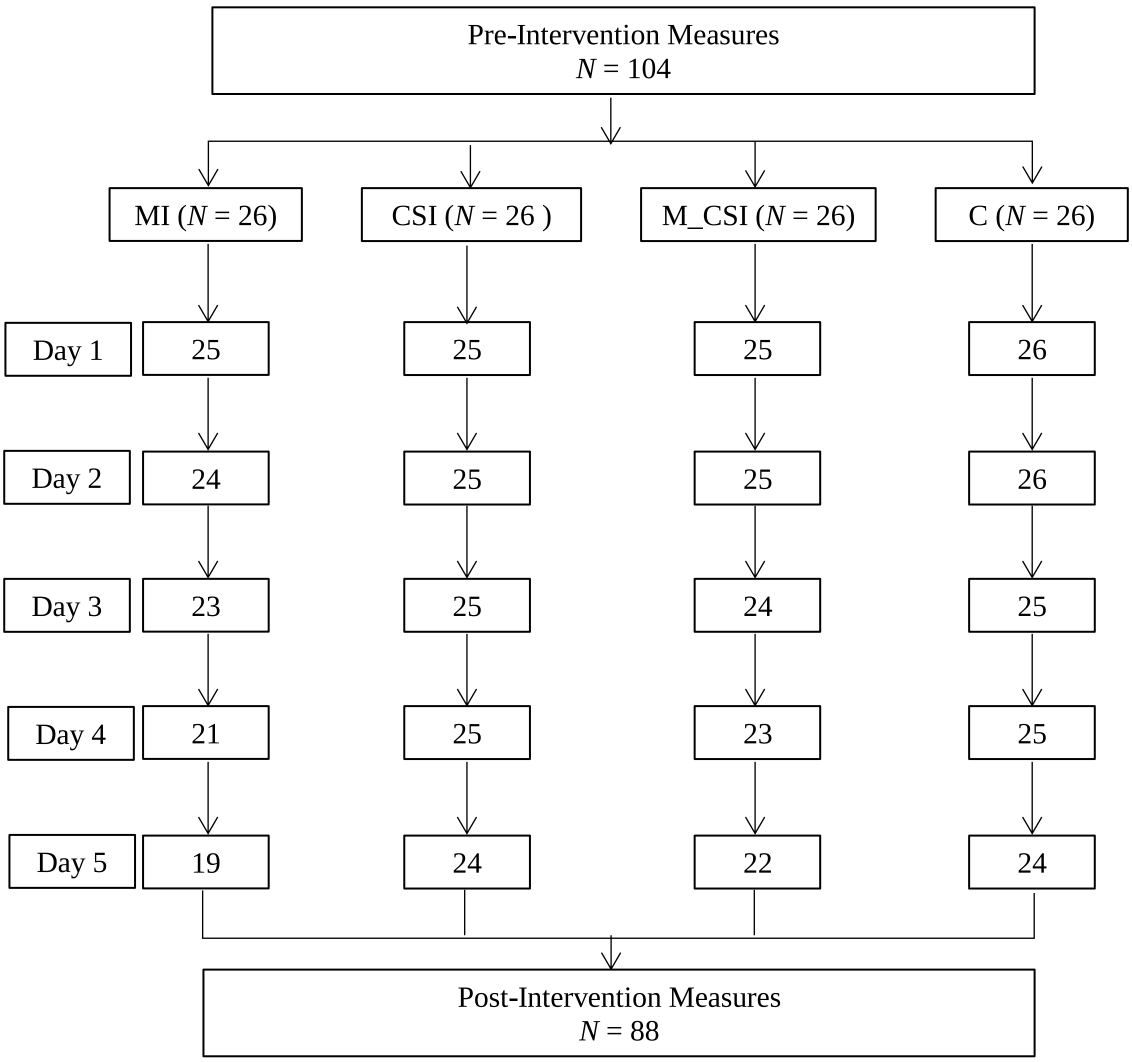
Participants were recruited from the participant recruitment pool, Prolific. Eligible participants were UK citizens between the ages of 18 and 50. However, Prolific participants who took part in the study reported in Study 4 were excluded, as were those undergoing professional treatment for a psychiatric disorder, and participants who experience personality disorders, delusions or dissociation. Through Prolific's participant screening system, the study was selectively advertised to eligible participants. The study advert specified that it was a week-long study, and that every daily activity must be completed to be eligible for total payment.

A full information sheet and consent form was provided to participants before proceeding to the questionnaire. Participants were randomly assigned to one of the four conditions after completing psychometrics, at which point participants were given an introduction to their intervention. For each of the days following, all participants were invited through Prolific to complete the activity for the day. These activities took approximately 5 minutes each day and were administered in audio file or online worksheet format as appropriate. Only those who completed the previous day's activity were invited to complete the following day. As such, a small number of participants did not complete post-intervention measures (Figure 7.1). To encourage maximum participation throughout the programme, daily reminders were sent to those who had not completed the daily activities within the first 18 hours, to allow time to complete them. Post-intervention measures were then collected the day after the final activity, and participants were also provided with a full debrief.

Participants were paid a total of £4.20 for completing the study, with incremental payments given at each step. £1.05 was awarded for the pre-intervention measures, £0.42 for each day of the intervention, and finally £1.05 for the post-intervention measures. The whole intervention took approximately 50 minutes: 10-15 minutes for each set of questionnaires (pre- and post-intervention) and 5 minutes for each daily activity.

Figure 7.1

Participant numbers for every daily activity in each condition



Interventions

Each programme consisted of an introduction, which was presented after the pre-intervention questionnaires, followed by five days of exercises/meditations for the participants to complete. Each day also included a text-entry question which acted as an attention check to reduce the likelihood of participants not engaging with the activity. These questions usually asked about a participant's experience of the exercise and were timed to appear ten seconds before the conclusion of the audio file, so that the audio could not be skipped. The daily exercises took the form of either an audio recording, or a worksheet for participants to complete, and participants were provided with a brief synopsis of the exercise before completing it. The study plan and daily exercises can be seen in Table 7.3. Exercises for each intervention (except control) were taken from MBSP and assigned to one of the conditions.

The exercises were selected from the exercise evaluations which had been completed throughout MBSP trials in this thesis. Exercise evaluations were completed by all PGR cohorts from Study 2, participants from the pilot study in Chapter 4 and also from cohorts 1 and 2 in Study 3a, resulting in a total of 31 participants who completed evaluations. Evaluations asked participants to rate each exercise on the extent to which they found it to be: enjoyable, calming, useful, interesting and to what extent they found it helped them deal with stress, learn about themselves, practice mindfulness, and practice strengths use. Participants were also given an opportunity to offer qualitative feedback on each exercise. All evaluations were collated and ranked according to their scores on each question. Only exercises which had a mean score above 4 were labelled as ranking highly in a category. In Table 7.2 each exercise is listed under the categories mindfulness, character strengths and integration exercises, along with which categories each exercise ranked highly in.

Table 7.2

Each evaluated exercise divided into categories (Mindfulness, Character Strengths and Integration) and labelled with which attributes the exercise scored highly in.

Mindfulness	Character Strength	Integration
Body Scan (C, M, S)	You At Your Best	Character Strengths Breathing

		Space
Statue Meditation	Strengths Interview (I, P)	Loving Kindness Meditation
Mindful Eating	Signature Strengths In New Ways (P)	Strengths Exploration
Object Meditation (E, C, I, P, M)	Speak Up (E)	Reframing (I)
Gatha	Strengths Mapping (E, I)	Fresh Look Meditation (E, U, C, L, P, M)
Routine Mindfulness	Strengths Worksheet	Strengths Branding (I)
Walking Meditation (U, C, I, L, P, M, S)	Character Strength 360 (E, U, I, L)	Signature Strengths Breathing Space (P, M)
3 Minute Mindfulness	Goal Setting (U)	Best Possible Self (E, U, C, I, L, P, M)
		Defining Moments (E, U, C, I, L, P, M)

Note: E = enjoyable; C = calming; U = useful; I = interesting; S = deal with stress; L = learn about themselves; M = practice mindfulness; P = practice strengths use.

The only three mindfulness exercises which ranked highly were the *Body Scan*, *Sacred Object Meditation* and *Walking Meditation*. *Mindful Eating* and *Routine Mindfulness* were chosen as the *Strengths Gatha* exercise ranked the lowest exercise of all, and the *Statue Meditation* is already partially included in the *Walking Meditation*. Although *Character Strengths 360* was the most highly ranked character strengths exercise, it is not suitable for completion in a 5-minute slot, and likewise, the *Strengths Interview* did not meet the time constraints required for inclusion. The *You at Your Best* exercise was chosen as a good introduction to spotting strengths, but the *Strengths Worksheet* was excluded as it involves a deeper understanding of character strengths than is realistic within a one-week intervention. Similarly, although *Strengths Branding* and the *Signature Strengths Breathing Space* exercise were ranked highly, they require knowledge of one's signature strengths. Due to the limited time of the intervention, there was no opportunity for participants to complete the VIA and see their signature strengths. As a result, the selected exercises for each intervention can be seen in Table 7.3.

Table 7.3

Study plan and intervention content

		Day 1	Day 2	Day 3	Day 4	Day 5	
M	PRE-INTERVENTION MEASURES	Body Scan	Mindful Eating	Mindfulness in a routine activity	Mindful Walking Meditation	Object Meditation	POST-INTERVENTION MEASURES
CS		You at Your Best	Signature Strengths in New Ways	Speak Up!	Strengths Mapping	Goal-Setting	
M and CS		Character Strengths Breathing Space	Reframing exercise	Fresh Look Meditation	Defining Moments Meditation	Best Possible Self Meditation	
Control		Reflective Diary Activity	Reflective Diary Activity	Reflective Diary Activity	Reflective Diary Activity	Reflective Diary Activity	

Note: M = Mindfulness Intervention; CS = Character Strength Intervention; M and CS = Mindfulness and Character Strength Intervention

M Intervention

To introduce the mindfulness interventions, the Kabat-Zinn (1979) definition of mindfulness was used and the concept of autopilot introduced. Day one focused on the *Body Scan* to introduce the awareness and acceptance of mindfulness. At the end of the audio clip, participants were then asked to describe their experience of the exercise. This was not analysed as data but used as an attention check. Day two included the *Mindful Eating* exercise, continuing the introduction to the beginner's mind. Here, participants were asked to write down what item of food they ate. Day three was not an audio recording but aimed to introduce the concept of integrating mindfulness in everyday life through the *Routine Mindfulness* exercise. Having selected the mindfulness exercise they wished to practice, participants were told to set a phone reminder and to complete it before the next day's exercise. Day four used an audio file for *Mindful Walking*, and again participants were asked to record their experience of the exercise. Finally, day five used the *Object Meditation* to bring a beginner's mind to an object.

CS Intervention

The introduction to the character strength intervention began with introducing the 24 character strengths and providing a full list. Day one began with the *You At Your Best* exercise as an audio file to help participants identify their own character strengths. After the audio finished, participants were asked to list the strengths they spotted in themselves. Day two then introduced using *Signature Strengths In A New Way*. This involved looking at the VIA suggestions for using strengths in new ways and writing down which character strengths the participant intended to use in a new way and how they would do so. Day three explored the relational aspect of character strengths, by instructing participants to spot strengths in two people and to tell them. Here again a list of the character strengths was provided to increase familiarity. Day four involved the *Strengths Activity Mapping* exercise, reflecting on strengths use over the previous 24 hours and spotting strengths in a routine activity, a relational activity and an activity that required effort. Finally, day five included part of the *Goal-Setting* activity from MBSP, focussing on a life goal, but not a mindfulness goal. This activity involved choosing a life goal, identifying which activities will be needed to achieve it, and the character strengths required.

M and CS Intervention

This intervention began by introducing both mindfulness and character strengths. Day one featured the *Character Strength Breathing Space* as a guided meditation focused on three character strengths. At the end of the audio, participants were asked to describe their experience of the activity. The *Reframing Exercise* took place in day two as an introduction to the golden mean in which participants read the vignette and identified which strengths 'John' was overusing and underusing and to provide examples of this. Day three included the *Fresh Look Meditation* as an audio file, in which participants applied the understanding of the golden mean to their own difficulties. Again, participants were asked to briefly describe their experience. Day four continued a similar format as day three, by including the *Defining Moments* meditation as a means of reflecting on previous successful strengths use. Finally, day five included the *Best Possible Self* exercise, and participants were asked to choose a future goal before beginning the audio. Again, participants were asked about their experience of the exercise.

Control

Those allocated to the control were given a reflective diary activity every day, in which they had to consider three activities from the previous 24 hours which had an effect on them. This acted as an active control group which still required self-reflection.

Data Analysis

To analyse the effect of the interventions on outcome measures a 2 (time: pre-intervention vs. post-intervention) x 4 (condition: MI, CSI, M_CSI, CI) MANOVA was conducted.

Results

Descriptive Statistics

Initial descriptives (table 7.4) did not indicate notable differences between conditions in baseline scores. To confirm that this was the case, a one-way independent groups ANOVA was conducted and revealed no significant differences between groups in mindfulness, F (3, 100) = 0.08, p = .971, strengths use, F (3, 100) = 0.12, p = .948, self-efficacy, F (3, 100) = 0.76, p = .518, stress, F (3, 100) = 2.08, p = .108, depression, F (3, 100) = 0.21, p = .888, anxiety, F (3, 100) = 2.07, p = .109, or wellbeing, F (3, 100) = 0.55, p = .653.

Table 7.4

Descriptive for each variable split by condition

Measure	Condition	T1		T2	
		M	*SD*	*M*	*SD*
Mindfulness Attention Awareness Scale	M	3.79	0.88	3.86	0.85
	CS	3.76	1.06	3.58	0.88
	M_CS	3.73	0.83	3.46	0.79
	Control	3.67	0.91	3.66	1.10
Strengths Use	M	4.95	0.99	5.11	1.12
	CS	4.90	0.77	5.38	0.69
	M_CS	4.96	0.98	4.93	0.99
	Control	5.05	0.90	5.31	0.74
Self-Efficacy	M	2.85	0.46	3.00	0.48
	CS	3.03	0.45	3.09	0.36
	M_CS	2.97	0.65	2.95	0.49
	Control	3.03	0.39	3.14	0.39
Overall Wellbeing	M	8.00	1.11	7.93	1.14
	CS	7.81	1.16	8.00	1.12

	M_CS	7.68	1.74	7.90	1.68
	Control	7.51	1.59	7.69	1.44
Depression	M	5.98	2.41	6.11	3.04
	CS	6.21	2.04	6.15	2.48
	M_CS	6.44	2.95	6.30	2.75
	Control	5.96	2.49	5.98	2.76
Anxiety	M	5.87	2.22	5.44	2.48
	CS	6.65	2.41	5.77	2.49
	M_CS	5.52	2.42	5.84	2.41
	Control	5.23	1.55	5.31	2.08
Stress	M	7.38	2.43	7.38	2.43
	CS	7.83	2.34	7.30	2.57
	M_CS	6.52	2.62	6.27	2.49
	Control	6.48	1.96	6.52	2.36

Inferential Statistics

Mindfulness. Answering the first research question, there seemed to be a decrease in mindfulness between T1 and T2 in the M_CSI and a slight decrease in the CSI However, in keeping as expected for research question two, mindfulness seemed to increase in the MI condition and no changes observed in the control condition. To test the significance of these changes, a MANOVA was conducted and showed a significant main effect of time, F (1, 84) = 4.31, p = .041, η^2_p = .05, but no significant interaction between time and condition on mindfulness, F (3, 84) = 0.84, p = .476. Post-hoc comparisons demonstrated that the increases seen in the MI condition were not significant (p = .473), but the decreases in the M_CSI were significant (p = .026).

Strengths Use. In keeping with the expectations of research question two, a big increase in strengths use was seen between T1 (M = 4.90, SD = 0.77) and T2 (M = 5.38, SD = 0.69). Interestingly, smaller increases were also seen in the MI condition and in the control group. However, no changes were seen in those who completed the M_CSI. When conducting the MANOVA, a significant interaction between time and condition was seen, F (1, 84) = 12.81, p < .001, η^2_p = .13. Post-hoc tests showed significant increases in the CSI condition (p < .001), and no significant change was observed in the MI (p = .134). However, in contrast to the expected outcomes, no changes were seen in M_CSI (p = .995), and significant changes were seen in the control group (p = .044).

Self-Efficacy. Interestingly, self-efficacy increased in those who completed the MI, but not in those who took part in the CSI, contradictory to the third research question. As in the CSI, no changes in self-efficacy were observed in the M_CSI either, also counter to the expected results of research question one. When testing the significance of these changes, the MANOVA revealed a significant main effect of time was found on self-efficacy, F (1, 84) = 6.84, p = .011, η^2_p = .08, but no significant interaction between time and condition was seen, F (3, 84) = 0.84, p = .478. Post-hoc tests showed significant increases between T1 (M = 2.85, SD = 0.46) and T2 (M = 3.00, SD = 0.48) in self-efficacy in participants who completed the MI (p = .020), but not in CSI (p = .322) or the M_CSI condition (p = .743).

Wellbeing. Small increases in wellbeing were seen in the descriptive trends, in participants who took part in the CSI, M_CSI and the control group, and a small decrease was seen in the MI. No main effect of time was found when conducting the MANOVA, F (1, 84) = 1.93, p = .168, nor a significant interaction between time and condition, F (3, 84) = 0.75, p = .527. Post-hoc comparisons showed no significant differences in wellbeing regardless of the condition (p > .05). These findings do not provide any positive evidence for research question four, showing that the interventions were not more effective at positively influencing wellbeing than the control group.

Depression, Anxiety and Stress. Very small changes were seen depression in the trends reported in Table 7.4, and the MANOVA revealed no main effect of time on depression, *F* (1, 82) = 0.04, *p* = .844, nor a significant interaction effect, *F* (3, 82) = 0.12, *p* = .949.When examining the trends in anxiety, a big decrease was observed in those who completed the CSI. A smaller decrease was also observed in those who completed the MI. Very little change was seen in the M_CSI and the control condition. The MANOVA showed no main effect of time on anxiety, *F* (1, 82) = 0.86, *p* = .356, nor a significant interaction effect, *F* (3, 82) = 2.01, *p* = .118. However, a post-hoc follow up showed the decreases in anxiety observed in CSI participants between T1 (*M* = 6.65, *SD* = 2.41) and T2 (*M* = 5.77, *SD* = 2.49) were significant (*p* = .019). Finally, the descriptive statistics were not indicative of any changes in stress, and this was confirmed in the MANOVA with no main effect of time, *F* (1, 82) = 1.33, *p* = .252, nor a significant interaction between time and condition *F* (3, 82) = 0.45, *p* = .719.

Discussion

Study 5 explored the isolated effects of mindfulness, character strengths and the combination effects of the two through four, week-long interventions. Participants who were allocated to the mindfulness only intervention (MI) showed significant increases in self-efficacy. The character strengths only intervention (CSI) successfully influenced positive changes in strengths use in participants, and additionally resulted in decreased levels of anxiety. Although it was expected that the combination of mindfulness and strengths use (M_CSI) would show stronger effects than either isolated concept, the intervention only showed increases in mindfulness. Finally, and unexpectedly, the control intervention (reflective diary practice) also showed increases in strengths use.

Confirming expectations of research question one, M_CSI increased mindfulness, but not strengths use or self-efficacy. Similarly, the CSI increased strengths use, whereas the MI did not, but the MI intervention did not result in increases in mindfulness as expected, calling into question the face validity of this short intervention. This could indicate that five daily activities do not have enough impact to produce the same outcomes of mindfulness, strengths use and self-efficacy as seen in MBSP, or for the MI or CSI to elicit the expected increases in mindfulness and strengths use respectively. This echoes previous findings which suggest that condensing an 8-week programme to even four weeks eliminates findings seen from the 8-week (Basso et al., 2019; Niemiec, 2017). This can also be supported from the focus-group study in Study 2b, in which the idea of reducing MBSP to a one-day retreat to reduce its time requirements was met with hesitation by those who argued that the current session and programme length was required "to get the most out of the session" and that it was helpful to repeat exercises to consistently reinforce the exercises learnt. It could be argued that the 5-daily practices did not offer the opportunity to reinforce and repeat each activity, and therefore the exercises had been insufficiently consolidated to elicit increased outcomes. This could explain the lack of findings in the current study compared to published week-long intervention studies, which utilise the same exercise every day, compared to the current study which delivered a different exercise each day.

The lack of clear findings is contrary to the expectations of the research questions and the literature which supports the original design and aim of the study at hand, and initially provided evidence for the effects which should have been identified in participants. The support for the effectiveness of week-long interventions, or even short stand-alone interventions is evidenced in the literature which showed that 4 days of daily mindfulness enhanced attention (Zeidan, Gordon et al., 2010), 3 days of mindfulness resulted in decreases in pain (Zeidan, Johnson et al., 2010), a brief 10 minute mindfulness resulted in increases in attention (Norris et al., 2018) and 10 minutes of mindfulness twice over a 24 hour period also demonstrated decreases in pain related stress (Ussher et al., 2012). In Ussher's study, only the first mindfulness session which took place in a lab setting was successful. The second mindfulness meditation took place in participants' own environment and demonstrated no significant changes. This could provide an explanation for the null findings in the current study, as participants were listening to audio files in their own environment, though it is more likely that Ussher found no significant changes because of the repeated measures design in which the first use of mindfulness had the biggest impact. The null findings seen in the current study could be a result of possible non-compliance on the part of the participants. Whilst attention-checking questions were asked, it is not possible to ensure participants have indeed completed each exercise fully when conducting interventions online rather than face-to-face. Similar to the previous chapter, the quality of Prolific participants can be critiqued (e.g., Chandler et al., 2013).

Disappointingly, the CSI did not result in an increase in self-efficacy, though the MI did. This is contrary to the SEM in Study 4 which showed character strengths to be a stronger predictor of self-efficacy than mindfulness. While mindfulness was also a significant predictor of self-efficacy (which is supported by the increases seen in the MI), it is surprising that the CSI did not elicit these effects as well. These results could provide a contradiction to the predictions derived from the SEM, but as explored earlier, there are several findings from the current study which contradict existing literature and previous findings from the SEM in Study 4. Similarly, no significant differences were observed between conditions when comparing interventions, only when separately observing each intervention in changes between T1 and T2. As no comparisons can be drawn between interventions, and marginal increases do not follow expected patterns, this experiment cannot successfully test the results of the SEM from study 4.

As such, a more thorough testing of the SEM is required, using a randomised control trial comparing the effects of MBSP, MBSR and an 8-week character strength intervention on mindfulness, strengths use, self-efficacy and wellbeing. MBSR would provide a more detailed mindfulness intervention, from which the structure of MBSP was derived. Using MBSR as the mindfulness intervention would enable a clear comparison between mindfulness only and MBSP, which combines mindfulness and strengths use, a character strengths intervention would also need to be developed, to provide an opportunity for a full comparison to take place. Using the 8-week programmes will enable the full effects of each programme to be experienced unlike in the current study, and enable the specific effects of mindfulness, character strengths, or the integration of the two to be isolated. This could be achieved through the use of 6-week interventions, however the recommendation here for 8-weeks is chosen because of the existing published 8-week programmes of MBSR and MBSP.

Alternatively, an additional study could be conducted to identify the most effect components of MBSP, by comparing each exercise listed in the introduction. This could be done in a short week-long or fortnight long RCT, with participants completing each exercise every day. This would give an indication of which exercises in MBSP are the ‘active components’, from which it could become clear which specific aspects of the programme are responsible for the increases in outcome measures. This would be a more thorough way of understanding how the programme works. However, Study 5 sought more to test the SEM, rather than compare the individual activities of MBSP.

Conclusion

Here, study 5 aimed to empirically test the theory that strengths use is more effective at increasing self-efficacy and wellbeing than mindfulness, and thus that character strengths education is the most active component of MBSP. The week-long interventions used in the current study did not elicit the outcomes as hypothesised. No statistical comparisons could be made between the interventions and the results of individual programmes were inconclusive, and contrary to published literature and previous findings within this thesis. As such, further research on 8-week programmes are required to test the SEM results.

CHAPTER EIGHT: DISCUSSION

Review of Research Questions

Research Question One: What are the effects of MBSP on mindfulness, strengths use, self-efficacy, resilience, wellbeing, depression, anxiety and stress? Are these effects replicable across several cohorts of MBSP and across different populations within higher education?

Of the numerous trials of MBSP that have been reported in this thesis, consistent increases in mindfulness and strengths use have been identified as a result of completing MBSP. Measurable changes in these variables were recorded across all trials in this thesis: with undergraduates (Study 1), doctoral students (Study 2), in MBSP-6 (Study 3a), and in multi-level analysis of all cohorts of MBSP (Study 3b). The reported increases in mindfulness are a novel contribution to the existing literature on MBSP as no such changes have been elicited in any other published trial of MBSP, even when mindfulness was measured (Niemiec, 2014). The increase in strengths use was previously identified in published MBSP trials (Ivtzan et al., 2016; Niemiec, 2014), providing support for these findings. As such, this thesis provides clear, consistent face validity for the programme, demonstrating that it is successful in teaching both mindfulness and character strengths skills. Interestingly, all studies on MBSP in this thesis revealed significant increases in self-efficacy in all populations. These increases in self-efficacy are particularly notable as a clear addition to the existing literature, reported consistently across all cohorts of MBSP analysed within the thesis. Although previous literature has shown that character strengths and mindfulness independently increase self-efficacy (e.g. Chang et al., 2004; Toback et al., 2016), no study of MBSP has shown these effects before.

In line with published literature, MBSP was seen to increase wellbeing in Study 3b when conducting the multi-level analysis, and in one undergraduate cohort (Study 1). These findings are in line with previous published studies on MBSP (Ivtzan et al., 2016; Wingert et al., 2020). Although not consistent throughout the thesis, these findings are prominent when analysing all cohorts of MBSP (Study 3) and suggest that increases in wellbeing are potentially too subtle to be identified in smaller sized studies but are identified more reliably in larger sample sizes. Similarly, resilience was identified as an outcome of MBSP measured in one undergraduate cohort of MBSP-8 (Study 1) and again in the multi-level analysis (Study 3b). These findings have not yet been identified in published literature, and so are a novel contribution to the field of research. Finally, no effects on depression, anxiety or stress were identified, contrary to pilot studies reported in Niemiec and Bretherton's chapter (2017), but in line with the pilot study described by Niemiec (2014).

Research Question Two: Beyond quantitative measures, what additional benefits do participants experience? How and in what way are the practices of MBSP implemented in participant's daily lives?

While the quantitative measures provide good insight into the measurable effects of MBSP, they provide only a limited understanding of how MBSP impacts participants longitudinally, and which aspects of the programme participants found helpful. The focus group study (Study 2a) provided useful insight into the mechanisms of MBSP and practical direction for future MBSP groups. The focal finding of this study was the 'Toolbox effect', which describes how participants were able to practice different exercises taught in the programme, and extract those they found particularly helpful for continued use beyond the programme. These exercises were then often used in the face of stressors, in an 'S.O.S' fashion (used as and when participants required them), rather than in a continued routine as is encouraged during the programme. This use of MBSP exercises to handle difficulties is also captured in the qualitative comments described by Niemiec and Lissing (2016), with the description of exercises as tools also noted in Tarrasch's account of MBSR (2015). The novel aspect of this finding therefore comes from noting that most participants did not continue a formal routine of practice after programme completion but used the exercises in response to stressors and specific situations. Participants implied positive effects on wellbeing and stress reduction as a result of this situational practice, not otherwise picked up in the quantitative measures of this cohort alone. This could suggest a longitudinal effect of the programme on wellbeing, after the demands of the formal routine associated with the programme are lifted and participants select the exercises most useful to them.

Further to this, the focus group participants described the enjoyment of the programme and the experience of the group and facilitator. Namely that completing the programme with a group provided accountability and responsibility to complete the homework and engage fully for the benefit of the group and that the language of strengths provided accessible methods of supporting each other, resulting in improved relationships both with other group members and in their personal relationships outside of the group. These insights are again supported by Niemiec and Lissing (2016), who highlighted positive relationships as a recurrent MBSP outcome. A novel contribution to the literature that this thesis provides, is the salience of facilitator effectiveness described by focus group participants; namely that facilitators of MBSP need to be personable, relatable and active participants of the programme themselves, demonstrating their own personal routines and practices of both mindfulness and character strengths. Finally, participants described a frustration and difficulty with the length of the programme and time commitment involved in completing the sessions and homework exercises, a common complaint in other mindfulness interventions (e.g., Cohen-Katz, 2005; Tarrash, 2015). Suggestions for shorter sessions, or programme lengths were discussed.

Research Question Three: Can a 6-week adaptation of the programme be developed and still retain the effectiveness of MBSP-8? How does this new adaptation compare to the original programme?

In response to the commitment concerns raised by the focus group participants, a 6-week adaptation of MBSP (MBSP-6) was proposed and evaluated in Study 3a. MBSP-6 was designed to be more accessible than MBSP-8 and therefore well suited to educational settings where terms are 6-7 weeks in length, and thereby preclude the delivery of MBSP-8. Evaluation of MBSP-6 recorded the same increases in mindfulness, strengths use and self-efficacy as seen in MBSP-8 trials (Study 3a). MBSP-6 also resulted in increases in wellbeing and resilience, which were present but inconsistent in the MBSP-8 studies reported in Study 1, providing evidence that MBSP-6 may be more efficient at drawing out positive outcomes than MBSP-8, although differences in sample size and demographic composition need to be considered. When directly compared with MBSP-8 in Study 3b, MBSP-6 demonstrated significantly larger increases in mindfulness and strengths use, though these effect sizes were small and no differences were identified in post-hoc examinations. MBSP-6 also demonstrated significantly larger increases in wellbeing compared to MBSP-8 when including pre- and post-intervention scores, but not when including 6-week post-intervention follow ups. Further to this, MBSP-6 demonstrates significantly bigger effects on these outcomes over MBSP-6, providing evidence for its effectiveness and subsequent applicability in educational settings, such as with higher education or with teachers. This thesis demonstrates that its effectiveness in higher educational settings, and as such has potential to be applied in student wellbeing services, or as an extracurricular activity delivered throughout the academic year. This thesis has therefore provided the first empirically validated short-form of MBSP, which can now be utilised by other facilitators.

Research Question Four: How do the individual components of MBSP (Character Strengths; Mindfulness; Integration of Mindfulness and Character Strengths) influence the outcomes of the programme?

The final research question of the thesis pertained to the mechanisms of MBSP that underlie the outcomes reported as a result of the programme. In Study 4 the key outcomes of MBSP (mindfulness, strengths use and self-efficacy) were explored with their relation to wellbeing, to identify which out of mindfulness and strengths use is responsible for the increases in self-efficacy and subsequent wellbeing. The structural equation model showed that both mindfulness and strengths use significantly predict wellbeing, however it is strengths use which is the stronger predictor compared to mindfulness. Similarly, strengths use more strongly predicted self-efficacy than mindfulness, with self-efficacy also acting as a partial mediator between strengths use and wellbeing. These findings suggest that character strengths are mainly responsible for increases in self-efficacy and wellbeing, accomplishing these wellbeing changes through increasing self-efficacy. This is supported by the literature which demonstrates the longitudinal predictive effects of self-efficacy on wellbeing (Capara et al., 2006; Vecchio et al., 2017).

In application to MBSP, it is suggested that while mindfulness practices within MBSP are beneficial at improving wellbeing, they are more effective as the framework in which character strengths are taught and explored. The character strength education in MBSP results in individuals feeling more equipped to face day-to-day life resulting in self-efficacy, in addition to experiencing increases in wellbeing. Longitudinally, the character strengths knowledge appears to yield increases in self-efficacy, which in time results in enhanced wellbeing. Study 5 then went to explore whether an intervention solely focused on character strengths would be more effective than a mindfulness intervention in increasing self-efficacy and wellbeing, using a randomised control trial of three active conditions and one control intervention. Unfortunately, no changes were recognised in any intervention, indicating that week-long interventions lack sufficient duration and intensity of exposure to fully teach these skills. Future research could test this further with 8-week interventions with a similar structure to MBSP.

General Discussion

Outside of answering research questions, some chapters highlight key themes throughout this thesis which warrant further discussion. Firstly, the validation of a 6-week adaptation of MBSP will be discussed, focusing on the implications of a shorter adaptation and future research that could be conducted. Secondly, the new working theory of 'Strengths Over Mindfulness' is discussed in the context of the SEM, but also in the context of the programme itself, in relation to the focus group data and noting future possibilities. Thirdly, the key finding of increased self-efficacy as a result of MBSP will be discussed, considering its reoccurrence throughout the chapters, its relationship with wellbeing and the links between quantitative and the qualitative findings, such as the toolbox effect. Fourthly, the suggestion of longitudinal wellbeing which is alluded to throughout several chapters, discussing possible explanations of the lack of immediate increases in wellbeing, and exploring the links between the qualitative data, longitudinal quantitative data and the SEM. Finally, this chapter concludes with an overview of the key limitations within this thesis, directions for future research beyond the thesis, and concluding remarks.

MBSP-6

This thesis provides a validated 6-week adaptation of MBSP, described as MBSP-6, as an attempt to overcome time commitment frustrations expressed by participants in the trials. MBSP-6 fulfils the criteria set out by Ruch et al. (2020) for successful strength interventions, as it is an adaptation of an existing, validated intervention (MBSP), and is tested thoroughly against controls. This adaptation is the first fully validated adaptation of MBSP-6, offering strong evidence for the use of MBSP-6 as a more reliable programme than facilitators making local adjustments to the programme. These successful trials support the literature which show 6-week adaptations of Mindfulness-Based Stress Reduction to be successful (Lengacher et al., 2009), but avoids any null effects that can be seen if programmes are condensed much more (e.g. Basso et al., 2019). The results show that not only does MBSP-6 promote increases in mindfulness, strengths use and self-efficacy, as seen in MBSP-8, but MBSP-6 also delivers increases in resilience and wellbeing. Additionally, in the studies reported here, these increases are greater than those seen in MSBP-8, suggesting that the 6-week adaptation is both more concise and to some extent more effective than the original MBSP-8, though these effect sizes are very small. This could be a result of differing factors in research design discussed further in the limitation section, but the outcomes show good effect sizes and provide support and validation for the programme to be uses in higher education.

In this thesis, MBSP-6 was first piloted with 16-18 year olds, with the intention of providing an opportunity for MBSP to be used effectively within one half term of the academic year. Although research with this age group could not continue, the initial feedback from these students and the further validation from the undergraduate trials show that the programme is retains its effectiveness as a shorter, 6-week version. By presenting a validated 6-week adaptation of MBSP, this thesis also provides an opportunity for MBSP-6 to be used and tested within more educational settings, with the potential for further adjustments for younger audiences. This fills a gap in the literature for shorter strengths-based interventions for use in education where alternatives such as the Strengths Gym (Proctor et al., 2005) and the Positive Psychology Programme (Seligman et al., 2009) are between twenty and twenty-five sessions long. MBSP-6 offers a shorter strengths programme that is can be used in either education or in generalized populations, unlike the Strengths Gym and Positive-Psychology Programme. Care should be taken when applying MBSP-6 to younger audiences to retain the core themes and lessons of MBSP, whilst making it appropriate for younger children. This thesis demonstrates the effectiveness of MBSP-6 in university settings, meaning MBSP-6 can be adopted by wellbeing teams within universities, as a contribution to the character development of its students. By creating another validated adaptation of MBSP, which is more applicable in educational settings, this thesis provides new opportunities to fulfil the third pillar of positive psychology (Seligman & Cszikszentmihalyi, 2000) by offering a new tool for a positive university, and answering the call of universities and schools to promote the flourishing of individuals, not just academic success (Bonell et al., 2014; Schreiner, 2015; Seligman et al., 2009; Williams et al., 2018).

Strengths over Mindfulness

Secondly, the thesis presents an interesting working theory, ‘Strengths Over Mindfulness’, which suggests that it is the character strength education within the programme which is the most effective component of the programme, but that mindfulness provides a useful framework in which to explore strengths with the small additional benefits in wellbeing. The SEM conducted in Study 4 showed that whilst both mindfulness and strengths use independently predict both self-efficacy and wellbeing, strengths use is a significantly stronger predictor of both. Within the programme, it could be suggested that mindfulness provides a good reflective framework in which to explore character strengths non-judgementally and facilitating the use of practical wisdom to navigate strength overuse and underuse (mindful strengths use). This hypothesis is supported by Pang and Ruch’s support model of character strengths and mindfulness (2019b), which empirically showed that the practice of mindfulness through mindfulness-based interventions such as MBSP and MBSR cultivated character strengths such as love, appreciation of beauty, gratitude and spirituality. Pang suggested a cyclical relationship here, in which through practicing mindfulness, increases in mindfulness are observed, then leading to increases in some character strengths. Here, Pang supports our notion that mindful strengths use is the key component of MBSP, as they state that “[t]hrough enabling increased awareness of ourselves, mindfulness allows us to develop our character strengths to a greater extent” (Pang, 2018, p.94). Although the authors continue to suggest that some of these character strengths then ‘feedback’ into mindfulness, this was not empirically tested or evidenced. In relation to this thesis, this pathway of their model mirrors our Strengths over Mindfulness hypothesis, providing a link between our SEM and understanding of MBSP.

In this thesis we propose that this character education and language is what leads to continuous changes longitudinally, through further increasing self-efficacy and subsequently mindfulness. This is supported by the qualitative data, where participants claimed that the strengths education was the most helpful part of the programme, and that they often ‘dip into’ this knowledge even 12 months after the programme. This is again supported by Pang (2018), who showed that over the 6-month follow up period, the increases in character strengths observed after MBSP did not decrease, supporting our interpretation of the data, in which it is the character strength language and knowledge which participants continue to use longitudinally.

Although this ‘Strengths Over Mindfulness’ theory is interesting, it is still necessary to test this empirically longitudinally, using a similar design to Pang and Ruch (2019a), rather than the cross-sectional design in Study 4. Although Study 5 (week-long interventions) made an attempt at this, the absence of results suggests that a week-long intervention is not enough to implement these changes, and future research should compare individual 8-week long interventions to explore whether the character strength intervention is significantly more effective than the mindfulness intervention, and whether combining the two in MBSP is more effective than either alone. Perhaps this could reveal character strengths as the more effective intervention for both wellbeing and self-efficacy, and subsequently the most active component of MBSP, but simultaneously could provide evidence for the unity of the two in MBSP, and empirically test the path between character strengths and mindfulness as proposed by Pang and Ruch (2019b).

Self-Efficacy

A novel finding in this thesis is that of self-efficacy as an outcome of MBSP, which has not been identified in any other published literature on MBSP. Not only is this finding novel, but it is also a consistent finding seen in all trials within this thesis, in Studies 1, 2 and 3, successfully replicating the self-efficacy increases across multiple iterations of the programme as recommended by Bartimote-Aufflick et al. (2015) in their evaluation of self-efficacy interventions. The finding of self-efficacy is also pertinent to research questions one, two and four. This thesis emphasises the importance of self-efficacy not only as an outcome of the programme but also as insight into the mechanisms of the programme. The regression in study 4 showed both mindfulness and strengths use to independently predict self-efficacy, as is seen in the published literature (e.g., Chang et al., 2004; Toback et al., 2016), showing that both skills taught within MBSP are responsible for the reported increases. MBSP itself contains several components which target Bandura's four sources of self-efficacy (1977). In MBSP, 'master experiences' are targeted through goal-oriented meditations such as *Best Possible Self* (King, 2001), and those which target overcoming obstacles in order to achieve goals, such as the *Statue Meditation* and *Fresh Look Meditation* (Niemiec, 2017, CSI 67). The 'social modelling' source comes from the example of the facilitator, who frequently shared their own experiences of practicing mindfulness and character strengths, but also through their peers who completed the course. Through discussion and feedback between participants, they can support each other and learn from experience and success. In exercises such as *Defining Moments* (Niemiec, 2017, CSI 25), the encouraging voice came from their participants themselves, by remembering times at in which they themselves have succeeded at strengths use. Thirdly, the encouraging voice of ‘social persuasion’ comes primarily from the facilitator, but also from other participants on the course. Finally, as MBSP lead to some improvements in wellbeing (Chapter 1 and Chapter 3), MBSP helped individuals to feel elevated and optimistic, making it easier for them to experience self-efficacy as described by the final physiological source of self-efficacy (Bandura 1977).

The SEM also shows the role of self-efficacy in wellbeing and the relationship between strengths use and wellbeing. The mediating effect of self-efficacy on the relationship between character strengths and wellbeing suggests that participants feel equipped by learning about and practicing their character strengths, and then continue to practice their strengths skilfully, resulting in increases in wellbeing. This is reflected in Hosseinian’s mediation model (2019), which shows a similar mediating role of self-efficacy in the relationships between participants knowledge of their own strengths and experiencing positive emotions. This is further supported throughout the thesis chapters, such as through the longitudinal changes measured in self-efficacy in Study 1, which shows that after an initial decrease in self-efficacy at the six week follow up, participants then begin to show increases in self-efficacy again, resulting in higher scores of self-efficacy even six months after completing the programme. This is important to consider, as the last 6-month follow up took part in the height of the COVID-19 pandemic, suggesting that participants were able to use the tools from the programme to handle the difficulties this presented. Similarly, the qualitative data in Study 2b asserts that the exercises taught in the programme were the participants’ ‘go-to’ when feeling stressed, linking to the ‘toolbox effect’, by explaining the tools helped them to handle stressors even a year after completing the programme. This toolbox effect is similar to the description of self-efficacy as a resource factor (Bandura, 1986). The research conducted in this thesis therefore shows, through both quantitative and qualitative means, that MBSP is a highly effective means of increasing general self-efficacy in higher education students.

Longitudinal Wellbeing

Although wellbeing outcomes in published MBSP literature are consistent (e.g., Ivtzan et al., 2016) the same cannot be said for the trials within this thesis. Wellbeing increased in one cohort of MBSP-8 in Study 1, and in the multi-level analysis in Study 3, but not across all trials. This could be an issue with statistical power, but as the changes observed in wellbeing when combining all trials still show small effect sizes, it is more likely that MBSP in these populations does not immediately impact wellbeing. Initially, one explanation for this was the choice of wellbeing measure. Other published MBSP studies (e.g., Ivtzan et al., 2016) used the *Flourishing Scale* (Diener et al., 2010) and *Satisfaction with Life Scale* (Diener et al., 1985) and observed increases in these wellbeing indicators, so it was thought that the *PERMA Profiler* might not accurately assess changes in smaller sample sizes. However, Wingert et al., (2020) measured wellbeing using the *PERMA Profiler* (Butler & Kern, 2016) with a similar sample size (N = 21) and observed significant changes in those who completed MBSP. Although the inconsistent quantitative changes in wellbeing cannot be explained by the choice of measure, the qualitative results still indicate that participants experience positive benefits on flourishing and wellbeing from the programme.

Further to this, the qualitative data suggested possible longitudinal improvements in wellbeing, rather than an immediate change after the programme. This was supported by the increases in outcomes measures seen at longitudinal follow ups in Study 1 (MBSP-8 in undergraduates), providing more evidence that participants begin practicing the exercises longitudinally, and may subsequently experience delayed increases in wellbeing. The focus group data showed that participants found the exercises and tools taught helpful for their everyday life and when faced with stressors. Linking this to the SEM, the observed effect of self-efficacy on wellbeing brings further support to the longitudinal increases of wellbeing. Duan and Ho (2017) showed a similar effect with mindfulness and strengths use, where mindful practice predicted strengths which in turn predicted higher levels of flourishing – supporting the notion that strengths practice leads to later increases in wellbeing.

As all trials of MBSP within this thesis resulted in increases in self-efficacy, and wellbeing was present but inconsistent, it is further support that a longitudinal effect on wellbeing may be possible, particularly when considering the longitudinal effects of self-efficacy on wellbeing reported in the literature (Caprara et al., 2006; Vecchio et al., 2007).

Limitations

Control Groups. Firstly, there were limited opportunities for conducting full randomised control trials in all experiments, despite attempts to address Bartimote-Aufflick et al.'s (2015) recommendation for evaluating self-efficacy interventions. This was only possible in Study 1 and Study 5, but due to reduced participant uptake in studies 2 and 3, it was not possible to split interested participants between MBSP and control whilst maintaining good group sizes for the intervention. Although participant reimbursement schemes could be utilised more frequently where resources are available, however it should be noted that undergraduates in Study 1 were offered a £50 Amazon gift voucher as reimbursement, and significant attrition was still observed.

As a result of this, the control groups utilised were either waiting list controls as in Study 1, which have been criticised for overestimating the effects of interventions (Cunningham et al., 2013), or they were often controls selected by participants. Though the control participants were either on the same course or studying for the same qualification (in the case of PGRs), this did not reach matched participant criteria. Besides the type of participants and lack of randomisation, which the researcher had little control over, a more deliberate choice of control group could have been made. Study 5 serves as a good example of an active control group, in non-intervention participants were assigned to an active control group of reflective diary practices. However, according to recommendations by MacCoon et al. (2012), this would not be a sufficient control group.

In their analysis of MBSR, MacCoon et al. (2012) they outlined several criteria for adequate control groups. Firstly, that researchers and facilitators should balance their 'allegiance' between the two conditions to minimise researcher bias. Secondly, the format of control should follow the same structure as the intervention in terms of length, format and the use of homework practices. Finally, in the case of MBSR, they state that a well-designed active control group should also have a therapeutic relationship, positive expectations from both the participants and the facilitator and have a clear therapeutic rationale. Following all this, they recommend the Health Enhancement Program as an effective active control. Alternatively, following Pang and Ruch's example, future research could compare MBSP to MBSR. This would effectively isolate character strengths as the active ingredient, but another similarly structured intervention would be required to isolate mindfulness as an active ingredient. It would be interesting for future research to create a more detailed comparison of outcomes from these two programmes.

Facilitator Effects. Perhaps the biggest limitation in this thesis is that of MBSP facilitators.

The majority of MBSP groups analysed within this thesis were delivered by the thesis author, taking the role of both facilitator and researcher, unavoidably increasing the possibility of bias when delivering the programme. Herbert (2010) describes four metaphors for when this is the case, outlining the potential difficulties and compromises that may be made: the 'politician', in which the researcher/facilitator must consider any stakeholder powers and expectations; the 'magician', which focuses on the practical aspect of juggling both research and facilitations; the 'trader/traitor', which considers the trade off in participant trust and may limit the extent of a participant's honesty; and finally the 'ventriloquist', where researchers must be mindful of which voices they chose to represent in research. In this thesis, the politician is avoided due to a reduced amount of stakeholder power. The magician is avoided as the MBSP sessions were not recorded or used directly in research, with the focus being on the questionnaire measures. In the focus groups, a separate moderator was selected to facilitate the focus groups, to reduce both the magician, trader/traitor and ventriloquist. This also removed the facilitator/researcher from the participants to allow them to speak more freely about their experience, as a way of reducing bias. A further measure introduced to reduce the likelihood of the 'ventriloquist' was the recruitment of an additional coder for the qualitative data. However, despite these measures, it is still possible that participants experienced a compromised level of trust with the MBSP facilitator, as they were also the researcher. Future research should aim to have a facilitator who is not involved in the research design or analysis.

The role of the facilitator is a further concern in Study 3, in which the facilitator for MBSP-6 was the participants' lecturer, increasing the potential for desirability bias (Grimm, 2010) and the halo effect of the instructor (Nisbett & DeCamp Wilson, 1977), with participants possibly exaggerating their responses to appear favourably to the lecturer and give the responses they felt were desired. Charisma of leaders and instructors have been shown to increase cooperation of followers (Cremer & Knippenberg, 2002) and lead to more imitation of a leader's behaviour (Cherulnik et al., 2006). The differences between these two variations of the programme could therefore be a result of the differences in facilitator, rather than differences in the programme. This could be the result of a more effective and experienced facilitator as in MBSP-6, where the facilitator was a 'master trainer' selected by Niemiec. Hopefully, this likelihood of desirability bias was reduced to some extent as participants were made aware that the lecturer was not the researcher and would not see their results.

Future research should aim to maintain consistency with facilitators, as "when delivery depends on multiple facilitators, the potential for variation and bias increases" (Parahoo et al., 2017, p.24).

Alternatively, these differences could be a result of differing populations. Participants recruited for MBSP-6 were also students of a character strengths psychology elective, taught by the MBSP-6 facilitator. This could elicit changes as participants could: a) have a more in-depth knowledge of character strengths and b) be more engaged in the programme as a relationship-building attempt with the lecturer. Similarly, there were big differences in group sizes between MBSP-8 and MBSP-6, with MBSP-6 groups being notably larger. With these smaller group sizes, the likelihood of identifying a true effect is significantly reduced and might explain the reduced findings of wellbeing and resilience in MBSP-8 compared to MBSP-6. This could explain the reduced findings in MBSP-8 as a result of smaller group sizes when compared with MBSP-6. In addition, differences in group sizes will also impact the social dynamics of the group. Smaller groups will become familiar with all group members very quickly, and more space is given to each person for discussion, whereas bigger groups allow more voices to be heard but for less time. It is because of these reasons that MBSP-6 should be evaluated more thoroughly, using the same facilitator and the same participant pool as those in MBSP-8 to allow for a more robust comparison. Here again, an additional active control group should be utilised, as the use of control groups in Study 3 is inconsistent and uses different participant pools to those in MSBP-6. Future research on MBSP, should attempt to control for each of these limitations to ensure consistency across groups and control for bias as much as possible.

Implications and Future Research

Future intervention research should follow the recommendations given by Bartimote-Aufflick et al. (2015), controlling for confounding variables where possible, randomly assigning participants to either the intervention being evaluated or an active control following the recommendations by MacCoon et al. (2012), and replicating effects through the use of multiple groups. This thesis shows that meeting these criteria can be difficult, but has succeeded in replicating the effects across multiple groups and has implemented randomised control trials in studies 1 and 5. Following the recommendations above, implementing robust, active control groups and randomly assigning participants is now needed to robustly evaluate the comparative effectiveness of MBSP-6 to MBSP-8. These recommendations are not only useful for self-efficacy interventions or mindfulness interventions, but is applicable to intervention work across disciplines, populations and intervention content.

With the disappointing results from Study 5 (week-long interventions), the next big question to explore is that of character strengths over mindfulness. As this thesis demonstrates week-long interventions to be insufficient at creating measurable changes, future research should seek to run a similar randomised control trial with full 8-week long programmes, comparing MBSP (mindfulness and character strengths), MBSR (mindfulness only) and a character strengths only intervention. This intervention may need to be designed by following a similar structure to MBSP and MBSR but removing mindfulness meditations and replacing them with strengths activities as recommended by MacCoon et al. (2012) as this would successfully isolate the ingredients of mindfulness and strengths use. By comparing the effects of each intervention on mindfulness, strengths use, self-efficacy, and wellbeing, the model from Study 4, which posits character strengths as more powerful than mindfulness when eliciting changes in self-efficacy and wellbeing, can be tested. If this is confirmed through the testing of a randomised control trial, it will provide more evidence for the Strengths Over Mindfulness hypothesis.

In addition, the longitudinal increases in wellbeing require empirical testing. As discussed above, these increases hint to improvements in wellbeing beyond the programme, as a result of participants using the tools taught out of habit and in response to stressors. The suggestion of longitudinal wellbeing is, admittedly, a subjective interpretation of the results of the chapters, and therefore requires further testing. Future research should explore these longitudinal effects more robustly, with a direct control group who have not completed the programme, and test this at a 12 month quantitative follow up to test whether the sentiments expressed at the focus group are mirrored in the data. Similarly, this would be an opportunity to conduct a full path analysis to again test the effect of self-efficacy and longitudinal wellbeing.

Concluding Remarks

This thesis makes prominent contributions to the existing literature in this field. Firstly, the thesis establishes MBSP as an effective intervention for increasing self-efficacy with students in higher education. MBSP participants also experience consistent increases in mindfulness and strengths use, with possible increases also in resilience and wellbeing. The findings in self-efficacy, mindfulness and resilience are novel to the field, not having been identified previously in published literature. Secondly, the thesis offers a validated 6-week adaptation of the programme, named 'MBSP-6', with evidence that this programme results in bigger increases in outcome measures than those seen in MBSP-8. Tested with undergraduates, the thesis presents MBSP-6 as a concise adaptation which can successfully be implemented in higher education, with possibilities of further adaptations for younger audiences in education. Thirdly, the thesis presents possible underlying mechanisms in the programme. Namely, that mindfulness is a useful framework in which to teach character strengths, which in turn improve ratings of self-efficacy and wellbeing, suggesting that it is the strengths education within the programme which promotes both the immediate effects and longitudinal benefits seen in this thesis. Similarly, the thesis offers the 'toolbox effect', which denotes that participants of MBSP gain tools and exercises that they can then implement in their own lives when it is needed, rather than continuing a routine practice. This toolbox effect clearly demonstrates the increases in self-efficacy, and the additional continued benefits that participants experience as a result of the programme. Future research should continue to empirically test the theory of 'Strengths Over Mindfulness', to explore whether character interventions are more powerful than mindfulness interventions, and whether the combination of the two as presented in MBSP is stronger still.

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APPENDICES

Appendix 1.1: Baseline t-tests for Study 1

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
M	Equal variances assumed	1.197	.281	1.587	36	.121	.38947	.24548	-.10839	.88734
	Equal variances not assumed			1.587	32.931	.122	.38947	.24548	-.11001	.88895

SU	Equal variances assumed	.064	.801	-.107	36	.916	-.03383	.31763	-.67802	.61035
	Equal variances not assumed			-.107	35.093	.916	-.03383	.31763	-.67860	.61093
SE	Equal variances assumed	.510	.480	-.557	36	.581	-.07193	.12909	-.33374	.18988
	Equal variances not assumed			-.557	35.094	.581	-.07193	.12909	-.33397	.19011
BR	Equal variances assumed	.641	.429	-.598	36	.553	-.16667	.27858	-.73165	.39831
	Equal variances not assumed			-.598	34.518	.554	-.16667	.27858	-.73249	.39916
OWB	Equal variances assumed	.017	.896	1.447	36	.157	.57697	.39870	-.23162	1.38557
	Equal variances not assumed			1.447	35.255	.157	.57697	.39870	-.23222	1.38616
STR	Equal variances assumed	.634	.431	-1.727	35	.093	-1.02632	.59423	-2.23267	.18004
	Equal variances not assumed			-1.737	34.251	.091	-1.02632	.59090	-2.22684	.17421
DEP	Equal variances assumed	2.263	.142	-2.590	34	.014	-1.80556	.69718	-3.22240	-.38871
	Equal variances not assumed			-2.590	30.006	.015	-1.80556	.69718	-3.22938	-.38173
ANX	Equal variances assumed	.599	.444	-2.672	36	.011	-1.39474	.52206	-2.45352	-.33595
	Equal variances not assumed			-2.672	34.950	.011	-1.39474	.52206	-2.45463	-.33485

Appendix 1.2: MANCOVAs for mindfulness and strengths use

2 x 2 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	.721	1	.721	5.923	.024	.212
		Greenhouse-Geisser	.721	1.000	.721	5.923	.024	.212
		Huynh-Feldt	.721	1.000	.721	5.923	.024	.212
		Lower-bound	.721	1.000	.721	5.923	.024	.212
	stre	Sphericity Assumed	.005	1	.005	.019	.890	.001
		Greenhouse-Geisser	.005	1.000	.005	.019	.890	.001
		Huynh-Feldt	.005	1.000	.005	.019	.890	.001
		Lower-bound	.005	1.000	.005	.019	.890	.001
time * Group	mind	Sphericity Assumed	.796	1	.796	6.532	.018	.229
		Greenhouse-Geisser	.796	1.000	.796	6.532	.018	.229
		Huynh-Feldt	.796	1.000	.796	6.532	.018	.229
		Lower-bound	.796	1.000	.796	6.532	.018	.229
	stre	Sphericity Assumed	.144	1	.144	.562	.461	.025
		Greenhouse-Geisser	.144	1.000	.144	.562	.461	.025
		Huynh-Feldt	.144	1.000	.144	.562	.461	.025
		Lower-bound	.144	1.000	.144	.562	.461	.025
time * Condition	mind	Sphericity Assumed	.618	1	.618	5.078	.035	.188
		Greenhouse-Geisser	.618	1.000	.618	5.078	.035	.188
		Huynh-Feldt	.618	1.000	.618	5.078	.035	.188

		Lower-bound	.618	1.000	.618	5.078	.035	.188
	stre	Sphericity Assumed	1.473	1	1.473	5.734	.026	.207
		Greenhouse-Geisser	1.473	1.000	1.473	5.734	.026	.207
		Huynh-Feldt	1.473	1.000	1.473	5.734	.026	.207
		Lower-bound	1.473	1.000	1.473	5.734	.026	.207
Error(time)	mind	Sphericity Assumed	2.679	22	.122			
		Greenhouse-Geisser	2.679	22.000	.122			
		Huynh-Feldt	2.679	22.000	.122			
		Lower-bound	2.679	22.000	.122			
	stre	Sphericity Assumed	5.651	22	.257			
		Greenhouse-Geisser	5.651	22.000	.257			
		Huynh-Feldt	5.651	22.000	.257			
		Lower-bound	5.651	22.000	.257			

2 x 3 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	.722	2	.361	2.661	.081	.108
		Greenhouse-Geisser	.722	1.602	.451	2.661	.094	.108
		Huynh-Feldt	.722	1.865	.387	2.661	.085	.108
		Lower-bound	.722	1.000	.722	2.661	.117	.108

	stre	Sphericity Assumed	.615	2	.307	.978	.384	.043
		Greenhouse-Geisser	.615	1.923	.320	.978	.381	.043
		Huynh-Feldt	.615	2.000	.307	.978	.384	.043
		Lower-bound	.615	1.000	.615	.978	.333	.043
time * Group	mind	Sphericity Assumed	.827	2	.414	3.046	.058	.122
		Greenhouse-Geisser	.827	1.602	.516	3.046	.071	.122
		Huynh-Feldt	.827	1.865	.443	3.046	.062	.122
		Lower-bound	.827	1.000	.827	3.046	.095	.122
	stre	Sphericity Assumed	.642	2	.321	1.022	.368	.044
		Greenhouse-Geisser	.642	1.923	.334	1.022	.366	.044
		Huynh-Feldt	.642	2.000	.321	1.022	.368	.044
		Lower-bound	.642	1.000	.642	1.022	.323	.044
time * Condition	mind	Sphericity Assumed	.650	2	.325	2.393	.103	.098
		Greenhouse-Geisser	.650	1.602	.406	2.393	.116	.098
		Huynh-Feldt	.650	1.865	.348	2.393	.107	.098
		Lower-bound	.650	1.000	.650	2.393	.136	.098
	stre	Sphericity Assumed	2.586	2	1.293	4.115	.023	.158
		Greenhouse-Geisser	2.586	1.923	1.345	4.115	.025	.158
		Huynh-Feldt	2.586	2.000	1.293	4.115	.023	.158
		Lower-bound	2.586	1.000	2.586	4.115	.055	.158
Error(time)	mind	Sphericity Assumed	5.974	44	.136			

		Greenhouse-Geisser	5.974	35.234	.170			
		Huynh-Feldt	5.974	41.025	.146			
		Lower-bound	5.974	22.000	.272			
	stre	Sphericity Assumed	13.827	44	.314			
		Greenhouse-Geisser	13.827	42.298	.327			
		Huynh-Feldt	13.827	44.000	.314			
		Lower-bound	13.827	22.000	.628			

Post-hoc comparisons

Pairwise Comparisons

Measure	Condition	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
mind	SemA	1	2	-.216	.149	.481	-.602	.169
			3	-.251	.191	.607	-.745	.244
		2	1	.216	.149	.481	-.169	.602
			3	-.034	.125	1.000	-.357	.288
		3	1	.251	.191	.607	-.244	.745
			2	.034	.125	1.000	-.288	.357
	SemB	1	2	.232	.132	.278	-.110	.574
			3	.061	.169	1.000	-.377	.499
		2	1	-.232	.132	.278	-.574	.110
			3	-.171	.110	.408	-.457	.115
		3	1	-.061	.169	1.000	-.499	.377

			2	.171	.110	.408	-.115	.457
stre	SemA	1	2	-.590*	.216	.037	-1.150	-.030
			3	-.470	.241	.193	-1.095	.156
		2	1	.590*	.216	.037	.030	1.150
			3	.120	.258	1.000	-.548	.788
		3	1	.470	.241	.193	-.156	1.095
			2	-.120	.258	1.000	-.788	.548
	SemB	1	2	.101	.192	1.000	-.395	.598
			3	.397	.214	.232	-.158	.951
		2	1	-.101	.192	1.000	-.598	.395
			3	.295	.229	.629	-.297	.887
		3	1	-.397	.214	.232	-.951	.158
			2	-.295	.229	.629	-.887	.297

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Paired Samples Test

Group	Condition			Paired Differences: Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference: Lower	Upper	t	df	Sig. (2-tailed)
med	SemA	Pair 1	M - M2	.03810	.62758	.23720	-.54232	.61851	.161	6	.878
	SemB	Pair 1	M - M2	.37037	.47971	.15990	.00163	.73911	2.316	8	.049
FSY	SemA	Pair 1	M - M2	-.66667	.31740	.15870	-1.17172	-.16162	-4.201	3	.025
	SemB	Pair 1	M - M2	-.01333	.42005	.18785	-.53490	.50823	-.071	4	.947

Appendix 1.3: MANCOVAs for wellbeing, depression, anxiety and stress

2 x 2 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	well	Sphericity Assumed	3.387	1	3.387	6.295	.021	.249
		Greenhouse-Geisser	3.387	1.000	3.387	6.295	.021	.249
		Huynh-Feldt	3.387	1.000	3.387	6.295	.021	.249
		Lower-bound	3.387	1.000	3.387	6.295	.021	.249
	depr	Sphericity Assumed	3.352	1	3.352	1.235	.280	.061
		Greenhouse-Geisser	3.352	1.000	3.352	1.235	.280	.061
		Huynh-Feldt	3.352	1.000	3.352	1.235	.280	.061
		Lower-bound	3.352	1.000	3.352	1.235	.280	.061
	anxi	Sphericity Assumed	.264	1	.264	.105	.749	.006
		Greenhouse-Geisser	.264	1.000	.264	.105	.749	.006
		Huynh-Feldt	.264	1.000	.264	.105	.749	.006
		Lower-bound	.264	1.000	.264	.105	.749	.006
	stre	Sphericity Assumed	1.560	1	1.560	.471	.501	.024
		Greenhouse-Geisser	1.560	1.000	1.560	.471	.501	.024
		Huynh-Feldt	1.560	1.000	1.560	.471	.501	.024
		Lower-bound	1.560	1.000	1.560	.471	.501	.024
time * Group	well	Sphericity Assumed	3.865	1	3.865	7.183	.015	.274
		Greenhouse-Geisser	3.865	1.000	3.865	7.183	.015	.274
		Huynh-Feldt	3.865	1.000	3.865	7.183	.015	.274
		Lower-bound	3.865	1.000	3.865	7.183	.015	.274
	depr	Sphericity Assumed	4.983	1	4.983	1.836	.191	.088

		Greenhouse-Geisser	4.983	1.000	4.983	1.836	.191	.088
		Huynh-Feldt	4.983	1.000	4.983	1.836	.191	.088
		Lower-bound	4.983	1.000	4.983	1.836	.191	.088
	anxi	Sphericity Assumed	.014	1	.014	.006	.941	.000
		Greenhouse-Geisser	.014	1.000	.014	.006	.941	.000
		Huynh-Feldt	.014	1.000	.014	.006	.941	.000
		Lower-bound	.014	1.000	.014	.006	.941	.000
	stre	Sphericity Assumed	3.637	1	3.637	1.098	.308	.055
		Greenhouse-Geisser	3.637	1.000	3.637	1.098	.308	.055
		Huynh-Feldt	3.637	1.000	3.637	1.098	.308	.055
		Lower-bound	3.637	1.000	3.637	1.098	.308	.055
time * Condition	well	Sphericity Assumed	.651	1	.651	1.211	.285	.060
		Greenhouse-Geisser	.651	1.000	.651	1.211	.285	.060
		Huynh-Feldt	.651	1.000	.651	1.211	.285	.060
		Lower-bound	.651	1.000	.651	1.211	.285	.060
	depr	Sphericity Assumed	.352	1	.352	.130	.723	.007
		Greenhouse-Geisser	.352	1.000	.352	.130	.723	.007
		Huynh-Feldt	.352	1.000	.352	.130	.723	.007
		Lower-bound	.352	1.000	.352	.130	.723	.007
	anxi	Sphericity Assumed	1.292	1	1.292	.517	.481	.026
		Greenhouse-Geisser	1.292	1.000	1.292	.517	.481	.026
		Huynh-Feldt	1.292	1.000	1.292	.517	.481	.026
		Lower-bound	1.292	1.000	1.292	.517	.481	.026
	stre	Sphericity Assumed	.070	1	.070	.021	.886	.001

		Greenhouse-Geisser	.070	1.000	.070	.021	.886	.001
		Huynh-Feldt	.070	1.000	.070	.021	.886	.001
		Lower-bound	.070	1.000	.070	.021	.886	.001
Error(time)	well	Sphericity Assumed	10.222	19	.538			
		Greenhouse-Geisser	10.222	19.000	.538			
		Huynh-Feldt	10.222	19.000	.538			
		Lower-bound	10.222	19.000	.538			
	depr	Sphericity Assumed	51.563	19	2.714			
		Greenhouse-Geisser	51.563	19.000	2.714			
		Huynh-Feldt	51.563	19.000	2.714			
		Lower-bound	51.563	19.000	2.714			
	anxi	Sphericity Assumed	47.531	19	2.502			
		Greenhouse-Geisser	47.531	19.000	2.502			
		Huynh-Feldt	47.531	19.000	2.502			
		Lower-bound	47.531	19.000	2.502			
	stre	Sphericity Assumed	62.909	19	3.311			
		Greenhouse-Geisser	62.909	19.000	3.311			
		Huynh-Feldt	62.909	19.000	3.311			
		Lower-bound	62.909	19.000	3.311			

2 x 3 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	well	Sphericity Assumed	5.869	2	2.935	5.985	.006	.250

		Greenhouse-Geisser	5.869	1.532	3.831	5.985	.011	.250
		Huynh-Feldt	5.869	1.832	3.203	5.985	.007	.250
		Lower-bound	5.869	1.000	5.869	5.985	.025	.250
	depr	Sphericity Assumed	4.149	2	2.075	.819	.449	.044
		Greenhouse-Geisser	4.149	1.344	3.088	.819	.408	.044
		Huynh-Feldt	4.149	1.574	2.636	.819	.425	.044
		Lower-bound	4.149	1.000	4.149	.819	.377	.044
	anxi	Sphericity Assumed	1.468	2	.734	.376	.689	.020
		Greenhouse-Geisser	1.468	1.378	1.065	.376	.613	.020
		Huynh-Feldt	1.468	1.620	.906	.376	.646	.020
		Lower-bound	1.468	1.000	1.468	.376	.547	.020
	stre	Sphericity Assumed	4.592	2	2.296	.903	.415	.048
		Greenhouse-Geisser	4.592	1.450	3.167	.903	.388	.048
		Huynh-Feldt	4.592	1.719	2.671	.903	.402	.048
		Lower-bound	4.592	1.000	4.592	.903	.355	.048
time * Group	well	Sphericity Assumed	6.009	2	3.004	6.127	.005	.254
		Greenhouse-Geisser	6.009	1.532	3.922	6.127	.010	.254
		Huynh-Feldt	6.009	1.832	3.279	6.127	.007	.254
		Lower-bound	6.009	1.000	6.009	6.127	.023	.254
	depr	Sphericity Assumed	6.005	2	3.002	1.186	.317	.062
		Greenhouse-Geisser	6.005	1.344	4.469	1.186	.304	.062
		Huynh-Feldt	6.005	1.574	3.815	1.186	.310	.062
		Lower-bound	6.005	1.000	6.005	1.186	.291	.062
	anxi	Sphericity Assumed	1.001	2	.500	.256	.775	.014

		Greenhouse-Geisser	1.001	1.378	.726	.256	.692	.014
		Huynh-Feldt	1.001	1.620	.618	.256	.729	.014
		Lower-bound	1.001	1.000	1.001	.256	.619	.014
	stre	Sphericity Assumed	8.276	2	4.138	1.626	.211	.083
		Greenhouse-Geisser	8.276	1.450	5.707	1.626	.218	.083
		Huynh-Feldt	8.276	1.719	4.813	1.626	.215	.083
		Lower-bound	8.276	1.000	8.276	1.626	.218	.083
time * Condition	well	Sphericity Assumed	1.138	2	.569	1.161	.325	.061
		Greenhouse-Geisser	1.138	1.532	.743	1.161	.316	.061
		Huynh-Feldt	1.138	1.832	.621	1.161	.322	.061
		Lower-bound	1.138	1.000	1.138	1.161	.296	.061
	depr	Sphericity Assumed	.500	2	.250	.099	.906	.005
		Greenhouse-Geisser	.500	1.344	.372	.099	.828	.005
		Huynh-Feldt	.500	1.574	.317	.099	.862	.005
		Lower-bound	.500	1.000	.500	.099	.757	.005
	anxi	Sphericity Assumed	7.569	2	3.785	1.939	.159	.097
		Greenhouse-Geisser	7.569	1.378	5.495	1.939	.174	.097
		Huynh-Feldt	7.569	1.620	4.672	1.939	.168	.097
		Lower-bound	7.569	1.000	7.569	1.939	.181	.097
	stre	Sphericity Assumed	.241	2	.121	.047	.954	.003
		Greenhouse-Geisser	.241	1.450	.166	.047	.907	.003
		Huynh-Feldt	.241	1.719	.140	.047	.934	.003
		Lower-bound	.241	1.000	.241	.047	.830	.003
Error(time)	well	Sphericity Assumed	17.653	36	.490			

		Greenhouse-Geisser	17.653	27.577	.640			
		Huynh-Feldt	17.653	32.980	.535			
		Lower-bound	17.653	18.000	.981			
	depr	Sphericity Assumed	91.156	36	2.532			
		Greenhouse-Geisser	91.156	24.184	3.769			
		Huynh-Feldt	91.156	28.330	3.218			
		Lower-bound	91.156	18.000	5.064			
	anxi	Sphericity Assumed	70.258	36	1.952			
		Greenhouse-Geisser	70.258	24.797	2.833			
		Huynh-Feldt	70.258	29.161	2.409			
		Lower-bound	70.258	18.000	3.903			
	stre	Sphericity Assumed	91.586	36	2.544			
		Greenhouse-Geisser	91.586	26.103	3.509			
		Huynh-Feldt	91.586	30.947	2.959			
		Lower-bound	91.586	18.000	5.088			

Post-hoc analyses

Paired Samples Test

Group	Condition			Paired Differences: Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference: Lower	Upper	t	df	Sig. (2-tailed)
med	SemA	Pair 1	OWB - OWB2	.40595	.75859	.28672	-.29562	1.10753	1.416	6	.207

	SemB	Pair 1	OWB - OWB2	.41667	1.16676	.38892	-.48018	1.31352	1.071	8	.315
FSY	SemA	Pair 1	OWB - OWB2	-1.57812	.96471	.48235	-3.11319	-.04306	-3.272	3	.047
	SemB	Pair 1	OWB - OWB2	.15917	.57507	.25718	-.55488	.87321	.619	4	.569

Appendix 1.4 MANCOVAs for Resilience and Self-Efficacy

2 x 2 MANCOVAS

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	res	Sphericity Assumed	.554	1	.554	1.643	.213	.069
		Greenhouse-Geisser	.554	1.000	.554	1.643	.213	.069
		Huynh-Feldt	.554	1.000	.554	1.643	.213	.069
		Lower-bound	.554	1.000	.554	1.643	.213	.069
	selfe	Sphericity Assumed	.000	1	.000	.005	.942	.000
		Greenhouse-Geisser	.000	1.000	.000	.005	.942	.000
		Huynh-Feldt	.000	1.000	.000	.005	.942	.000
		Lower-bound	.000	1.000	.000	.005	.942	.000
time * Group	res	Sphericity Assumed	1.137	1	1.137	3.371	.080	.133
		Greenhouse-Geisser	1.137	1.000	1.137	3.371	.080	.133
		Huynh-Feldt	1.137	1.000	1.137	3.371	.080	.133
		Lower-bound	1.137	1.000	1.137	3.371	.080	.133
	selfe	Sphericity Assumed	.043	1	.043	.816	.376	.036
		Greenhouse-Geisser	.043	1.000	.043	.816	.376	.036

		Huynh-Feldt	.043	1.000	.043	.816	.376	.036
		Lower-bound	.043	1.000	.043	.816	.376	.036
time * Condition	res	Sphericity Assumed	.149	1	.149	.441	.514	.020
		Greenhouse-Geisser	.149	1.000	.149	.441	.514	.020
		Huynh-Feldt	.149	1.000	.149	.441	.514	.020
		Lower-bound	.149	1.000	.149	.441	.514	.020
	selfe	Sphericity Assumed	.299	1	.299	5.708	.026	.206
		Greenhouse-Geisser	.299	1.000	.299	5.708	.026	.206
		Huynh-Feldt	.299	1.000	.299	5.708	.026	.206
		Lower-bound	.299	1.000	.299	5.708	.026	.206
Error(time)	res	Sphericity Assumed	7.421	22	.337			
		Greenhouse-Geisser	7.421	22.000	.337			
		Huynh-Feldt	7.421	22.000	.337			
		Lower-bound	7.421	22.000	.337			
	selfe	Sphericity Assumed	1.154	22	.052			
		Greenhouse-Geisser	1.154	22.000	.052			
		Huynh-Feldt	1.154	22.000	.052			
		Lower-bound	1.154	22.000	.052			

2 x 3 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	res	Sphericity Assumed	.862	2	.431	1.938	.156	.081

		Greenhouse-Geisser	.862	1.442	.598	1.938	.170	.081
		Huynh-Feldt	.862	1.656	.520	1.938	.165	.081
		Lower-bound	.862	1.000	.862	1.938	.178	.081
	selfe	Sphericity Assumed	.024	2	.012	.215	.807	.010
		Greenhouse-Geisser	.024	1.961	.012	.215	.803	.010
		Huynh-Feldt	.024	2.000	.012	.215	.807	.010
		Lower-bound	.024	1.000	.024	.215	.647	.010
time * Group	res	Sphericity Assumed	1.445	2	.723	3.250	.048	.129
		Greenhouse-Geisser	1.445	1.442	1.002	3.250	.067	.129
		Huynh-Feldt	1.445	1.656	.873	3.250	.059	.129
		Lower-bound	1.445	1.000	1.445	3.250	.085	.129
	selfe	Sphericity Assumed	.047	2	.024	.420	.660	.019
		Greenhouse-Geisser	.047	1.961	.024	.420	.656	.019
		Huynh-Feldt	.047	2.000	.024	.420	.660	.019
		Lower-bound	.047	1.000	.047	.420	.524	.019
time * Condition	res	Sphericity Assumed	.644	2	.322	1.448	.246	.062
		Greenhouse-Geisser	.644	1.442	.447	1.448	.247	.062
		Huynh-Feldt	.644	1.656	.389	1.448	.247	.062
		Lower-bound	.644	1.000	.644	1.448	.242	.062
	selfe	Sphericity Assumed	.306	2	.153	2.703	.078	.109
		Greenhouse-Geisser	.306	1.961	.156	2.703	.079	.109

		Huynh-Feldt	.306	2.000	.153	2.703	.078	.109
		Lower-bound	.306	1.000	.306	2.703	.114	.109
Error(time)	res	Sphericity Assumed	9.783	44	.222			
		Greenhouse-Geisser	9.783	31.722	.308			
		Huynh-Feldt	9.783	36.436	.268			
		Lower-bound	9.783	22.000	.445			
	selfe	Sphericity Assumed	2.487	44	.057			
		Greenhouse-Geisser	2.487	43.137	.058			
		Huynh-Feldt	2.487	44.000	.057			
		Lower-bound	2.487	22.000	.113			

Post-hoc comparisons

Pairwise Comparisons

Measure	Condition	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
self	SemA	1	2	-.336*	.098	.002	-.538	-.133
		2	1	.336*	.098	.002	.133	.538
	SemB	1	2	-.024	.087	.783	-.204	.155
		2	1	.024	.087	.783	-.155	.204
res	SemA	1	2	-.331	.248	.195	-.845	.183
		2	1	.331	.248	.195	-.183	.845
	SemB	1	2	-.111	.220	.617	-.567	.344
		2	1	.111	.220	.617	-.344	.567

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 1.5: Semester B t-tests and ANOVAs for mindfulness and strengths use

Paired Samples Test

Condition			Paired Differences					t	df	Sig. (2-tailed)
			Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
SemA	Pair 1	M3 - M4	.05286	.49066	.14794	-.27677	.38249	.357	10	.728
	Pair 2	SU3 - SU4	-.06042	.49838	.15027	-.39524	.27440	-.402	10	.696
	Pair 3	SE3 - SE4	-.03636	.34720	.10468	-.26961	.19689	-.347	10	.736
SemB	Pair 1	M3 - M4	-.51625	.71992	.25453	-1.11812	.08562	-2.028	7	.082
	Pair 2	SU3 - SU4	-.04500	1.92192	.67950	-1.65177	1.56177	-.066	7	.949
	Pair 3	SE3 - SE4	-.26250	.19955	.07055	-.42933	-.09567	-3.721	7	.007

Univariate Tests

Condition	Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
SemA	time	mind	Sphericity Assumed	.457	2	.228	1.895	.176	.159	3.790	.347
			Greenhouse-Geisser	.457	1.665	.274	1.895	.185	.159	3.156	.312
			Huynh-Feldt	.457	1.958	.233	1.895	.177	.159	3.710	.342
			Lower-bound	.457	1.000	.457	1.895	.199	.159	1.895	.238

		stre	Sphericity Assumed	.330	2	.165	1.799	.191	.152	3.597	.331
			Greenhouse-Geisser	.330	1.573	.210	1.799	.201	.152	2.828	.289
			Huynh-Feldt	.330	1.815	.182	1.799	.195	.152	3.265	.313
			Lower-bound	.330	1.000	.330	1.799	.210	.152	1.799	.229
	Error(time)	mind	Sphericity Assumed	2.412	20	.121					
			Greenhouse-Geisser	2.412	16.655	.145					
			Huynh-Feldt	2.412	19.581	.123					
			Lower-bound	2.412	10.000	.241					
		stre	Sphericity Assumed	1.836	20	.092					
			Greenhouse-Geisser	1.836	15.726	.117					
			Huynh-Feldt	1.836	18.153	.101					
			Lower-bound	1.836	10.000	.184					
SemB	time	mind	Sphericity Assumed	1.173	2	.587	2.916	.087	.294	5.832	.478
			Greenhouse-Geisser	1.173	1.773	.662	2.916	.096	.294	5.169	.444
			Huynh-Feldt	1.173	2.000	.587	2.916	.087	.294	5.832	.478
			Lower-bound	1.173	1.000	1.173	2.916	.131	.294	2.916	.315
		stre	Sphericity Assumed	2.502	2	1.251	.838	.453	.107	1.677	.165
			Greenhouse-Geisser	2.502	1.044	2.396	.838	.394	.107	.875	.127
			Huynh-Feldt	2.502	1.067	2.345	.838	.396	.107	.894	.128
			Lower-bound	2.502	1.000	2.502	.838	.390	.107	.838	.125
	Error(time)	mind	Sphericity Assumed	2.817	14	.201					

		Greenhouse-Geisser	2.817	12.408	.227					
		Huynh-Feldt	2.817	14.000	.201					
		Lower-bound	2.817	7.000	.402					
	stre	Sphericity Assumed	20.888	14	1.492					
		Greenhouse-Geisser	20.888	7.309	2.858					
		Huynh-Feldt	20.888	7.467	2.797					
		Lower-bound	20.888	7.000	2.984					

a. Computed using alpha = .05

Appendix 1.6: Semester B t-tests and ANOVAs for resilience and self-efficacy

Paired Samples Test

			Paired Differences							
						95% Confidence Interval of the Difference				
Condition			Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
SemA	Pair 1	SE3 - SE4	-.03636	.34720	.10468	-.26961	.19689	-.347	10	.736
	Pair 2	SE4 - SE5	-.00909	.31766	.09578	-.22250	.20432	-.095	10	.926
	Pair 3	BR3 - BR4	.13636	.44634	.13458	-.16349	.43622	1.013	10	.335
	Pair 4	BR4 - BR5	-.04545	.58611	.17672	-.43921	.34830	-.257	10	.802
SemB	Pair 1	SE3 - SE4	-.26250	.19955	.07055	-.42933	-.09567	-3.721	7	.007
	Pair 2	SE4 - SE5	.03750	.21998	.07778	-.14641	.22141	.482	7	.644
	Pair 3	BR3 - BR4	-.52042	.55220	.19523	-.98207	-.05876	-2.666	7	.032

Pair 4	BR4 - BR5	.10375	.30799	.10889	-.15373	.36123	.953	7	.372

Univariate Tests

Condition	Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
SemA	time	self	Sphericity Assumed	.013	2	.006	.130	.879	.013	.260	.067
			Greenhouse-Geisser	.013	1.852	.007	.130	.864	.013	.240	.067
			Huynh-Feldt	.013	2.000	.006	.130	.879	.013	.260	.067
			Lower-bound	.013	1.000	.013	.130	.726	.013	.130	.062
		res	Sphericity Assumed	.106	2	.053	.389	.683	.037	.778	.104
			Greenhouse-Geisser	.106	1.829	.058	.389	.665	.037	.712	.102
			Huynh-Feldt	.106	2.000	.053	.389	.683	.037	.778	.104
			Lower-bound	.106	1.000	.106	.389	.547	.037	.389	.087
	Error(time)	self	Sphericity Assumed	.981	20	.049					
			Greenhouse-Geisser	.981	18.517	.053					
			Huynh-Feldt	.981	20.000	.049					
			Lower-bound	.981	10.000	.098					
		res	Sphericity Assumed	2.726	20	.136					
			Greenhouse-Geisser	2.726	18.290	.149					
			Huynh-Feldt	2.726	20.000	.136					
			Lower-bound	2.726	10.000	.273					

SemB	time	self	Sphericity Assumed	.322	2	.161	5.980	.013	.461	11.960	.798
			Greenhouse-Geisser	.322	1.753	.184	5.980	.018	.461	10.481	.752
			Huynh-Feldt	.322	2.000	.161	5.980	.013	.461	11.960	.798
			Lower-bound	.322	1.000	.322	5.980	.044	.461	5.980	.558
		res	Sphericity Assumed	1.214	2	.607	4.193	.037	.375	8.386	.638
			Greenhouse-Geisser	1.214	1.283	.946	4.193	.064	.375	5.380	.493
			Huynh-Feldt	1.214	1.446	.840	4.193	.057	.375	6.061	.529
			Lower-bound	1.214	1.000	1.214	4.193	.080	.375	4.193	.424
	Error(time)	self	Sphericity Assumed	.377	14	.027					
			Greenhouse-Geisser	.377	12.269	.031					
			Huynh-Feldt	.377	14.000	.027					
			Lower-bound	.377	7.000	.054					
		res	Sphericity Assumed	2.027	14	.145					
			Greenhouse-Geisser	2.027	8.981	.226					
			Huynh-Feldt	2.027	10.119	.200					
			Lower-bound	2.027	7.000	.290					

a. Computed using alpha = .05

Appendix 1.7: Semester B t-tests and ANOVAs for wellbeing, depression, anxiety and stress

Paired Samples Test

Condition	Paired Differences	t	df

						95% Confidence Interval of the Difference				
			Mean	Std. Deviation	Std. Error Mean	Lower	Upper			Sig. (2-tailed)
SemA	Pair 1	OWB3 - OWB4	-.47977	.69563	.20974	-.94711	-.01244	-2.287	10	.045
	Pair 2	OWB4 - OWB5	.00727	.42779	.12898	-.28012	.29466	.056	10	.956
	Pair 3	DEP3 - DEP4	-.45000	1.53569	.48563	-1.54856	.64856	-.927	9	.378
	Pair 4	DEP4 - DEP5	-.45455	1.23399	.37206	-1.28355	.37446	-1.222	10	.250
	Pair 5	ANX3 - ANX4	.63636	1.09752	.33091	-.10096	1.37369	1.923	10	.083
	Pair 6	ANX4 - ANX5	.09091	.66401	.20021	-.35518	.53700	.454	10	.659
	Pair 7	STR3 - STR4	-.31818	1.90096	.57316	-1.59526	.95890	-.555	10	.591
	Pair 8	STR4 - STR5	-.65000	1.39543	.44127	-1.64823	.34823	-1.473	9	.175
SemB	Pair 1	OWB3 - OWB4	-.44333	.97530	.34482	-1.25871	.37204	-1.286	7	.239
	Pair 2	OWB4 - OWB5	.14250	.38403	.13577	-.17856	.46356	1.050	7	.329
	Pair 3	DEP3 - DEP4	1.31250	2.96332	1.04769	-1.16490	3.78990	1.253	7	.251
	Pair 4	DEP4 - DEP5	-1.37500	2.62882	.92943	-3.57275	.82275	-1.479	7	.183
	Pair 5	ANX3 - ANX4	1.12500	1.94110	.68628	-.49780	2.74780	1.639	7	.145
	Pair 6	ANX4 - ANX5	-.62500	1.57548	.55702	-1.94214	.69214	-1.122	7	.299
	Pair 7	STR3 - STR4	1.62500	2.31069	.81695	-.30678	3.55678	1.989	7	.087

Pair 8	STR4 - STR5	-.75000	1.94569	.68791	-2.37664	.87664	-1.090	7	.312

Univariate Tests

Condition	Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
SemA	time	well	Sphericity Assumed	1.684	2	.842	4.297	.032	.349	8.593	.662
			Greenhouse-Geisser	1.684	1.552	1.085	4.297	.046	.349	6.670	.576
			Huynh-Feldt	1.684	1.857	.907	4.297	.036	.349	7.978	.636
			Lower-bound	1.684	1.000	1.684	4.297	.072	.349	4.297	.446
		stre	Sphericity Assumed	7.389	2	3.694	2.800	.091	.259	5.600	.472
			Greenhouse-Geisser	7.389	1.929	3.831	2.800	.093	.259	5.401	.462
			Huynh-Feldt	7.389	2.000	3.694	2.800	.091	.259	5.600	.472
			Lower-bound	7.389	1.000	7.389	2.800	.133	.259	2.800	.314
		depr	Sphericity Assumed	6.130	2	3.065	2.995	.079	.272	5.991	.500
			Greenhouse-Geisser	6.130	1.946	3.149	2.995	.080	.272	5.830	.492
			Huynh-Feldt	6.130	2.000	3.065	2.995	.079	.272	5.991	.500
			Lower-bound	6.130	1.000	6.130	2.995	.122	.272	2.995	.332
		anxi	Sphericity Assumed	1.500	2	.750	2.182	.145	.214	4.364	.380
			Greenhouse-Geisser	1.500	1.624	.924	2.182	.158	.214	3.544	.336
			Huynh-Feldt	1.500	1.979	.758	2.182	.146	.214	4.318	.378
			Lower-bound	1.500	1.000	1.500	2.182	.178	.214	2.182	.256

	Error(time)	well	Sphericity Assumed	3.135	16	.196					
			Greenhouse-Geisser	3.135	12.419	.252					
			Huynh-Feldt	3.135	14.854	.211					
			Lower-bound	3.135	8.000	.392					
		stre	Sphericity Assumed	21.111	16	1.319					
			Greenhouse-Geisser	21.111	15.430	1.368					
			Huynh-Feldt	21.111	16.000	1.319					
			Lower-bound	21.111	8.000	2.639					
		depr	Sphericity Assumed	16.370	16	1.023					
			Greenhouse-Geisser	16.370	15.570	1.051					
			Huynh-Feldt	16.370	16.000	1.023					
			Lower-bound	16.370	8.000	2.046					
		anxi	Sphericity Assumed	5.500	16	.344					
			Greenhouse-Geisser	5.500	12.993	.423					
			Huynh-Feldt	5.500	15.832	.347					
			Lower-bound	5.500	8.000	.687					
SemB	time	well	Sphericity Assumed	.820	2	.410	1.297	.304	.156	2.595	.235
			Greenhouse-Geisser	.820	1.244	.659	1.297	.298	.156	1.614	.185
			Huynh-Feldt	.820	1.382	.593	1.297	.300	.156	1.792	.195
			Lower-bound	.820	1.000	.820	1.297	.292	.156	1.297	.167
		stre	Sphericity Assumed	10.583	2	5.292	2.577	.111	.269	5.154	.430

		Greenhouse-Geisser	10.583	1.823	5.804	2.577	.118	.269	4.699	.406
		Huynh-Feldt	10.583	2.000	5.292	2.577	.111	.269	5.154	.430
		Lower-bound	10.583	1.000	10.583	2.577	.152	.269	2.577	.285
	depr	Sphericity Assumed	9.646	2	4.823	1.319	.299	.159	2.638	.238
		Greenhouse-Geisser	9.646	1.917	5.031	1.319	.299	.159	2.529	.233
		Huynh-Feldt	9.646	2.000	4.823	1.319	.299	.159	2.638	.238
		Lower-bound	9.646	1.000	9.646	1.319	.288	.159	1.319	.169
	anxi	Sphericity Assumed	5.083	2	2.542	1.675	.223	.193	3.349	.293
		Greenhouse-Geisser	5.083	1.881	2.702	1.675	.225	.193	3.150	.283
		Huynh-Feldt	5.083	2.000	2.542	1.675	.223	.193	3.349	.293
		Lower-bound	5.083	1.000	5.083	1.675	.237	.193	1.675	.202
Error(time)	well	Sphericity Assumed	4.422	14	.316					
		Greenhouse-Geisser	4.422	8.709	.508					
		Huynh-Feldt	4.422	9.672	.457					
		Lower-bound	4.422	7.000	.632					
	stre	Sphericity Assumed	28.750	14	2.054					
		Greenhouse-Geisser	28.750	12.764	2.252					
		Huynh-Feldt	28.750	14.000	2.054					
		Lower-bound	28.750	7.000	4.107					
	depr	Sphericity Assumed	51.188	14	3.656					
		Greenhouse-Geisser	51.188	13.422	3.814					

		Huynh-Feldt	51.188	14.000	3.656					
		Lower-bound	51.188	7.000	7.313					
	anxi	Sphericity Assumed	21.250	14	1.518					
		Greenhouse-Geisser	21.250	13.167	1.614					
		Huynh-Feldt	21.250	14.000	1.518					
		Lower-bound	21.250	7.000	3.036					

a. Computed using alpha = .05

Appendix 2.1: Baseline T-tests PGR CHAPTER

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
M	Equal variances assumed	.618	.437	-2.683	33	.011	-.52581	.19597	-.92452	-.12711
	Equal variances not assumed			-2.638	29.133	.013	-.52581	.19930	-.93334	-.11829
SU	Equal variances assumed	.728	.400	-2.191	33	.036	-.64468	.29425	-1.24333	-.04604
	Equal variances not assumed			-2.230	32.977	.033	-.64468	.28907	-1.23281	-.05656
SE	Equal variances assumed	.016	.900	-1.414	33	.167	-.23224	.16419	-.56628	.10181
	Equal variances not assumed			-1.426	32.771	.163	-.23224	.16284	-.56363	.09915
BR	Equal variances assumed	3.879	.057	-.765	33	.449	-.21436	.28003	-.78410	.35537

	Equal variances not assumed			-.747	27.382	.462	-.21436	.28713	-.80313	.37440
STR	Equal variances assumed	.465	.500	.234	33	.817	.14638	.62665	-1.12855	1.42131
	Equal variances not assumed			.238	32.929	.813	.14638	.61458	-1.10410	1.39687
DEP	Equal variances assumed	4.352	.045	.605	33	.550	.50658	.83777	-1.19787	2.21103
	Equal variances not assumed			.630	30.148	.533	.50658	.80394	-1.13494	2.14810
ANX	Equal variances assumed	.693	.411	.233	33	.818	.11020	.47388	-.85392	1.07431
	Equal variances not assumed			.241	31.411	.811	.11020	.45784	-.82309	1.04348
OWB	Equal variances assumed	.000	.991	1.413	8	.195	1.08750	.76979	-.68764	2.86264
	Equal variances not assumed			1.413	7.992	.195	1.08750	.76979	-.68795	2.86295
WE	Equal variances assumed	.500	.484	-2.273	33	.030	-.67028	.29486	-1.27017	-.07039
	Equal variances not assumed			-2.239	29.493	.033	-.67028	.29933	-1.28204	-.05852

Appendix 2.2 MANOVAs for mindfulness and strengths use

2 x 2 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	1.184	1	1.184	3.559	.070	.113
		Greenhouse-Geisser	1.184	1.000	1.184	3.559	.070	.113
		Huynh-Feldt	1.184	1.000	1.184	3.559	.070	.113
		Lower-bound	1.184	1.000	1.184	3.559	.070	.113

	stren	Sphericity Assumed	2.225	1	2.225	5.212	.030	.157
		Greenhouse-Geisser	2.225	1.000	2.225	5.212	.030	.157
		Huynh-Feldt	2.225	1.000	2.225	5.212	.030	.157
		Lower-bound	2.225	1.000	2.225	5.212	.030	.157
time * Condition	mind	Sphericity Assumed	2.273	1	2.273	6.829	.014	.196
		Greenhouse-Geisser	2.273	1.000	2.273	6.829	.014	.196
		Huynh-Feldt	2.273	1.000	2.273	6.829	.014	.196
		Lower-bound	2.273	1.000	2.273	6.829	.014	.196
	stren	Sphericity Assumed	5.362	1	5.362	12.563	.001	.310
		Greenhouse-Geisser	5.362	1.000	5.362	12.563	.001	.310
		Huynh-Feldt	5.362	1.000	5.362	12.563	.001	.310
		Lower-bound	5.362	1.000	5.362	12.563	.001	.310
Error(time)	mind	Sphericity Assumed	9.319	28	.333			
		Greenhouse-Geisser	9.319	28.000	.333			
		Huynh-Feldt	9.319	28.000	.333			
		Lower-bound	9.319	28.000	.333			
	stren	Sphericity Assumed	11.952	28	.427			
		Greenhouse-Geisser	11.952	28.000	.427			
		Huynh-Feldt	11.952	28.000	.427			
		Lower-bound	11.952	28.000	.427			

2 x 3 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	.793	2	.396	1.989	.149	.087
		Greenhouse-Geisser	.793	1.339	.592	1.989	.166	.087
		Huynh-Feldt	.793	1.465	.541	1.989	.163	.087

		Lower-bound	.793	1.000	.793	1.989	.173	.087
	stren	Sphericity Assumed	2.360	2	1.180	2.146	.130	.093
		Greenhouse-Geisser	2.360	1.732	1.363	2.146	.137	.093
		Huynh-Feldt	2.360	1.964	1.202	2.146	.131	.093
		Lower-bound	2.360	1.000	2.360	2.146	.158	.093
time * Condition	mind	Sphericity Assumed	1.415	2	.708	3.553	.038	.145
		Greenhouse-Geisser	1.415	1.339	1.057	3.553	.059	.145
		Huynh-Feldt	1.415	1.465	.966	3.553	.054	.145
		Lower-bound	1.415	1.000	1.415	3.553	.073	.145
	stren	Sphericity Assumed	3.113	2	1.557	2.830	.070	.119
		Greenhouse-Geisser	3.113	1.732	1.797	2.830	.079	.119
		Huynh-Feldt	3.113	1.964	1.585	2.830	.071	.119
		Lower-bound	3.113	1.000	3.113	2.830	.107	.119
Error(time)	mind	Sphericity Assumed	8.366	42	.199			
		Greenhouse-Geisser	8.366	28.117	.298			
		Huynh-Feldt	8.366	30.756	.272			
		Lower-bound	8.366	21.000	.398			
	stren	Sphericity Assumed	23.102	42	.550			
		Greenhouse-Geisser	23.102	36.378	.635			
		Huynh-Feldt	23.102	41.244	.560			
		Lower-bound	23.102	21.000	1.100			

Post-hoc Comparisons

Pairwise Comparisons

							95% Confidence Interval for Difference[b]	
Measure	Condition	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
mind	MBSP	1	2	-.619*	.170	.005	-1.062	-.175

			3	-.505*	.194	.050	-1.009	-.001
		2	1	.619*	.170	.005	.175	1.062
			3	.114	.090	.661	-.121	.348
		3	1	.505*	.194	.050	.001	1.009
			2	-.114	.090	.661	-.348	.121
	Control	1	2	.126	.258	1.000	-.544	.796
			3	.009	.293	1.000	-.753	.771
		2	1	-.126	.258	1.000	-.796	.544
			3	-.117	.136	1.000	-.471	.237
		3	1	-.009	.293	1.000	-.771	.753
			2	.117	.136	1.000	-.237	.471
stren	MBSP	1	2	-.951*	.259	.004	-1.625	-.278
			3	-.651	.305	.134	-1.444	.142
		2	1	.951*	.259	.004	.278	1.625
			3	.301	.215	.531	-.259	.860
		3	1	.651	.305	.134	-.142	1.444
			2	-.301	.215	.531	-.860	.259
	Control	1	2	.164	.391	1.000	-.854	1.182
			3	-.255	.461	1.000	-1.454	.945
		2	1	-.164	.391	1.000	-1.182	.854
			3	-.419	.325	.636	-1.265	.427
		3	1	.255	.461	1.000	-.945	1.454
			2	.419	.325	.636	-.427	1.265

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 2.3 MANOVAs for self-efficacy and resilience

2 x 2 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	self	Sphericity Assumed	.591	1	.591	4.128	.052	.128
		Greenhouse-Geisser	.591	1.000	.591	4.128	.052	.128
		Huynh-Feldt	.591	1.000	.591	4.128	.052	.128
		Lower-bound	.591	1.000	.591	4.128	.052	.128
	res	Sphericity Assumed	.033	1	.033	.097	.757	.003
		Greenhouse-Geisser	.033	1.000	.033	.097	.757	.003
		Huynh-Feldt	.033	1.000	.033	.097	.757	.003
		Lower-bound	.033	1.000	.033	.097	.757	.003
time * Condition	self	Sphericity Assumed	.735	1	.735	5.134	.031	.155
		Greenhouse-Geisser	.735	1.000	.735	5.134	.031	.155
		Huynh-Feldt	.735	1.000	.735	5.134	.031	.155
		Lower-bound	.735	1.000	.735	5.134	.031	.155
	res	Sphericity Assumed	1.104	1	1.104	3.232	.083	.103
		Greenhouse-Geisser	1.104	1.000	1.104	3.232	.083	.103
		Huynh-Feldt	1.104	1.000	1.104	3.232	.083	.103
		Lower-bound	1.104	1.000	1.104	3.232	.083	.103
Error(time)	self	Sphericity Assumed	4.007	28	.143			

		Greenhouse-Geisser	4.007	28.000	.143			
		Huynh-Feldt	4.007	28.000	.143			
		Lower-bound	4.007	28.000	.143			
	res	Sphericity Assumed	9.568	28	.342			
		Greenhouse-Geisser	9.568	28.000	.342			
		Huynh-Feldt	9.568	28.000	.342			
		Lower-bound	9.568	28.000	.342			

2 x 3 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	self	Sphericity Assumed	1.117	2	.558	5.105	.010	.196
		Greenhouse-Geisser	1.117	1.525	.732	5.105	.018	.196
		Huynh-Feldt	1.117	1.698	.658	5.105	.015	.196
		Lower-bound	1.117	1.000	1.117	5.105	.035	.196
	res	Sphericity Assumed	.227	2	.113	.526	.595	.024
		Greenhouse-Geisser	.227	1.978	.115	.526	.593	.024
		Huynh-Feldt	.227	2.000	.113	.526	.595	.024
		Lower-bound	.227	1.000	.227	.526	.476	.024
time * Condition	self	Sphericity Assumed	.056	2	.028	.256	.775	.012
		Greenhouse-Geisser	.056	1.525	.037	.256	.715	.012
		Huynh-Feldt	.056	1.698	.033	.256	.739	.012
		Lower-bound	.056	1.000	.056	.256	.618	.012

	res	Sphericity Assumed	.386	2	.193	.896	.416	.041
		Greenhouse-Geisser	.386	1.978	.195	.896	.415	.041
		Huynh-Feldt	.386	2.000	.193	.896	.416	.041
		Lower-bound	.386	1.000	.386	.896	.355	.041
Error(time)	self	Sphericity Assumed	4.594	42	.109			
		Greenhouse-Geisser	4.594	32.023	.143			
		Huynh-Feldt	4.594	35.663	.129			
		Lower-bound	4.594	21.000	.219			
	res	Sphericity Assumed	9.040	42	.215			
		Greenhouse-Geisser	9.040	41.541	.218			
		Huynh-Feldt	9.040	42.000	.215			
		Lower-bound	9.040	21.000	.430			

Post-hoc Comparisons

Pairwise Comparisons

Measure	Condition	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
self	MBSP	1	2	-.406*	.141	.026	-.772	-.040
			3	-.250	.121	.153	-.564	.064
		2	1	.406*	.141	.026	.040	.772
			3	.156	.082	.208	-.056	.368
		3	1	.250	.121	.153	-.064	.564
			2	-.156	.082	.208	-.368	.056
	Control	1	2	-.257	.213	.720	-.810	.296

			3	-.200	.183	.857	-.675	.275
		2	1	.257	.213	.720	-.296	.810
			3	.057	.123	1.000	-.264	.378
		3	1	.200	.183	.857	-.275	.675
			2	-.057	.123	1.000	-.378	.264
res	MBSP	1	2	-.230	.171	.584	-.676	.216
			3	-.115	.164	1.000	-.541	.311
		2	1	.230	.171	.584	-.216	.676
			3	.114	.157	1.000	-.293	.522
		3	1	.115	.164	1.000	-.311	.541
			2	-.114	.157	1.000	-.522	.293
	Control	1	2	.072	.259	1.000	-.602	.746
			3	-.190	.248	1.000	-.834	.454
		2	1	-.072	.259	1.000	-.746	.602
			3	-.261	.237	.845	-.877	.354
		3	1	.190	.248	1.000	-.454	.834
			2	.261	.237	.845	-.354	.877

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 2.4 ANOVA for work engagement

2 x 2 ANOVA

Tests of Within-Subjects Effects

Measure: worken

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared

time	Sphericity Assumed	.165	1	.165	.167	.686	.006
	Greenhouse-Geisser	.165	1.000	.165	.167	.686	.006
	Huynh-Feldt	.165	1.000	.165	.167	.686	.006
	Lower-bound	.165	1.000	.165	.167	.686	.006
time * Condition	Sphericity Assumed	.656	1	.656	.663	.422	.023
	Greenhouse-Geisser	.656	1.000	.656	.663	.422	.023
	Huynh-Feldt	.656	1.000	.656	.663	.422	.023
	Lower-bound	.656	1.000	.656	.663	.422	.023
Error(time)	Sphericity Assumed	27.688	28	.989			
	Greenhouse-Geisser	27.688	28.000	.989			
	Huynh-Feldt	27.688	28.000	.989			
	Lower-bound	27.688	28.000	.989			

2 x 3 ANOVA

Tests of Within-Subjects Effects

Measure: worken

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	.722	2	.361	.456	.637	.021
	Greenhouse-Geisser	.722	1.141	.633	.456	.531	.021
	Huynh-Feldt	.722	1.220	.591	.456	.544	.021
	Lower-bound	.722	1.000	.722	.456	.507	.021

time * Condition	Sphericity Assumed	2.271	2	1.136	1.435	.249	.064
	Greenhouse-Geisser	2.271	1.141	1.991	1.435	.247	.064
	Huynh-Feldt	2.271	1.220	1.861	1.435	.248	.064
	Lower-bound	2.271	1.000	2.271	1.435	.244	.064
Error(time)	Sphericity Assumed	33.228	42	.791			
	Greenhouse-Geisser	33.228	23.956	1.387			
	Huynh-Feldt	33.228	25.630	1.296			
	Lower-bound	33.228	21.000	1.582			

Appendix 2.5 MANOVAs for Depression, Anxiety and Stress

2 x 2 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	stre	Sphericity Assumed	11.533	1	11.533	3.484	.073	.114
		Greenhouse-Geisser	11.533	1.000	11.533	3.484	.073	.114
		Huynh-Feldt	11.533	1.000	11.533	3.484	.073	.114
		Lower-bound	11.533	1.000	11.533	3.484	.073	.114
	anxi	Sphericity Assumed	.862	1	.862	.595	.447	.022
		Greenhouse-Geisser	.862	1.000	.862	.595	.447	.022
		Huynh-Feldt	.862	1.000	.862	.595	.447	.022
		Lower-bound	.862	1.000	.862	.595	.447	.022
	depr	Sphericity Assumed	.001	1	.001	.000	.986	.000

		Greenhouse-Geisser	.001	1.000	.001	.000	.986	.000
		Huynh-Feldt	.001	1.000	.001	.000	.986	.000
		Lower-bound	.001	1.000	.001	.000	.986	.000
time * Condition	stre	Sphericity Assumed	.395	1	.395	.119	.733	.004
		Greenhouse-Geisser	.395	1.000	.395	.119	.733	.004
		Huynh-Feldt	.395	1.000	.395	.119	.733	.004
		Lower-bound	.395	1.000	.395	.119	.733	.004
	anxi	Sphericity Assumed	1.966	1	1.966	1.355	.255	.048
		Greenhouse-Geisser	1.966	1.000	1.966	1.355	.255	.048
		Huynh-Feldt	1.966	1.000	1.966	1.355	.255	.048
		Lower-bound	1.966	1.000	1.966	1.355	.255	.048
	depr	Sphericity Assumed	1.087	1	1.087	.650	.427	.024
		Greenhouse-Geisser	1.087	1.000	1.087	.650	.427	.024
		Huynh-Feldt	1.087	1.000	1.087	.650	.427	.024
		Lower-bound	1.087	1.000	1.087	.650	.427	.024
Error(time)	stre	Sphericity Assumed	89.373	27	3.310			
		Greenhouse-Geisser	89.373	27.000	3.310			
		Huynh-Feldt	89.373	27.000	3.310			
		Lower-bound	89.373	27.000	3.310			
	anxi	Sphericity Assumed	39.163	27	1.450			
		Greenhouse-Geisser	39.163	27.000	1.450			
		Huynh-Feldt	39.163	27.000	1.450			
		Lower-bound	39.163	27.000	1.450			
	depr	Sphericity Assumed	45.146	27	1.672			

		Greenhouse-Geisser	45.146	27.000	1.672		
		Huynh-Feldt	45.146	27.000	1.672		
		Lower-bound	45.146	27.000	1.672		

2 x 3 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	stre	Sphericity Assumed	3.811	2	1.906	.740	.484	.039
		Greenhouse-Geisser	3.811	1.760	2.166	.740	.469	.039
		Huynh-Feldt	3.811	2.000	1.906	.740	.484	.039
		Lower-bound	3.811	1.000	3.811	.740	.401	.039
	anxi	Sphericity Assumed	4.253	2	2.126	3.055	.059	.145
		Greenhouse-Geisser	4.253	1.938	2.194	3.055	.061	.145
		Huynh-Feldt	4.253	2.000	2.126	3.055	.059	.145
		Lower-bound	4.253	1.000	4.253	3.055	.098	.145
	depr	Sphericity Assumed	.033	2	.017	.008	.992	.000
		Greenhouse-Geisser	.033	1.590	.021	.008	.980	.000
		Huynh-Feldt	.033	1.817	.018	.008	.988	.000
		Lower-bound	.033	1.000	.033	.008	.929	.000
time * Condition	stre	Sphericity Assumed	2.011	2	1.006	.390	.680	.021
		Greenhouse-Geisser	2.011	1.760	1.143	.390	.654	.021

		Huynh-Feldt	2.011	2.000	1.006	.390	.680	.021
		Lower-bound	2.011	1.000	2.011	.390	.540	.021
	anxi	Sphericity Assumed	3.203	2	1.601	2.301	.115	.113
		Greenhouse-Geisser	3.203	1.938	1.652	2.301	.117	.113
		Huynh-Feldt	3.203	2.000	1.601	2.301	.115	.113
		Lower-bound	3.203	1.000	3.203	2.301	.147	.113
	depr	Sphericity Assumed	.433	2	.217	.107	.898	.006
		Greenhouse-Geisser	.433	1.590	.272	.107	.855	.006
		Huynh-Feldt	.433	1.817	.239	.107	.881	.006
		Lower-bound	.433	1.000	.433	.107	.747	.006
Error(time)	stre	Sphericity Assumed	92.756	36	2.577			
		Greenhouse-Geisser	92.756	31.676	2.928			
		Huynh-Feldt	92.756	36.000	2.577			
		Lower-bound	92.756	18.000	5.153			
	anxi	Sphericity Assumed	25.056	36	.696			
		Greenhouse-Geisser	25.056	34.892	.718			
		Huynh-Feldt	25.056	36.000	.696			
		Lower-bound	25.056	18.000	1.392			
	depr	Sphericity Assumed	72.600	36	2.017			
		Greenhouse-Geisser	72.600	28.629	2.536			
		Huynh-Feldt	72.600	32.699	2.220			

Lower-bound	72.600	18.000	4.033		

Post-hoc Comparisons

Pairwise Comparisons

Measure	Condition	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a] Lower Bound	Upper Bound
stre	MBSP	1	2	1.100	.633	.298	-.571	2.771
			3	.767	.642	.745	-.929	2.462
		2	1	-1.100	.633	.298	-2.771	.571
			3	-.333	.466	1.000	-1.562	.895
		3	1	-.767	.642	.745	-2.462	.929
			2	.333	.466	1.000	-.895	1.562
	Control	1	2	.100	1.097	1.000	-2.795	2.995
			3	.500	1.113	1.000	-2.437	3.437
		2	1	-.100	1.097	1.000	-2.995	2.795
			3	.400	.806	1.000	-1.728	2.528
		3	1	-.500	1.113	1.000	-3.437	2.437
			2	-.400	.806	1.000	-2.528	1.728
anxi	MBSP	1	2	.067	.315	1.000	-.764	.897
			3	.167	.276	1.000	-.563	.896
		2	1	-.067	.315	1.000	-.897	.764
			3	.100	.321	1.000	-.747	.947
		3	1	-.167	.276	1.000	-.896	.563
			2	-.100	.321	1.000	-.947	.747
	Control	1	2	-.700	.545	.646	-2.138	.738
			3	.700	.479	.483	-.564	1.964
		2	1	.700	.545	.646	-.738	2.138
			3	1.400	.556	.064	-.067	2.867

		3	1	-.700	.479	.483	-1.964	.564
			2	-1.400	.556	.064	-2.867	.067
depr	MBSP	1	2	.267	.450	1.000	-.922	1.455
			3	.033	.637	1.000	-1.647	1.714
		2	1	-.267	.450	1.000	-1.455	.922
			3	-.233	.446	1.000	-1.410	.943
		3	1	-.033	.637	1.000	-1.714	1.647
			2	.233	.446	1.000	-.943	1.410
	Control	1	2	-.200	.780	1.000	-2.258	1.858
			3	-.100	1.103	1.000	-3.010	2.810
		2	1	.200	.780	1.000	-1.858	2.258
			3	.100	.772	1.000	-1.937	2.137
		3	1	.100	1.103	1.000	-2.810	3.010
			2	-.100	.772	1.000	-2.137	1.937

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
M	Equal variances assumed	.618	.437	-2.683	33	.011	-.52581	.19597	-.92452	-.12711
	Equal variances not assumed			-2.638	29.133	.013	-.52581	.19930	-.93334	-.11829

SU	Equal variances assumed	.728	.400	-2.191	33	.036	-.64468	.29425	-1.24333	-.04604
	Equal variances not assumed			-2.230	32.977	.033	-.64468	.28907	-1.23281	-.05656
SE	Equal variances assumed	.016	.900	-1.414	33	.167	-.23224	.16419	-.56628	.10181
	Equal variances not assumed			-1.426	32.771	.163	-.23224	.16284	-.56363	.09915
BR	Equal variances assumed	3.879	.057	-.765	33	.449	-.21436	.28003	-.78410	.35537
	Equal variances not assumed			-.747	27.382	.462	-.21436	.28713	-.80313	.37440
STR	Equal variances assumed	.465	.500	.234	33	.817	.14638	.62665	-1.12855	1.42131
	Equal variances not assumed			.238	32.929	.813	.14638	.61458	-1.10410	1.39687
DEP	Equal variances assumed	4.352	.045	.605	33	.550	.50658	.83777	-1.19787	2.21103
	Equal variances not assumed			.630	30.148	.533	.50658	.80394	-1.13494	2.14810
ANX	Equal variances assumed	.693	.411	.233	33	.818	.11020	.47388	-.85392	1.07431
	Equal variances not assumed			.241	31.411	.811	.11020	.45784	-.82309	1.04348
OWB	Equal variances assumed	.000	.991	1.413	8	.195	1.08750	.76979	-.68764	2.86264
	Equal variances not assumed			1.413	7.992	.195	1.08750	.76979	-.68795	2.86295
WE	Equal variances assumed	.500	.484	-2.273	33	.030	-.67028	.29486	-1.27017	-.07039
	Equal variances not assumed			-2.239	29.493	.033	-.67028	.29933	-1.28204	-.05852

Appendix 2.6 Focus Group Guide

MBSP focus group guide.
Start by saying we're looking for their thoughts and opinions, there isn't a right or wrong answer and they are welcome, although not required to talk about personal experiences. Then ask everyone to introduce themselves and name their signature strength.

Experience of the programme

- How did you find the experience of MBSP?
- What was the most enjoyable part for you?
- What was your favourite part of a session?
- What did you make of the group format?

Maintaining your practice

- Which exercise do you use most regularly?
- Which tools did you use for the first few weeks after the programme finished which you have stopped using. Why?
- What gets in the way of you maintaining your practice?
- What resources would be appropriate for helping you maintain your practice?

Impact of MBSP on problem solving

- How has mindfulness specifically helped you face problems, either day-to-day or bigger life problems?
- How have your character strengths specifically helped you face problems, either day-to-day or bigger life problems?
- Do you think that MBSP teaches valuable tools for problem solving?

Impact of MBSP on wellbeing

- How has MBSP had an effect on your wellbeing?
- Which aspect of MBSP has been most beneficial to your wellbeing?
- What aspect of MSBP has had the strongest impact on your day-to-day life?
- What aspect of MBSP has had the strongest impact on one-off situations?
- What would you say is more important to learn from MBSP, mindfulness techniques or how to use your character strengths?

Impact of Peer Researcher

- How did you feel about the facilitator also being a PhD Student?
- How did you feel about the facilitator also being the researcher?

Closing Questions

- Do you have any other thoughts or views you'd like to share?

- What did you make of taking part in a focus group?

Appendix 3.1: Baseline t-tests

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
M	Equal variances assumed	1.632	.206	-1.632	71	.107	-.27841	.17054	-.61847	.06164
	Equal variances not assumed			-1.670	70.689	.099	-.27841	.16669	-.61081	.05398
SU	Equal variances assumed	.257	.613	-1.271	71	.208	-.26122	.20549	-.67095	.14852
	Equal variances not assumed			-1.299	70.558	.198	-.26122	.20115	-.66235	.13992
SE	Equal variances assumed	3.904	.052	-.643	71	.522	-.07315	.11380	-.30005	.15376
	Equal variances not assumed			-.669	70.627	.506	-.07315	.10941	-.29133	.14504
BR	Equal variances assumed	6.083	.016	-.743	71	.460	-.15536	.20908	-.57226	.26153
	Equal variances not assumed			-.781	69.139	.437	-.15536	.19892	-.55217	.24145
STR	Equal variances assumed	.415	.522	.643	71	.522	.35252	.54841	-.74099	1.44602
	Equal variances not assumed			.641	66.208	.523	.35252	.54959	-.74471	1.44974
DEP	Equal variances assumed	1.376	.245	-.624	69	.535	-.33089	.53016	-1.38853	.72674
	Equal variances not assumed			-.615	59.061	.541	-.33089	.53807	-1.40755	.74576

ANX	Equal variances assumed	.067	.796	1.449	71	.152	.76601	.52854	-.28788	1.81989
	Equal variances not assumed			1.460	68.397	.149	.76601	.52479	-.28108	1.81310
OWB	Equal variances assumed	.005	.944	-.139	71	.890	-.04449	.31953	-.68161	.59264
	Equal variances not assumed			-.139	66.658	.890	-.04449	.31966	-.68258	.59361
WE	Equal variances assumed	.045	.833	.948	71	.347	.18194	.19199	-.20087	.56476
	Equal variances not assumed			.953	68.091	.344	.18194	.19090	-.19899	.56287

Appendix 3.2: MANCOVAs for mindfulness and strengths use

2 x 2 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	mind	Sphericity Assumed	.158	1	.158	.908	.345	.016
		Greenhouse-Geisser	.158	1.000	.158	.908	.345	.016
		Huynh-Feldt	.158	1.000	.158	.908	.345	.016
		Lower-bound	.158	1.000	.158	.908	.345	.016
	stre	Sphericity Assumed	.004	1	.004	.019	.890	.000
		Greenhouse-Geisser	.004	1.000	.004	.019	.890	.000
		Huynh-Feldt	.004	1.000	.004	.019	.890	.000
		Lower-bound	.004	1.000	.004	.019	.890	.000
Time * Cohort	mind	Sphericity Assumed	.059	1	.059	.340	.562	.006

		Greenhouse-Geisser	.059	1.000	.059	.340	.562	.006
		Huynh-Feldt	.059	1.000	.059	.340	.562	.006
		Lower-bound	.059	1.000	.059	.340	.562	.006
	stre	Sphericity Assumed	1.243	1	1.243	5.492	.023	.091
		Greenhouse-Geisser	1.243	1.000	1.243	5.492	.023	.091
		Huynh-Feldt	1.243	1.000	1.243	5.492	.023	.091
		Lower-bound	1.243	1.000	1.243	5.492	.023	.091
Time * Condition	mind	Sphericity Assumed	5.398	1	5.398	30.922	.000	.360
		Greenhouse-Geisser	5.398	1.000	5.398	30.922	.000	.360
		Huynh-Feldt	5.398	1.000	5.398	30.922	.000	.360
		Lower-bound	5.398	1.000	5.398	30.922	.000	.360
	stre	Sphericity Assumed	12.037	1	12.037	53.175	.000	.492
		Greenhouse-Geisser	12.037	1.000	12.037	53.175	.000	.492
		Huynh-Feldt	12.037	1.000	12.037	53.175	.000	.492
		Lower-bound	12.037	1.000	12.037	53.175	.000	.492
Error(Time)	mind	Sphericity Assumed	9.601	55	.175			
		Greenhouse-Geisser	9.601	55.000	.175			
		Huynh-Feldt	9.601	55.000	.175			
		Lower-bound	9.601	55.000	.175			
	stre	Sphericity Assumed	12.450	55	.226			
		Greenhouse-Geisser	12.450	55.000	.226			
		Huynh-Feldt	12.450	55.000	.226			
		Lower-bound	12.450	55.000	.226			

2 x 3 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	mind	Sphericity Assumed	.297	2	.149	.949	.393	.028
		Greenhouse-Geisser	.297	1.955	.152	.949	.391	.028
		Huynh-Feldt	.297	2.000	.149	.949	.393	.028
		Lower-bound	.297	1.000	.297	.949	.337	.028
	stre	Sphericity Assumed	5.929	2	2.964	6.334	.003	.161
		Greenhouse-Geisser	5.929	1.480	4.006	6.334	.007	.161
		Huynh-Feldt	5.929	1.627	3.644	6.334	.006	.161
		Lower-bound	5.929	1.000	5.929	6.334	.017	.161
Time * Cohort	mind	Sphericity Assumed	.502	2	.251	1.601	.210	.046
		Greenhouse-Geisser	.502	1.955	.257	1.601	.210	.046
		Huynh-Feldt	.502	2.000	.251	1.601	.210	.046
		Lower-bound	.502	1.000	.502	1.601	.215	.046
	stre	Sphericity Assumed	7.435	2	3.718	7.944	.001	.194
		Greenhouse-Geisser	7.435	1.480	5.024	7.944	.003	.194
		Huynh-Feldt	7.435	1.627	4.570	7.944	.002	.194
		Lower-bound	7.435	1.000	7.435	7.944	.008	.194
Time * Condition	mind	Sphericity Assumed	5.700	2	2.850	18.185	.000	.355

		Greenhouse-Geisser	5.700	1.955	2.916	18.185	.000	.355
		Huynh-Feldt	5.700	2.000	2.850	18.185	.000	.355
		Lower-bound	5.700	1.000	5.700	18.185	.000	.355
	stre	Sphericity Assumed	9.647	2	4.824	10.308	.000	.238
		Greenhouse-Geisser	9.647	1.480	6.518	10.308	.001	.238
		Huynh-Feldt	9.647	1.627	5.929	10.308	.000	.238
		Lower-bound	9.647	1.000	9.647	10.308	.003	.238
Error(Time)	mind	Sphericity Assumed	10.344	66	.157			
		Greenhouse-Geisser	10.344	64.511	.160			
		Huynh-Feldt	10.344	66.000	.157			
		Lower-bound	10.344	33.000	.313			
	stre	Sphericity Assumed	30.886	66	.468			
		Greenhouse-Geisser	30.886	48.843	.632			
		Huynh-Feldt	30.886	53.692	.575			
		Lower-bound	30.886	33.000	.936			

Post-hoc Comparisons

Pairwise Comparisons

Measure	Are you taking part in the Mindfulness-Based Strengths Practice?	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
							Lower Bound	Upper Bound
mind	MBSP	1	2	-.845*	.111	.000	-1.126	-.565
			3	-.709*	.123	.000	-1.019	-.400

		2	1	.845*	.111	.000	.565	1.126
			3	.136	.109	.660	-.138	.410
		3	1	.709*	.123	.000	.400	1.019
			2	-.136	.109	.660	-.410	.138
	Control	1	2	.152	.157	1.000	-.245	.549
			3	.361	.173	.136	-.077	.798
		2	1	-.152	.157	1.000	-.549	.245
			3	.209	.154	.550	-.179	.597
		3	1	-.361	.173	.136	-.798	.077
			2	-.209	.154	.550	-.597	.179
stren	MBSP	1	2	-1.425*	.131	.000	-1.754	-1.096
			3	-.880*	.237	.002	-1.478	-.282
		2	1	1.425*	.131	.000	1.096	1.754
			3	.545*	.209	.041	.017	1.073
		3	1	.880*	.237	.002	.282	1.478
			2	-.545*	.209	.041	-1.073	-.017
	Control	1	2	.094	.185	1.000	-.372	.560
			3	.170	.336	1.000	-.677	1.016
		2	1	-.094	.185	1.000	-.560	.372
			3	.076	.296	1.000	-.672	.823
		3	1	-.170	.336	1.000	-1.016	.677
			2	-.076	.296	1.000	-.823	.672

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Pairwise Comparisons

Measure	time	(I) Are you taking part in the Mindfulness-Based Strengths Practice?	(J) Are you taking part in the Mindfulness-Based Strengths Practice?	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
mind	1	MBSP	Control	-.094	.266	.725	-.634	.446
		Control	MBSP	.094	.266	.725	-.446	.634
	2	MBSP	Control	.903*	.221	.000	.453	1.352
		Control	MBSP	-.903*	.221	.000	-1.352	-.453
	3	MBSP	Control	.976*	.214	.000	.540	1.412
		Control	MBSP	-.976*	.214	.000	-1.412	-.540
stren	1	MBSP	Control	-.423	.273	.131	-.977	.132
		Control	MBSP	.423	.273	.131	-.132	.977
	2	MBSP	Control	1.096*	.282	.000	.524	1.669
		Control	MBSP	-1.096*	.282	.000	-1.669	-.524
	3	MBSP	Control	.627	.379	.108	-.145	1.399
		Control	MBSP	-.627	.379	.108	-1.399	.145

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Paired Samples Test

Condition	Cohort			Paired Differences Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	Sig. (2-tailed)
MBSP	1.00	Pair 1	SU - SU2	-.71286	.55763	.27882	-1.60018	.17446	-2.557	3	.083
		Pair 2	SU2 - SU3	2.23667	2.90911	1.67958	-4.98997	9.46330	1.332	2	.314

	2.00	Pair 1	SU - SU2	-1.27381	.70223	.20272	-1.71998	-.82764	-6.284	11	.000
		Pair 2	SU2 - SU3	.57000	.89849	.36681	-.37290	1.51290	1.554	5	.181
	3.00	Pair 1	SU - SU2	-1.49952	.73390	.17298	-1.86449	-1.13456	-8.669	17	.000
		Pair 2	SU2 - SU3	.22333	.60196	.15542	-.11002	.55669	1.437	14	.173
Control	1.00	Pair 1	SU - SU2	.30714	.51847	.29934	-.98082	1.59510	1.026	2	.413
	2.00	Pair 1	SU - SU2	.08304	.78193	.27645	-.57067	.73675	.300	7	.773
		Pair 2	SU2 - SU3	.33333	.57735	.33333	-1.10088	1.76755	1.000	2	.423
	3.00	Pair 1	SU - SU2	-.16011	.59972	.16633	-.52252	.20230	-.963	12	.355
		Pair 2	SU2 - SU3	-.02750	.73391	.25948	-.64106	.58606	-.106	7	.919

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	SU - SU2	-.78663	.94968	.12470	-1.03633	-.53692	-6.308	57	.000
Pair 2	SU2 - SU3	.38833	1.11056	.18509	.01258	.76409	2.098	35	.043

Appendix 3.3 MANCOVAs for self-efficacy and resilience

2 x 2 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	self	Sphericity Assumed	.246	1	.246	4.298	.043	.072

		Greenhouse-Geisser	.246	1.000	.246	4.298	.043	.072
		Huynh-Feldt	.246	1.000	.246	4.298	.043	.072
		Lower-bound	.246	1.000	.246	4.298	.043	.072
	res	Sphericity Assumed	.071	1	.071	.352	.555	.006
		Greenhouse-Geisser	.071	1.000	.071	.352	.555	.006
		Huynh-Feldt	.071	1.000	.071	.352	.555	.006
		Lower-bound	.071	1.000	.071	.352	.555	.006
Time * Cohort	self	Sphericity Assumed	5.563E-5	1	5.563E-5	.001	.975	.000
		Greenhouse-Geisser	5.563E-5	1.000	5.563E-5	.001	.975	.000
		Huynh-Feldt	5.563E-5	1.000	5.563E-5	.001	.975	.000
		Lower-bound	5.563E-5	1.000	5.563E-5	.001	.975	.000
	res	Sphericity Assumed	.444	1	.444	2.214	.142	.039
		Greenhouse-Geisser	.444	1.000	.444	2.214	.142	.039
		Huynh-Feldt	.444	1.000	.444	2.214	.142	.039
		Lower-bound	.444	1.000	.444	2.214	.142	.039
Time * Condition	self	Sphericity Assumed	1.360	1	1.360	23.768	.000	.302
		Greenhouse-Geisser	1.360	1.000	1.360	23.768	.000	.302
		Huynh-Feldt	1.360	1.000	1.360	23.768	.000	.302
		Lower-bound	1.360	1.000	1.360	23.768	.000	.302
	res	Sphericity Assumed	3.027	1	3.027	15.085	.000	.215
		Greenhouse-Geisser	3.027	1.000	3.027	15.085	.000	.215

		Huynh-Feldt	3.027	1.000	3.027	15.085	.000	.215
		Lower-bound	3.027	1.000	3.027	15.085	.000	.215
Error(Time)	self	Sphericity Assumed	3.147	55	.057			
		Greenhouse-Geisser	3.147	55.000	.057			
		Huynh-Feldt	3.147	55.000	.057			
		Lower-bound	3.147	55.000	.057			
	res	Sphericity Assumed	11.038	55	.201			
		Greenhouse-Geisser	11.038	55.000	.201			
		Huynh-Feldt	11.038	55.000	.201			
		Lower-bound	11.038	55.000	.201			

2 x 3 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	self	Sphericity Assumed	.231	2	.115	1.617	.206	.047
		Greenhouse-Geisser	.231	1.662	.139	1.617	.210	.047
		Huynh-Feldt	.231	1.845	.125	1.617	.208	.047
		Lower-bound	.231	1.000	.231	1.617	.212	.047
	resi	Sphericity Assumed	.051	2	.026	.119	.888	.004
		Greenhouse-Geisser	.051	1.964	.026	.119	.885	.004
		Huynh-Feldt	.051	2.000	.026	.119	.888	.004
		Lower-bound	.051	1.000	.051	.119	.733	.004

Time * Cohort	self	Sphericity Assumed	.317	2	.159	2.221	.117	.063
		Greenhouse-Geisser	.317	1.662	.191	2.221	.127	.063
		Huynh-Feldt	.317	1.845	.172	2.221	.121	.063
		Lower-bound	.317	1.000	.317	2.221	.146	.063
	resi	Sphericity Assumed	.239	2	.120	.553	.578	.016
		Greenhouse-Geisser	.239	1.964	.122	.553	.575	.016
		Huynh-Feldt	.239	2.000	.120	.553	.578	.016
		Lower-bound	.239	1.000	.239	.553	.462	.016
Time * Condition	self	Sphericity Assumed	.987	2	.493	6.908	.002	.173
		Greenhouse-Geisser	.987	1.662	.594	6.908	.004	.173
		Huynh-Feldt	.987	1.845	.535	6.908	.003	.173
		Lower-bound	.987	1.000	.987	6.908	.013	.173
	resi	Sphericity Assumed	3.545	2	1.773	8.201	.001	.199
		Greenhouse-Geisser	3.545	1.964	1.805	8.201	.001	.199
		Huynh-Feldt	3.545	2.000	1.773	8.201	.001	.199
		Lower-bound	3.545	1.000	3.545	8.201	.007	.199
Error(Time)	self	Sphericity Assumed	4.714	66	.071			
		Greenhouse-Geisser	4.714	54.837	.086			
		Huynh-Feldt	4.714	60.888	.077			
		Lower-bound	4.714	33.000	.143			
	resi	Sphericity Assumed	14.266	66	.216			

	Greenhouse-Geisser	14.266	64.814	.220			
	Huynh-Feldt	14.266	66.000	.216			
	Lower-bound	14.266	33.000	.432			

Post-Hoc Comparisons

Pairwise Comparisons

Measure	Are you taking part in the Mindfulness-Based Strengths Practice?	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
selfe	MBSP	1	2	-.552*	.072	.000	-.733	-.372
			3	-.419*	.093	.000	-.653	-.185
		2	1	.552*	.072	.000	.372	.733
			3	.133	.064	.138	-.029	.296
		3	1	.419*	.093	.000	.185	.653
			2	-.133	.064	.138	-.296	.029
	Control	1	2	-.073	.101	1.000	-.329	.183
			3	-.065	.131	1.000	-.395	.266
		2	1	.073	.101	1.000	-.183	.329
			3	.008	.091	1.000	-.222	.238
		3	1	.065	.131	1.000	-.266	.395
			2	-.008	.091	1.000	-.238	.222
resi	MBSP	1	2	-.671*	.140	.000	-1.024	-.318
			3	-.509*	.138	.002	-.856	-.162
		2	1	.671*	.140	.000	.318	1.024
			3	.162	.125	.611	-.153	.477
		3	1	.509*	.138	.002	.162	.856

		2	-.162	.125	.611	-.477	.153
Control	1	2	.259	.198	.599	-.240	.758
		3	.090	.195	1.000	-.401	.581
	2	1	-.259	.198	.599	-.758	.240
		3	-.169	.177	1.000	-.615	.277
	3	1	-.090	.195	1.000	-.581	.401
		2	.169	.177	1.000	-.277	.615

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.4 ANCOVA for work engagement

2 x 2 ANCOVA

Tests of Within-Subjects Effects

Measure: work

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	.874	1	.874	4.723	.034	.079
	Greenhouse-Geisser	.874	1.000	.874	4.723	.034	.079
	Huynh-Feldt	.874	1.000	.874	4.723	.034	.079
	Lower-bound	.874	1.000	.874	4.723	.034	.079
Time * Cohort	Sphericity Assumed	.177	1	.177	.958	.332	.017
	Greenhouse-Geisser	.177	1.000	.177	.958	.332	.017
	Huynh-Feldt	.177	1.000	.177	.958	.332	.017
	Lower-bound	.177	1.000	.177	.958	.332	.017
Time * Condition	Sphericity Assumed	.516	1	.516	2.788	.101	.048
	Greenhouse-Geisser	.516	1.000	.516	2.788	.101	.048
	Huynh-Feldt	.516	1.000	.516	2.788	.101	.048

	Lower-bound	.516	1.000	.516	2.788	.101	.048
Error(Time)	Sphericity Assumed	10.175	55	.185			
	Greenhouse-Geisser	10.175	55.000	.185			
	Huynh-Feldt	10.175	55.000	.185			
	Lower-bound	10.175	55.000	.185			

2 x 3 ANCOVA

Tests of Within-Subjects Effects

Measure: work

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	Sphericity Assumed	.598	2	.299	1.412	.251	.041
	Greenhouse-Geisser	.598	1.779	.336	1.412	.251	.041
	Huynh-Feldt	.598	1.987	.301	1.412	.251	.041
	Lower-bound	.598	1.000	.598	1.412	.243	.041
Time * Cohort	Sphericity Assumed	.262	2	.131	.620	.541	.018
	Greenhouse-Geisser	.262	1.779	.147	.620	.523	.018
	Huynh-Feldt	.262	1.987	.132	.620	.540	.018
	Lower-bound	.262	1.000	.262	.620	.437	.018
Time * Condition	Sphericity Assumed	1.255	2	.627	2.963	.059	.082
	Greenhouse-Geisser	1.255	1.779	.705	2.963	.065	.082
	Huynh-Feldt	1.255	1.987	.631	2.963	.059	.082
	Lower-bound	1.255	1.000	1.255	2.963	.095	.082

Error(Time)	Sphericity Assumed	13.975	66	.212				
	Greenhouse-Geisser	13.975	58.711	.238				
	Huynh-Feldt	13.975	65.584	.213				
	Lower-bound	13.975	33.000	.423				

Post-Hoc Comparisons

Pairwise Comparisons

Measure: work

(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	2	-.356*	.081	.000	-.519	-.194
2	1	.356*	.081	.000	.194	.519

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.5 MANCOVAs for wellbeing, depression, anxiety and stress

2 x 2 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	well	Sphericity Assumed	1.759	1	1.759	4.537	.038	.082
		Greenhouse-Geisser	1.759	1.000	1.759	4.537	.038	.082

		Huynh-Feldt	1.759	1.000	1.759	4.537	.038	.082
		Lower-bound	1.759	1.000	1.759	4.537	.038	.082
	depr	Sphericity Assumed	1.610	1	1.610	.841	.363	.016
		Greenhouse-Geisser	1.610	1.000	1.610	.841	.363	.016
		Huynh-Feldt	1.610	1.000	1.610	.841	.363	.016
		Lower-bound	1.610	1.000	1.610	.841	.363	.016
	anxi	Sphericity Assumed	5.328	1	5.328	2.665	.109	.050
		Greenhouse-Geisser	5.328	1.000	5.328	2.665	.109	.050
		Huynh-Feldt	5.328	1.000	5.328	2.665	.109	.050
		Lower-bound	5.328	1.000	5.328	2.665	.109	.050
	stres	Sphericity Assumed	6.401	1	6.401	3.339	.074	.061
		Greenhouse-Geisser	6.401	1.000	6.401	3.339	.074	.061
		Huynh-Feldt	6.401	1.000	6.401	3.339	.074	.061
		Lower-bound	6.401	1.000	6.401	3.339	.074	.061
Time * Cohort	well	Sphericity Assumed	.109	1	.109	.281	.599	.005
		Greenhouse-Geisser	.109	1.000	.109	.281	.599	.005
		Huynh-Feldt	.109	1.000	.109	.281	.599	.005
		Lower-bound	.109	1.000	.109	.281	.599	.005
	depr	Sphericity Assumed	.255	1	.255	.133	.717	.003
		Greenhouse-Geisser	.255	1.000	.255	.133	.717	.003
		Huynh-Feldt	.255	1.000	.255	.133	.717	.003

		Lower-bound	.255	1.000	.255	.133	.717	.003
	anxi	Sphericity Assumed	.467	1	.467	.233	.631	.005
		Greenhouse-Geisser	.467	1.000	.467	.233	.631	.005
		Huynh-Feldt	.467	1.000	.467	.233	.631	.005
		Lower-bound	.467	1.000	.467	.233	.631	.005
	stres	Sphericity Assumed	.784	1	.784	.409	.525	.008
		Greenhouse-Geisser	.784	1.000	.784	.409	.525	.008
		Huynh-Feldt	.784	1.000	.784	.409	.525	.008
		Lower-bound	.784	1.000	.784	.409	.525	.008
Time * Condition	well	Sphericity Assumed	2.539	1	2.539	6.548	.014	.114
		Greenhouse-Geisser	2.539	1.000	2.539	6.548	.014	.114
		Huynh-Feldt	2.539	1.000	2.539	6.548	.014	.114
		Lower-bound	2.539	1.000	2.539	6.548	.014	.114
	depr	Sphericity Assumed	3.852	1	3.852	2.012	.162	.038
		Greenhouse-Geisser	3.852	1.000	3.852	2.012	.162	.038
		Huynh-Feldt	3.852	1.000	3.852	2.012	.162	.038
		Lower-bound	3.852	1.000	3.852	2.012	.162	.038
	anxi	Sphericity Assumed	3.833	1	3.833	1.917	.172	.036
		Greenhouse-Geisser	3.833	1.000	3.833	1.917	.172	.036
		Huynh-Feldt	3.833	1.000	3.833	1.917	.172	.036
		Lower-bound	3.833	1.000	3.833	1.917	.172	.036

	stres	Sphericity Assumed	7.656	1	7.656	3.993	.051	.073
		Greenhouse-Geisser	7.656	1.000	7.656	3.993	.051	.073
		Huynh-Feldt	7.656	1.000	7.656	3.993	.051	.073
		Lower-bound	7.656	1.000	7.656	3.993	.051	.073
Error(Time)	well	Sphericity Assumed	19.776	51	.388			
		Greenhouse-Geisser	19.776	51.000	.388			
		Huynh-Feldt	19.776	51.000	.388			
		Lower-bound	19.776	51.000	.388			
	depr	Sphericity Assumed	97.670	51	1.915			
		Greenhouse-Geisser	97.670	51.000	1.915			
		Huynh-Feldt	97.670	51.000	1.915			
		Lower-bound	97.670	51.000	1.915			
	anxi	Sphericity Assumed	101.956	51	1.999			
		Greenhouse-Geisser	101.956	51.000	1.999			
		Huynh-Feldt	101.956	51.000	1.999			
		Lower-bound	101.956	51.000	1.999			
	stres	Sphericity Assumed	97.782	51	1.917			
		Greenhouse-Geisser	97.782	51.000	1.917			
		Huynh-Feldt	97.782	51.000	1.917			
		Lower-bound	97.782	51.000	1.917			

2 x 3 MANCOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Time	well	Sphericity Assumed	.592	2	.296	.617	.543	.020
		Greenhouse-Geisser	.592	1.545	.383	.617	.504	.020
		Huynh-Feldt	.592	1.721	.344	.617	.520	.020
		Lower-bound	.592	1.000	.592	.617	.438	.020
	depr	Sphericity Assumed	3.458	2	1.729	.795	.456	.026
		Greenhouse-Geisser	3.458	1.954	1.770	.795	.454	.026
		Huynh-Feldt	3.458	2.000	1.729	.795	.456	.026
		Lower-bound	3.458	1.000	3.458	.795	.380	.026
	anx	Sphericity Assumed	.628	2	.314	.177	.838	.006
		Greenhouse-Geisser	.628	1.732	.362	.177	.807	.006
		Huynh-Feldt	.628	1.951	.322	.177	.833	.006
		Lower-bound	.628	1.000	.628	.177	.677	.006
	stre	Sphericity Assumed	6.931	2	3.465	1.451	.242	.046
		Greenhouse-Geisser	6.931	1.800	3.850	1.451	.243	.046
		Huynh-Feldt	6.931	2.000	3.465	1.451	.242	.046
		Lower-bound	6.931	1.000	6.931	1.451	.238	.046
Time * Cohort	well	Sphericity Assumed	.111	2	.055	.115	.891	.004
		Greenhouse-Geisser	.111	1.545	.072	.115	.840	.004

		Huynh-Feldt	.111	1.721	.064	.115	.862	.004
		Lower-bound	.111	1.000	.111	.115	.736	.004
	depr	Sphericity Assumed	4.799	2	2.400	1.103	.338	.035
		Greenhouse-Geisser	4.799	1.954	2.456	1.103	.338	.035
		Huynh-Feldt	4.799	2.000	2.400	1.103	.338	.035
		Lower-bound	4.799	1.000	4.799	1.103	.302	.035
	anx	Sphericity Assumed	1.163	2	.582	.329	.721	.011
		Greenhouse-Geisser	1.163	1.732	.672	.329	.690	.011
		Huynh-Feldt	1.163	1.951	.596	.329	.716	.011
		Lower-bound	1.163	1.000	1.163	.329	.571	.011
	stre	Sphericity Assumed	7.724	2	3.862	1.617	.207	.051
		Greenhouse-Geisser	7.724	1.800	4.291	1.617	.210	.051
		Huynh-Feldt	7.724	2.000	3.862	1.617	.207	.051
		Lower-bound	7.724	1.000	7.724	1.617	.213	.051
Time * Condition	well	Sphericity Assumed	3.995	2	1.998	4.160	.020	.122
		Greenhouse-Geisser	3.995	1.545	2.586	4.160	.031	.122
		Huynh-Feldt	3.995	1.721	2.321	4.160	.026	.122
		Lower-bound	3.995	1.000	3.995	4.160	.050	.122
	depr	Sphericity Assumed	3.997	2	1.998	.919	.405	.030
		Greenhouse-Geisser	3.997	1.954	2.045	.919	.403	.030
		Huynh-Feldt	3.997	2.000	1.998	.919	.405	.030

		Lower-bound	3.997	1.000	3.997	.919	.346	.030
	anx	Sphericity Assumed	5.221	2	2.611	1.476	.237	.047
		Greenhouse-Geisser	5.221	1.732	3.015	1.476	.238	.047
		Huynh-Feldt	5.221	1.951	2.677	1.476	.237	.047
		Lower-bound	5.221	1.000	5.221	1.476	.234	.047
	stre	Sphericity Assumed	6.473	2	3.236	1.355	.266	.043
		Greenhouse-Geisser	6.473	1.800	3.596	1.355	.265	.043
		Huynh-Feldt	6.473	2.000	3.236	1.355	.266	.043
		Lower-bound	6.473	1.000	6.473	1.355	.254	.043
Error(Time)	well	Sphericity Assumed	28.811	60	.480			
		Greenhouse-Geisser	28.811	46.340	.622			
		Huynh-Feldt	28.811	51.632	.558			
		Lower-bound	28.811	30.000	.960			
	depr	Sphericity Assumed	130.529	60	2.175			
		Greenhouse-Geisser	130.529	58.620	2.227			
		Huynh-Feldt	130.529	60.000	2.175			
		Lower-bound	130.529	30.000	4.351			
	anx	Sphericity Assumed	106.114	60	1.769			
		Greenhouse-Geisser	106.114	51.948	2.043			
		Huynh-Feldt	106.114	58.521	1.813			
		Lower-bound	106.114	30.000	3.537			

stre	Sphericity Assumed	143.282	60	2.388			
	Greenhouse-Geisser	143.282	54.003	2.653			
	Huynh-Feldt	143.282	60.000	2.388			
	Lower-bound	143.282	30.000	4.776			

Post-Hoc Comparisons

Pairwise Comparisons

Measure	Are you taking part in the Mindfulness-Based Strengths Practice?	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
well	MBSP	1	2	-.865*	.187	.000	-1.340	-.389
			3	-.575	.253	.091	-1.217	.066
		2	1	.865*	.187	.000	.389	1.340
			3	.289	.162	.255	-.123	.701
		3	1	.575	.253	.091	-.066	1.217
			2	-.289	.162	.255	-.701	.123
	Control	1	2	-.255	.285	1.000	-.977	.467
			3	.495	.384	.621	-.479	1.469
		2	1	.255	.285	1.000	-.467	.977
			3	.750*	.247	.015	.125	1.376
		3	1	-.495	.384	.621	-1.469	.479
			2	-.750*	.247	.015	-1.376	-.125
depr	MBSP	1	2	.651	.467	.521	-.534	1.835
			3	.475	.413	.778	-.572	1.522
		2	1	-.651	.467	.521	-1.835	.534

			3	-.176	.424	1.000	-1.252	.900
		3	1	-.475	.413	.778	-1.522	.572
			2	.176	.424	1.000	-.900	1.252
	Control	1	2	.004	.709	1.000	-1.795	1.802
			3	-.592	.627	1.000	-2.181	.998
		2	1	-.004	.709	1.000	-1.802	1.795
			3	-.595	.644	1.000	-2.229	1.039
		3	1	.592	.627	1.000	-.998	2.181
			2	.595	.644	1.000	-1.039	2.229
anxi	MBSP	1	2	1.230*	.377	.008	.274	2.187
			3	1.154	.460	.053	-.012	2.321
		2	1	-1.230*	.377	.008	-2.187	-.274
			3	-.076	.329	1.000	-.911	.759
		3	1	-1.154	.460	.053	-2.321	.012
			2	.076	.329	1.000	-.759	.911
	Control	1	2	.120	.573	1.000	-1.332	1.572
			3	.145	.698	1.000	-1.626	1.916
		2	1	-.120	.573	1.000	-1.572	1.332
			3	.025	.500	1.000	-1.243	1.294
		3	1	-.145	.698	1.000	-1.916	1.626
			2	-.025	.500	1.000	-1.294	1.243
stre	MBSP	1	2	1.658*	.421	.001	.590	2.725
			3	1.102	.527	.135	-.233	2.438
		2	1	-1.658*	.421	.001	-2.725	-.590
			3	-.555	.412	.563	-1.600	.489
		3	1	-1.102	.527	.135	-2.438	.233
			2	.555	.412	.563	-.489	1.600

Control	1	2	.537	.639	1.000	-1.084	2.158
		3	-.136	.800	1.000	-2.163	1.892
	2	1	-.537	.639	1.000	-2.158	1.084
		3	-.672	.626	.873	-2.259	.914
	3	1	.136	.800	1.000	-1.892	2.163
		2	.672	.626	.873	-.914	2.259

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.6 MANCOVAs for the *PERMA Profiler*

2 x 2 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	pos	Sphericity Assumed	4.290	1	4.290	6.038	.017	.099
		Greenhouse-Geisser	4.290	1.000	4.290	6.038	.017	.099
		Huynh-Feldt	4.290	1.000	4.290	6.038	.017	.099
		Lower-bound	4.290	1.000	4.290	6.038	.017	.099
	en	Sphericity Assumed	.437	1	.437	.503	.481	.009
		Greenhouse-Geisser	.437	1.000	.437	.503	.481	.009
		Huynh-Feldt	.437	1.000	.437	.503	.481	.009
		Lower-bound	.437	1.000	.437	.503	.481	.009
	rela	Sphericity Assumed	3.194	1	3.194	2.906	.094	.050
		Greenhouse-Geisser	3.194	1.000	3.194	2.906	.094	.050

		Huynh-Feldt	3.194	1.000	3.194	2.906	.094	.050
		Lower-bound	3.194	1.000	3.194	2.906	.094	.050
	mean	Sphericity Assumed	5.777	1	5.777	5.004	.029	.083
		Greenhouse-Geisser	5.777	1.000	5.777	5.004	.029	.083
		Huynh-Feldt	5.777	1.000	5.777	5.004	.029	.083
		Lower-bound	5.777	1.000	5.777	5.004	.029	.083
	acco	Sphericity Assumed	.053	1	.053	.077	.783	.001
		Greenhouse-Geisser	.053	1.000	.053	.077	.783	.001
		Huynh-Feldt	.053	1.000	.053	.077	.783	.001
		Lower-bound	.053	1.000	.053	.077	.783	.001
time * Cohort	pos	Sphericity Assumed	1.911	1	1.911	2.690	.107	.047
		Greenhouse-Geisser	1.911	1.000	1.911	2.690	.107	.047
		Huynh-Feldt	1.911	1.000	1.911	2.690	.107	.047
		Lower-bound	1.911	1.000	1.911	2.690	.107	.047
	en	Sphericity Assumed	.003	1	.003	.004	.951	.000
		Greenhouse-Geisser	.003	1.000	.003	.004	.951	.000
		Huynh-Feldt	.003	1.000	.003	.004	.951	.000
		Lower-bound	.003	1.000	.003	.004	.951	.000
	rela	Sphericity Assumed	.552	1	.552	.502	.482	.009
		Greenhouse-Geisser	.552	1.000	.552	.502	.482	.009
		Huynh-Feldt	.552	1.000	.552	.502	.482	.009
		Lower-bound	.552	1.000	.552	.502	.482	.009
	mean	Sphericity Assumed	1.177	1	1.177	1.020	.317	.018
		Greenhouse-Geisser	1.177	1.000	1.177	1.020	.317	.018

		Huynh-Feldt	1.177	1.000	1.177	1.020	.317	.018
		Lower-bound	1.177	1.000	1.177	1.020	.317	.018
	acco	Sphericity Assumed	.555	1	.555	.803	.374	.014
		Greenhouse-Geisser	.555	1.000	.555	.803	.374	.014
		Huynh-Feldt	.555	1.000	.555	.803	.374	.014
		Lower-bound	.555	1.000	.555	.803	.374	.014
time * Condition	pos	Sphericity Assumed	4.864	1	4.864	6.847	.011	.111
		Greenhouse-Geisser	4.864	1.000	4.864	6.847	.011	.111
		Huynh-Feldt	4.864	1.000	4.864	6.847	.011	.111
		Lower-bound	4.864	1.000	4.864	6.847	.011	.111
	en	Sphericity Assumed	3.305	1	3.305	3.805	.056	.065
		Greenhouse-Geisser	3.305	1.000	3.305	3.805	.056	.065
		Huynh-Feldt	3.305	1.000	3.305	3.805	.056	.065
		Lower-bound	3.305	1.000	3.305	3.805	.056	.065
	rela	Sphericity Assumed	.128	1	.128	.116	.734	.002
		Greenhouse-Geisser	.128	1.000	.128	.116	.734	.002
		Huynh-Feldt	.128	1.000	.128	.116	.734	.002
		Lower-bound	.128	1.000	.128	.116	.734	.002
	mean	Sphericity Assumed	8.205	1	8.205	7.107	.010	.114
		Greenhouse-Geisser	8.205	1.000	8.205	7.107	.010	.114
		Huynh-Feldt	8.205	1.000	8.205	7.107	.010	.114
		Lower-bound	8.205	1.000	8.205	7.107	.010	.114
	acco	Sphericity Assumed	4.186	1	4.186	6.059	.017	.099
		Greenhouse-Geisser	4.186	1.000	4.186	6.059	.017	.099

		Huynh-Feldt	4.186	1.000	4.186	6.059	.017	.099
		Lower-bound	4.186	1.000	4.186	6.059	.017	.099
Error(time)	pos	Sphericity Assumed	39.076	55	.710			
		Greenhouse-Geisser	39.076	55.000	.710			
		Huynh-Feldt	39.076	55.000	.710			
		Lower-bound	39.076	55.000	.710			
	en	Sphericity Assumed	47.779	55	.869			
		Greenhouse-Geisser	47.779	55.000	.869			
		Huynh-Feldt	47.779	55.000	.869			
		Lower-bound	47.779	55.000	.869			
	rela	Sphericity Assumed	60.457	55	1.099			
		Greenhouse-Geisser	60.457	55.000	1.099			
		Huynh-Feldt	60.457	55.000	1.099			
		Lower-bound	60.457	55.000	1.099			
	mean	Sphericity Assumed	63.496	55	1.154			
		Greenhouse-Geisser	63.496	55.000	1.154			
		Huynh-Feldt	63.496	55.000	1.154			
		Lower-bound	63.496	55.000	1.154			
	acco	Sphericity Assumed	37.996	55	.691			
		Greenhouse-Geisser	37.996	55.000	.691			
		Huynh-Feldt	37.996	55.000	.691			
		Lower-bound	37.996	55.000	.691			

2 x 3 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	po	Sphericity Assumed	1.656	2	.828	1.090	.342	.032
		Greenhouse-Geisser	1.656	1.910	.867	1.090	.340	.032
		Huynh-Feldt	1.656	2.000	.828	1.090	.342	.032
		Lower-bound	1.656	1.000	1.656	1.090	.304	.032
	en	Sphericity Assumed	.546	2	.273	.388	.680	.012
		Greenhouse-Geisser	.546	1.539	.354	.388	.626	.012
		Huynh-Feldt	.546	1.697	.321	.388	.646	.012
		Lower-bound	.546	1.000	.546	.388	.537	.012
	re	Sphericity Assumed	1.845	2	.923	.940	.396	.028
		Greenhouse-Geisser	1.845	1.863	.991	.940	.390	.028
		Huynh-Feldt	1.845	2.000	.923	.940	.396	.028
		Lower-bound	1.845	1.000	1.845	.940	.339	.028
	me	Sphericity Assumed	4.984	2	2.492	2.163	.123	.062
		Greenhouse-Geisser	4.984	1.844	2.703	2.163	.128	.062
		Huynh-Feldt	4.984	2.000	2.492	2.163	.123	.062
		Lower-bound	4.984	1.000	4.984	2.163	.151	.062
	ac	Sphericity Assumed	1.354	2	.677	1.024	.365	.030
		Greenhouse-Geisser	1.354	1.800	.752	1.024	.359	.030

		Huynh-Feldt	1.354	2.000	.677	1.024	.365	.030
		Lower-bound	1.354	1.000	1.354	1.024	.319	.030
time * Cohort	po	Sphericity Assumed	1.621	2	.811	1.068	.350	.031
		Greenhouse-Geisser	1.621	1.910	.849	1.068	.347	.031
		Huynh-Feldt	1.621	2.000	.811	1.068	.350	.031
		Lower-bound	1.621	1.000	1.621	1.068	.309	.031
	en	Sphericity Assumed	.231	2	.116	.165	.849	.005
		Greenhouse-Geisser	.231	1.539	.150	.165	.792	.005
		Huynh-Feldt	.231	1.697	.136	.165	.814	.005
		Lower-bound	.231	1.000	.231	.165	.688	.005
	re	Sphericity Assumed	1.211	2	.606	.617	.543	.018
		Greenhouse-Geisser	1.211	1.863	.650	.617	.532	.018
		Huynh-Feldt	1.211	2.000	.606	.617	.543	.018
		Lower-bound	1.211	1.000	1.211	.617	.438	.018
	me	Sphericity Assumed	2.432	2	1.216	1.055	.354	.031
		Greenhouse-Geisser	2.432	1.844	1.319	1.055	.350	.031
		Huynh-Feldt	2.432	2.000	1.216	1.055	.354	.031
		Lower-bound	2.432	1.000	2.432	1.055	.312	.031
	ac	Sphericity Assumed	2.454	2	1.227	1.856	.164	.053
		Greenhouse-Geisser	2.454	1.800	1.363	1.856	.169	.053
		Huynh-Feldt	2.454	2.000	1.227	1.856	.164	.053

		Lower-bound	2.454	1.000	2.454	1.856	.182	.053
time * Condition	po	Sphericity Assumed	4.592	2	2.296	3.024	.055	.084
		Greenhouse-Geisser	4.592	1.910	2.404	3.024	.058	.084
		Huynh-Feldt	4.592	2.000	2.296	3.024	.055	.084
		Lower-bound	4.592	1.000	4.592	3.024	.091	.084
	en	Sphericity Assumed	3.193	2	1.597	2.273	.111	.064
		Greenhouse-Geisser	3.193	1.539	2.075	2.273	.125	.064
		Huynh-Feldt	3.193	1.697	1.881	2.273	.120	.064
		Lower-bound	3.193	1.000	3.193	2.273	.141	.064
	re	Sphericity Assumed	7.209	2	3.605	3.673	.031	.100
		Greenhouse-Geisser	7.209	1.863	3.871	3.673	.034	.100
		Huynh-Feldt	7.209	2.000	3.605	3.673	.031	.100
		Lower-bound	7.209	1.000	7.209	3.673	.064	.100
	me	Sphericity Assumed	5.816	2	2.908	2.524	.088	.071
		Greenhouse-Geisser	5.816	1.844	3.154	2.524	.093	.071
		Huynh-Feldt	5.816	2.000	2.908	2.524	.088	.071
		Lower-bound	5.816	1.000	5.816	2.524	.122	.071
	ac	Sphericity Assumed	4.190	2	2.095	3.170	.048	.088
		Greenhouse-Geisser	4.190	1.800	2.328	3.170	.054	.088
		Huynh-Feldt	4.190	2.000	2.095	3.170	.048	.088
		Lower-bound	4.190	1.000	4.190	3.170	.084	.088

Error(time)	po	Sphericity Assumed	50.110	66	.759			
		Greenhouse-Geisser	50.110	63.022	.795			
		Huynh-Feldt	50.110	66.000	.759			
		Lower-bound	50.110	33.000	1.518			
	en	Sphericity Assumed	46.364	66	.702			
		Greenhouse-Geisser	46.364	50.787	.913			
		Huynh-Feldt	46.364	56.016	.828			
		Lower-bound	46.364	33.000	1.405			
	re	Sphericity Assumed	64.779	66	.981			
		Greenhouse-Geisser	64.779	61.465	1.054			
		Huynh-Feldt	64.779	66.000	.981			
		Lower-bound	64.779	33.000	1.963			
	me	Sphericity Assumed	76.039	66	1.152			
		Greenhouse-Geisser	76.039	60.844	1.250			
		Huynh-Feldt	76.039	66.000	1.152			
		Lower-bound	76.039	33.000	2.304			
	ac	Sphericity Assumed	43.621	66	.661			
		Greenhouse-Geisser	43.621	59.384	.735			
		Huynh-Feldt	43.621	66.000	.661			
		Lower-bound	43.621	33.000	1.322			

Appendix 3.7 Baseline tests for Study 3b

Between MBSP-6 and MBSP-8

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
M	Equal variances assumed	3.219	.077	-1.378	77	.172	-.21879	.15874	-.53488	.09729
	Equal variances not assumed			-1.390	75.269	.169	-.21879	.15736	-.53225	.09466
SU	Equal variances assumed	.057	.813	-1.430	77	.157	-.29778	.20823	-.71242	.11686
	Equal variances not assumed			-1.431	76.729	.156	-.29778	.20809	-.71217	.11661
SE	Equal variances assumed	1.115	.294	-1.396	77	.167	-.15884	.11379	-.38541	.06774
	Equal variances not assumed			-1.404	76.471	.164	-.15884	.11309	-.38406	.06638
BR	Equal variances assumed	4.526	.037	-.799	77	.427	-.16057	.20105	-.56091	.23977
	Equal variances not assumed			-.809	72.268	.421	-.16057	.19852	-.55629	.23515
STR	Equal variances assumed	1.070	.304	2.055	77	.043	1.01123	.49209	.03136	1.99110
	Equal variances not assumed			2.065	76.854	.042	1.01123	.48982	.03585	1.98662
DEP	Equal variances assumed	.017	.896	2.088	76	.040	1.06460	.50979	.04927	2.07993
	Equal variances not assumed			2.075	72.404	.042	1.06460	.51297	.04211	2.08709

ANX	Equal variances assumed	7.145	.009	4.294	77	.000	1.89923	.44230	1.01850	2.77996
	Equal variances not assumed			4.358	70.061	.000	1.89923	.43578	1.03011	2.76834
OWB	Equal variances assumed	1.542	.219	-2.932	63	.005	-.97990	.33416	-1.64768	-.31213
	Equal variances not assumed			-3.025	52.956	.004	-.97990	.32397	-1.62973	-.33008
WE	Equal variances assumed	.041	.841	-2.362	58	.022	-.53749	.22757	-.99301	-.08196
	Equal variances not assumed			-2.397	36.456	.022	-.53749	.22424	-.99207	-.08291

Between MBSP and Control Participants

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
M	Equal variances assumed	.177	.674	-1.339	143	.183	-.15940	.11909	-.39480	.07600
	Equal variances not assumed			-1.337	139.071	.183	-.15940	.11922	-.39513	.07632
SU	Equal variances assumed	.690	.408	-1.947	143	.053	-.29464	.15131	-.59373	.00446
	Equal variances not assumed			-1.955	141.635	.052	-.29464	.15068	-.59250	.00323
SE	Equal variances assumed	3.152	.078	-1.557	143	.122	-.12159	.07809	-.27594	.03276
	Equal variances not assumed			-1.582	142.558	.116	-.12159	.07687	-.27353	.03035

BR	Equal variances assumed	.398	.529	-1.249	143	.214	-.17910	.14339	-.46253	.10433
	Equal variances not assumed			-1.258	142.480	.210	-.17910	.14238	-.46055	.10234
STR	Equal variances assumed	.489	.485	-.098	142	.922	-.03497	.35554	-.73780	.66787
	Equal variances not assumed			-.099	141.726	.921	-.03497	.35187	-.73055	.66062
DEP	Equal variances assumed	.430	.513	-1.353	139	.178	-.52171	.38563	-1.28417	.24075
	Equal variances not assumed			-1.349	132.858	.180	-.52171	.38666	-1.28652	.24309
ANX	Equal variances assumed	.611	.436	.134	143	.894	.04621	.34476	-.63527	.72769
	Equal variances not assumed			.135	142.811	.893	.04621	.34171	-.62926	.72168
OWB	Equal variances assumed	.130	.719	.966	118	.336	.23806	.24638	-.24984	.72595
	Equal variances not assumed			.968	116.761	.335	.23806	.24585	-.24885	.72497
WE	Equal variances assumed	2.586	.111	-.454	105	.651	-.08337	.18351	-.44724	.28049
	Equal variances not assumed			-.443	87.510	.659	-.08337	.18825	-.45751	.29076

Appendix 3.8 MANOVAs between MBSP-6 and MBSP-8 for mindfulness and strengths use

2 x 2 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	14.166	1	14.166	58.560	.000	.494

		Greenhouse-Geisser	14.166	1.000	14.166	58.560	.000	.494
		Huynh-Feldt	14.166	1.000	14.166	58.560	.000	.494
		Lower-bound	14.166	1.000	14.166	58.560	.000	.494
	stren	Sphericity Assumed	35.875	1	35.875	93.316	.000	.609
		Greenhouse-Geisser	35.875	1.000	35.875	93.316	.000	.609
		Huynh-Feldt	35.875	1.000	35.875	93.316	.000	.609
		Lower-bound	35.875	1.000	35.875	93.316	.000	.609
time * v6v8vC	mind	Sphericity Assumed	1.027	1	1.027	4.245	.044	.066
		Greenhouse-Geisser	1.027	1.000	1.027	4.245	.044	.066
		Huynh-Feldt	1.027	1.000	1.027	4.245	.044	.066
		Lower-bound	1.027	1.000	1.027	4.245	.044	.066
	stren	Sphericity Assumed	1.866	1	1.866	4.853	.031	.075
		Greenhouse-Geisser	1.866	1.000	1.866	4.853	.031	.075
		Huynh-Feldt	1.866	1.000	1.866	4.853	.031	.075
		Lower-bound	1.866	1.000	1.866	4.853	.031	.075
Error(time)	mind	Sphericity Assumed	14.514	60	.242			
		Greenhouse-Geisser	14.514	60.000	.242			
		Huynh-Feldt	14.514	60.000	.242			
		Lower-bound	14.514	60.000	.242			
	stren	Sphericity Assumed	23.067	60	.384			
		Greenhouse-Geisser	23.067	60.000	.384			
		Huynh-Feldt	23.067	60.000	.384			
		Lower-bound	23.067	60.000	.384			

2 x 3 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	12.518	2	6.259	30.465	.000	.383
		Greenhouse-Geisser	12.518	1.605	7.799	30.465	.000	.383
		Huynh-Feldt	12.518	1.685	7.429	30.465	.000	.383
		Lower-bound	12.518	1.000	12.518	30.465	.000	.383
	stren	Sphericity Assumed	32.212	2	16.106	26.603	.000	.352
		Greenhouse-Geisser	32.212	1.636	19.693	26.603	.000	.352
		Huynh-Feldt	32.212	1.719	18.738	26.603	.000	.352
		Lower-bound	32.212	1.000	32.212	26.603	.000	.352
time * v6v8vC	mind	Sphericity Assumed	1.062	2	.531	2.585	.081	.050
		Greenhouse-Geisser	1.062	1.605	.662	2.585	.093	.050
		Huynh-Feldt	1.062	1.685	.630	2.585	.090	.050
		Lower-bound	1.062	1.000	1.062	2.585	.114	.050
	stren	Sphericity Assumed	2.385	2	1.192	1.969	.145	.039
		Greenhouse-Geisser	2.385	1.636	1.458	1.969	.154	.039
		Huynh-Feldt	2.385	1.719	1.387	1.969	.152	.039
		Lower-bound	2.385	1.000	2.385	1.969	.167	.039
Error(time)	mind	Sphericity Assumed	20.134	98	.205			
		Greenhouse-Geisser	20.134	78.652	.256			
		Huynh-Feldt	20.134	82.567	.244			
		Lower-bound	20.134	49.000	.411			
	stren	Sphericity Assumed	59.331	98	.605			

	Greenhouse-Geisser	59.331	80.151	.740			
	Huynh-Feldt	59.331	84.234	.704			
	Lower-bound	59.331	49.000	1.211			

Post-hoc Comparisons

Pairwise Comparisons

Measure	time	(I) v6v8vC	(J) v6v8vC	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a] Lower Bound	Upper Bound
mind	1	6-Week	8-week	-.091	.195	.642	-.484	.301
		8-week	6-Week	.091	.195	.642	-.301	.484
	2	6-Week	8-week	.294	.168	.086	-.044	.632
		8-week	6-Week	-.294	.168	.086	-.632	.044
	3	6-Week	8-week	.219	.175	.218	-.133	.571
		8-week	6-Week	-.219	.175	.218	-.571	.133
stren	1	6-Week	8-week	-.244	.258	.349	-.762	.275
		8-week	6-Week	.244	.258	.349	-.275	.762
	2	6-Week	8-week	.368	.213	.091	-.060	.796
		8-week	6-Week	-.368	.213	.091	-.796	.060
	3	6-Week	8-week	.033	.275	.905	-.521	.586
		8-week	6-Week	-.033	.275	.905	-.586	.521

Based on estimated marginal means

a. Adjustment for multiple comparisons: Bonferroni.

Pairwise Comparisons

Measure	v6v8vC	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
							Lower Bound	Upper Bound
mind	6-Week	1	2	-.841*	.138	.000	-1.184	-.498
			3	-.712*	.153	.000	-1.090	-.334
		2	1	.841*	.138	.000	.498	1.184
			3	.129	.095	.537	-.106	.364
		3	1	.712*	.153	.000	.334	1.090
			2	-.129	.095	.537	-.364	.106
	8-week	1	2	-.455*	.130	.003	-.779	-.132
			3	-.402*	.144	.022	-.758	-.045
		2	1	.455*	.130	.003	.132	.779
			3	.054	.089	1.000	-.168	.275
		3	1	.402*	.144	.022	.045	.758
			2	-.054	.089	1.000	-.275	.168
stren	6-Week	1	2	-1.416*	.185	.000	-1.875	-.957
			3	-.855*	.271	.008	-1.527	-.182
		2	1	1.416*	.185	.000	.957	1.875
			3	.562*	.208	.029	.045	1.078
		3	1	.855*	.271	.008	.182	1.527
			2	-.562*	.208	.029	-1.078	-.045
	8-week	1	2	-.805*	.175	.000	-1.237	-.372
			3	-.578	.256	.085	-1.212	.057
		2	1	.805*	.175	.000	.372	1.237
			3	.227	.196	.762	-.260	.714
		3	1	.578	.256	.085	-.057	1.212
			2	-.227	.196	.762	-.714	.260

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Pairwise Comparisons

Measure	v6v8vC	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
mind	6-Week	1	2	-.862*	.119	.000	-1.101	-.623
		2	1	.862*	.119	.000	.623	1.101
	8-week	1	2	-.496*	.131	.000	-.759	-.233
		2	1	.496*	.131	.000	.233	.759
stren	6-Week	1	2	-1.327*	.150	.000	-1.628	-1.027
		2	1	1.327*	.150	.000	1.027	1.628
	8-week	1	2	-.834*	.166	.000	-1.166	-.503
		2	1	.834*	.166	.000	.503	1.166

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.9 MANOVAs for self-efficacy and resilience

2 x 2 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	sefle	Sphericity Assumed	6.745	1	6.745	68.696	.000	.534

		Greenhouse-Geisser	6.745	1.000	6.745	68.696	.000	.534
		Huynh-Feldt	6.745	1.000	6.745	68.696	.000	.534
		Lower-bound	6.745	1.000	6.745	68.696	.000	.534
	resi	Sphericity Assumed	5.507	1	5.507	18.427	.000	.235
		Greenhouse-Geisser	5.507	1.000	5.507	18.427	.000	.235
		Huynh-Feldt	5.507	1.000	5.507	18.427	.000	.235
		Lower-bound	5.507	1.000	5.507	18.427	.000	.235
time * v6v8vC	sefle	Sphericity Assumed	.193	1	.193	1.971	.166	.032
		Greenhouse-Geisser	.193	1.000	.193	1.971	.166	.032
		Huynh-Feldt	.193	1.000	.193	1.971	.166	.032
		Lower-bound	.193	1.000	.193	1.971	.166	.032
	resi	Sphericity Assumed	.739	1	.739	2.473	.121	.040
		Greenhouse-Geisser	.739	1.000	.739	2.473	.121	.040
		Huynh-Feldt	.739	1.000	.739	2.473	.121	.040
		Lower-bound	.739	1.000	.739	2.473	.121	.040
Error(time)	sefle	Sphericity Assumed	5.891	60	.098			
		Greenhouse-Geisser	5.891	60.000	.098			
		Huynh-Feldt	5.891	60.000	.098			
		Lower-bound	5.891	60.000	.098			
	resi	Sphericity Assumed	17.932	60	.299			
		Greenhouse-Geisser	17.932	60.000	.299			

		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
	Huynh-Feldt	17.932	60.000	.299			
	Lower-bound	17.932	60.000	.299			

2 x 3 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	selfe	Sphericity Assumed	5.828	2	2.914	32.482	.000	.399
		Greenhouse-Geisser	5.828	1.730	3.368	32.482	.000	.399
		Huynh-Feldt	5.828	1.825	3.194	32.482	.000	.399
		Lower-bound	5.828	1.000	5.828	32.482	.000	.399
	resi	Sphericity Assumed	6.063	2	3.032	12.538	.000	.204
		Greenhouse-Geisser	6.063	1.794	3.380	12.538	.000	.204
		Huynh-Feldt	6.063	1.896	3.198	12.538	.000	.204
		Lower-bound	6.063	1.000	6.063	12.538	.001	.204
time * v6v8vC	selfe	Sphericity Assumed	.239	2	.120	1.335	.268	.027
		Greenhouse-Geisser	.239	1.730	.138	1.335	.267	.027
		Huynh-Feldt	.239	1.825	.131	1.335	.267	.027
		Lower-bound	.239	1.000	.239	1.335	.254	.027
	resi	Sphericity Assumed	1.093	2	.547	2.260	.110	.044
		Greenhouse-Geisser	1.093	1.794	.609	2.260	.116	.044
		Huynh-Feldt	1.093	1.896	.577	2.260	.113	.044

		Lower-bound	1.093	1.000	1.093	2.260	.139	.044
Error(time)	selfe	Sphericity Assumed	8.791	98	.090			
		Greenhouse-Geisser	8.791	84.793	.104			
		Huynh-Feldt	8.791	89.411	.098			
		Lower-bound	8.791	49.000	.179			
	resi	Sphericity Assumed	23.696	98	.242			
		Greenhouse-Geisser	23.696	87.906	.270			
		Huynh-Feldt	23.696	92.895	.255			
		Lower-bound	23.696	49.000	.484			

Appendix 3.10 MANOVAs for depression, anxiety and stress

2 x 2 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	depr	Sphericity Assumed	8.996	1	8.996	5.836	.019	.090
		Greenhouse-Geisser	8.996	1.000	8.996	5.836	.019	.090
		Huynh-Feldt	8.996	1.000	8.996	5.836	.019	.090
		Lower-bound	8.996	1.000	8.996	5.836	.019	.090
	anxi	Sphericity Assumed	21.516	1	21.516	15.914	.000	.212
		Greenhouse-Geisser	21.516	1.000	21.516	15.914	.000	.212

		Huynh-Feldt	21.516	1.000	21.516	15.914	.000	.212
		Lower-bound	21.516	1.000	21.516	15.914	.000	.212
	stre	Sphericity Assumed	37.733	1	37.733	21.014	.000	.263
		Greenhouse-Geisser	37.733	1.000	37.733	21.014	.000	.263
		Huynh-Feldt	37.733	1.000	37.733	21.014	.000	.263
		Lower-bound	37.733	1.000	37.733	21.014	.000	.263
time * v6v8vC	depr	Sphericity Assumed	5.083	1	5.083	3.297	.074	.053
		Greenhouse-Geisser	5.083	1.000	5.083	3.297	.074	.053
		Huynh-Feldt	5.083	1.000	5.083	3.297	.074	.053
		Lower-bound	5.083	1.000	5.083	3.297	.074	.053
	anxi	Sphericity Assumed	16.277	1	16.277	12.039	.001	.169
		Greenhouse-Geisser	16.277	1.000	16.277	12.039	.001	.169
		Huynh-Feldt	16.277	1.000	16.277	12.039	.001	.169
		Lower-bound	16.277	1.000	16.277	12.039	.001	.169
	stre	Sphericity Assumed	12.469	1	12.469	6.944	.011	.105
		Greenhouse-Geisser	12.469	1.000	12.469	6.944	.011	.105
		Huynh-Feldt	12.469	1.000	12.469	6.944	.011	.105
		Lower-bound	12.469	1.000	12.469	6.944	.011	.105
Error(time)	depr	Sphericity Assumed	90.952	59	1.542			
		Greenhouse-Geisser	90.952	59.000	1.542			
		Huynh-Feldt	90.952	59.000	1.542			

		Lower-bound	90.952	59.000	1.542			
	anxi	Sphericity Assumed	79.772	59	1.352			
		Greenhouse-Geisser	79.772	59.000	1.352			
		Huynh-Feldt	79.772	59.000	1.352			
		Lower-bound	79.772	59.000	1.352			
	stre	Sphericity Assumed	105.942	59	1.796			
		Greenhouse-Geisser	105.942	59.000	1.796			
		Huynh-Feldt	105.942	59.000	1.796			
		Lower-bound	105.942	59.000	1.796			

2 x 3 MANOVAs

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	depr	Sphericity Assumed	3.671	2	1.835	1.252	.291	.026
		Greenhouse-Geisser	3.671	1.959	1.874	1.252	.290	.026
		Huynh-Feldt	3.671	2.000	1.835	1.252	.291	.026
		Lower-bound	3.671	1.000	3.671	1.252	.269	.026
	anxi	Sphericity Assumed	9.680	2	4.840	4.040	.021	.079
		Greenhouse-Geisser	9.680	1.544	6.268	4.040	.031	.079
		Huynh-Feldt	9.680	1.621	5.973	4.040	.029	.079
		Lower-bound	9.680	1.000	9.680	4.040	.050	.079

	stre	Sphericity Assumed	27.987	2	13.993	8.699	.000	.156
		Greenhouse-Geisser	27.987	1.619	17.291	8.699	.001	.156
		Huynh-Feldt	27.987	1.704	16.429	8.699	.001	.156
		Lower-bound	27.987	1.000	27.987	8.699	.005	.156
time * v6v8vC	depr	Sphericity Assumed	2.123	2	1.062	.724	.487	.015
		Greenhouse-Geisser	2.123	1.959	1.084	.724	.485	.015
		Huynh-Feldt	2.123	2.000	1.062	.724	.487	.015
		Lower-bound	2.123	1.000	2.123	.724	.399	.015
	anxi	Sphericity Assumed	13.564	2	6.782	5.662	.005	.108
		Greenhouse-Geisser	13.564	1.544	8.783	5.662	.009	.108
		Huynh-Feldt	13.564	1.621	8.369	5.662	.008	.108
		Lower-bound	13.564	1.000	13.564	5.662	.021	.108
	stre	Sphericity Assumed	9.370	2	4.685	2.912	.059	.058
		Greenhouse-Geisser	9.370	1.619	5.789	2.912	.071	.058
		Huynh-Feldt	9.370	1.704	5.500	2.912	.068	.058
		Lower-bound	9.370	1.000	9.370	2.912	.095	.058
Error(time)	depr	Sphericity Assumed	137.768	94	1.466			
		Greenhouse-Geisser	137.768	92.062	1.496			
		Huynh-Feldt	137.768	94.000	1.466			
		Lower-bound	137.768	47.000	2.931			
	anxi	Sphericity Assumed	112.597	94	1.198			

		Greenhouse-Geisser	112.597	72.581	1.551			
		Huynh-Feldt	112.597	76.172	1.478			
		Lower-bound	112.597	47.000	2.396			
	stre	Sphericity Assumed	151.217	94	1.609			
		Greenhouse-Geisser	151.217	76.072	1.988			
		Huynh-Feldt	151.217	80.067	1.889			
		Lower-bound	151.217	47.000	3.217			

Post-Hoc Comparisons

Pairwise Comparisons

Measure	v6v8vC	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
depr	6-Week	1	2	.652	.379	.276	-.289	1.594
			3	.500	.356	.500	-.383	1.383
		2	1	-.652	.379	.276	-1.594	.289
			3	-.152	.334	1.000	-.983	.678
		3	1	-.500	.356	.500	-1.383	.383
			2	.152	.334	1.000	-.678	.983
	8-week	1	2	.083	.357	1.000	-.803	.968
			3	.083	.335	1.000	-.748	.913
		2	1	-.083	.357	1.000	-.968	.803
			3	-2.665E-15	.315	1.000	-.781	.781
		3	1	-.083	.335	1.000	-.913	.748
			2	2.665E-15	.315	1.000	-.781	.781

anxi	6-Week	1	2	1.217*	.317	.001	.431	2.004
			3	1.152*	.394	.016	.175	2.129
		2	1	-1.217*	.317	.001	-2.004	-.431
			3	-.065	.239	1.000	-.659	.528
		3	1	-1.152*	.394	.016	-2.129	-.175
			2	.065	.239	1.000	-.528	.659
	8-week	1	2	-.047	.298	1.000	-.787	.693
			3	-.164	.370	1.000	-1.084	.755
		2	1	.047	.298	1.000	-.693	.787
			3	-.118	.225	1.000	-.676	.440
		3	1	.164	.370	1.000	-.755	1.084
			2	.118	.225	1.000	-.440	.676
stre	6-Week	1	2	1.652*	.387	.000	.692	2.612
			3	1.130*	.440	.040	.039	2.222
		2	1	-1.652*	.387	.000	-2.612	-.692
			3	-.522	.277	.198	-1.210	.167
		3	1	-1.130*	.440	.040	-2.222	-.039
			2	.522	.277	.198	-.167	1.210
	8-week	1	2	.429	.364	.733	-.474	1.331
			3	.349	.414	1.000	-.678	1.376
		2	1	-.429	.364	.733	-1.331	.474
			3	-.080	.261	1.000	-.727	.568
		3	1	-.349	.414	1.000	-1.376	.678
			2	.080	.261	1.000	-.568	.727

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.11 ANOVAs for wellbeing

2 x 2 ANOVA

Tests of Within-Subjects Effects

Measure: wellbeing

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	7.221	1	7.221	14.555	.000	.233
	Greenhouse-Geisser	7.221	1.000	7.221	14.555	.000	.233
	Huynh-Feldt	7.221	1.000	7.221	14.555	.000	.233
	Lower-bound	7.221	1.000	7.221	14.555	.000	.233
time * v6v8vC	Sphericity Assumed	3.654	1	3.654	7.365	.009	.133
	Greenhouse-Geisser	3.654	1.000	3.654	7.365	.009	.133
	Huynh-Feldt	3.654	1.000	3.654	7.365	.009	.133
	Lower-bound	3.654	1.000	3.654	7.365	.009	.133
Error(time)	Sphericity Assumed	23.815	48	.496			
	Greenhouse-Geisser	23.815	48.000	.496			
	Huynh-Feldt	23.815	48.000	.496			
	Lower-bound	23.815	48.000	.496			

2 x 3 ANOVA

Tests of Within-Subjects Effects

Measure: wellbeing

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	4.436	2	2.218	4.910	.010	.114
	Greenhouse-Geisser	4.436	1.505	2.948	4.910	.018	.114
	Huynh-Feldt	4.436	1.595	2.782	4.910	.016	.114
	Lower-bound	4.436	1.000	4.436	4.910	.033	.114
time * v6v8vC	Sphericity Assumed	2.562	2	1.281	2.835	.065	.069
	Greenhouse-Geisser	2.562	1.505	1.702	2.835	.081	.069
	Huynh-Feldt	2.562	1.595	1.607	2.835	.078	.069
	Lower-bound	2.562	1.000	2.562	2.835	.100	.069
Error(time)	Sphericity Assumed	34.335	76	.452			
	Greenhouse-Geisser	34.335	57.187	.600			
	Huynh-Feldt	34.335	60.596	.567			
	Lower-bound	34.335	38.000	.904			

Post-hoc Comparisons

Pairwise Comparisons

Measure: wellbeing

v6v8vC	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
6-Week	1	2	-.986*	.171	.000	-1.329	-.642
	2	1	.986*	.171	.000	.642	1.329

8-week	1	2	-.166	.249	.507	-.667	.334
	2	1	.166	.249	.507	-.334	.667

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.12 Work Engagement ANOVA

2 x 2 ANOVA

Tests of Within-Subjects Effects

Measure: workeng

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	3.707	1	3.707	9.268	.004	.159
	Greenhouse-Geisser	3.707	1.000	3.707	9.268	.004	.159
	Huynh-Feldt	3.707	1.000	3.707	9.268	.004	.159
	Lower-bound	3.707	1.000	3.707	9.268	.004	.159
time * v6v8vC	Sphericity Assumed	.174	1	.174	.434	.513	.009
	Greenhouse-Geisser	.174	1.000	.174	.434	.513	.009
	Huynh-Feldt	.174	1.000	.174	.434	.513	.009
	Lower-bound	.174	1.000	.174	.434	.513	.009
Error(time)	Sphericity Assumed	19.599	49	.400			
	Greenhouse-Geisser	19.599	49.000	.400			
	Huynh-Feldt	19.599	49.000	.400			

Tests of Within-Subjects Effects

Measure: workeng

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	4.032	2	2.016	5.478	.006	.126
	Greenhouse-Geisser	4.032	1.287	3.132	5.478	.016	.126
	Huynh-Feldt	4.032	1.348	2.991	5.478	.015	.126
	Lower-bound	4.032	1.000	4.032	5.478	.025	.126
time * v6v8vC	Sphericity Assumed	.354	2	.177	.480	.620	.012
	Greenhouse-Geisser	.354	1.287	.275	.480	.538	.012
	Huynh-Feldt	.354	1.348	.262	.480	.547	.012
	Lower-bound	.354	1.000	.354	.480	.492	.012
Error(time)	Sphericity Assumed	27.971	76	.368			
	Greenhouse-Geisser	27.971	48.916	.572			
	Huynh-Feldt	27.971	51.225	.546			
	Lower-bound	27.971	38.000	.736			
	Lower-bound	19.599	49.000	.400			

2 x 3 ANOVA

Appendix 3.13 MANCOVAs comparing all MBSP participants with controls for mindfulness and strengths use

2 x 2 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	2.350	1	2.350	10.673	.001	.088
		Greenhouse-Geisser	2.350	1.000	2.350	10.673	.001	.088
		Huynh-Feldt	2.350	1.000	2.350	10.673	.001	.088
		Lower-bound	2.350	1.000	2.350	10.673	.001	.088
	stren	Sphericity Assumed	7.977	1	7.977	26.439	.000	.194
		Greenhouse-Geisser	7.977	1.000	7.977	26.439	.000	.194
		Huynh-Feldt	7.977	1.000	7.977	26.439	.000	.194
		Lower-bound	7.977	1.000	7.977	26.439	.000	.194
time * Cohort	mind	Sphericity Assumed	.181	1	.181	.821	.367	.007
		Greenhouse-Geisser	.181	1.000	.181	.821	.367	.007
		Huynh-Feldt	.181	1.000	.181	.821	.367	.007
		Lower-bound	.181	1.000	.181	.821	.367	.007
	stren	Sphericity Assumed	.896	1	.896	2.971	.088	.026
		Greenhouse-Geisser	.896	1.000	.896	2.971	.088	.026
		Huynh-Feldt	.896	1.000	.896	2.971	.088	.026
		Lower-bound	.896	1.000	.896	2.971	.088	.026
time * Condition	mind	Sphericity Assumed	8.768	1	8.768	39.831	.000	.266
		Greenhouse-Geisser	8.768	1.000	8.768	39.831	.000	.266

		Huynh-Feldt	8.768	1.000	8.768	39.831	.000	.266
		Lower-bound	8.768	1.000	8.768	39.831	.000	.266
	stren	Sphericity Assumed	19.156	1	19.156	63.490	.000	.366
		Greenhouse-Geisser	19.156	1.000	19.156	63.490	.000	.366
		Huynh-Feldt	19.156	1.000	19.156	63.490	.000	.366
		Lower-bound	19.156	1.000	19.156	63.490	.000	.366
Error(time)	mind	Sphericity Assumed	24.215	110	.220			
		Greenhouse-Geisser	24.215	110.000	.220			
		Huynh-Feldt	24.215	110.000	.220			
		Lower-bound	24.215	110.000	.220			
	stren	Sphericity Assumed	33.188	110	.302			
		Greenhouse-Geisser	33.188	110.000	.302			
		Huynh-Feldt	33.188	110.000	.302			
		Lower-bound	33.188	110.000	.302			

2 x 3 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	.910	2	.455	2.616	.076	.031
		Greenhouse-Geisser	.910	1.744	.522	2.616	.084	.031
		Huynh-Feldt	.910	1.823	.499	2.616	.082	.031
		Lower-bound	.910	1.000	.910	2.616	.110	.031

	stren	Sphericity Assumed	5.491	2	2.745	5.620	.004	.065
		Greenhouse-Geisser	5.491	1.716	3.199	5.620	.007	.065
		Huynh-Feldt	5.491	1.793	3.062	5.620	.006	.065
		Lower-bound	5.491	1.000	5.491	5.620	.020	.065
time * Cohort	mind	Sphericity Assumed	.099	2	.050	.286	.752	.004
		Greenhouse-Geisser	.099	1.744	.057	.286	.722	.004
		Huynh-Feldt	.099	1.823	.054	.286	.731	.004
		Lower-bound	.099	1.000	.099	.286	.594	.004
	stren	Sphericity Assumed	1.044	2	.522	1.068	.346	.013
		Greenhouse-Geisser	1.044	1.716	.608	1.068	.338	.013
		Huynh-Feldt	1.044	1.793	.582	1.068	.340	.013
		Lower-bound	1.044	1.000	1.044	1.068	.304	.013
time * Condition	mind	Sphericity Assumed	7.876	2	3.938	22.651	.000	.219
		Greenhouse-Geisser	7.876	1.744	4.517	22.651	.000	.219
		Huynh-Feldt	7.876	1.823	4.321	22.651	.000	.219
		Lower-bound	7.876	1.000	7.876	22.651	.000	.219
	stren	Sphericity Assumed	15.387	2	7.693	15.749	.000	.163
		Greenhouse-Geisser	15.387	1.716	8.965	15.749	.000	.163
		Huynh-Feldt	15.387	1.793	8.580	15.749	.000	.163
		Lower-bound	15.387	1.000	15.387	15.749	.000	.163
Error(time)	mind	Sphericity Assumed	28.167	162	.174			

		Greenhouse-Geisser	28.167	141.232	.199			
		Huynh-Feldt	28.167	147.640	.191			
		Lower-bound	28.167	81.000	.348			
	stren	Sphericity Assumed	79.137	162	.488			
		Greenhouse-Geisser	79.137	139.025	.569			
		Huynh-Feldt	79.137	145.252	.545			
		Lower-bound	79.137	81.000	.977			

Post-Hoc Comparisons

Pairwise Comparisons

Measure	time	(I) Are you taking part in the Mindfulness-Based Strengths Practice?	(J) Are you taking part in the Mindfulness-Based Strengths Practice?	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
mind	1	MBSP	Control	-.112	.165	.497	-.440	.215
		Control	MBSP	.112	.165	.497	-.215	.440
	2	MBSP	Control	.704*	.146	.000	.413	.994
		Control	MBSP	-.704*	.146	.000	-.994	-.413
	3	MBSP	Control	.597*	.151	.000	.296	.897
		Control	MBSP	-.597*	.151	.000	-.897	-.296
stren	1	MBSP	Control	-.255	.206	.219	-.666	.155
		Control	MBSP	.255	.206	.219	-.155	.666
	2	MBSP	Control	.945*	.186	.000	.575	1.316
		Control	MBSP	-.945*	.186	.000	-1.316	-.575
	3	MBSP	Control	.610*	.236	.011	.141	1.079

Control	MBSP	-.610*	.236	.011	-1.079	-.141

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.14 MANCOVAs for self-efficacy and resilience

2 x 2 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	selfe	Sphericity Assumed	1.865	1	1.865	24.141	.000	.180
		Greenhouse-Geisser	1.865	1.000	1.865	24.141	.000	.180
		Huynh-Feldt	1.865	1.000	1.865	24.141	.000	.180
		Lower-bound	1.865	1.000	1.865	24.141	.000	.180
	resi	Sphericity Assumed	1.718	1	1.718	6.202	.014	.053
		Greenhouse-Geisser	1.718	1.000	1.718	6.202	.014	.053
		Huynh-Feldt	1.718	1.000	1.718	6.202	.014	.053
		Lower-bound	1.718	1.000	1.718	6.202	.014	.053
time * Cohort	selfe	Sphericity Assumed	.153	1	.153	1.977	.162	.018
		Greenhouse-Geisser	.153	1.000	.153	1.977	.162	.018
		Huynh-Feldt	.153	1.000	.153	1.977	.162	.018
		Lower-bound	.153	1.000	.153	1.977	.162	.018
	resi	Sphericity Assumed	.538	1	.538	1.941	.166	.017

		Greenhouse-Geisser	.538	1.000	.538	1.941	.166	.017
		Huynh-Feldt	.538	1.000	.538	1.941	.166	.017
		Lower-bound	.538	1.000	.538	1.941	.166	.017
time * Condition	selfe	Sphericity Assumed	2.487	1	2.487	32.194	.000	.226
		Greenhouse-Geisser	2.487	1.000	2.487	32.194	.000	.226
		Huynh-Feldt	2.487	1.000	2.487	32.194	.000	.226
		Lower-bound	2.487	1.000	2.487	32.194	.000	.226
	resi	Sphericity Assumed	3.792	1	3.792	13.686	.000	.111
		Greenhouse-Geisser	3.792	1.000	3.792	13.686	.000	.111
		Huynh-Feldt	3.792	1.000	3.792	13.686	.000	.111
		Lower-bound	3.792	1.000	3.792	13.686	.000	.111
Error(time)	selfe	Sphericity Assumed	8.497	110	.077			
		Greenhouse-Geisser	8.497	110.000	.077			
		Huynh-Feldt	8.497	110.000	.077			
		Lower-bound	8.497	110.000	.077			
	resi	Sphericity Assumed	30.477	110	.277			
		Greenhouse-Geisser	30.477	110.000	.277			
		Huynh-Feldt	30.477	110.000	.277			
		Lower-bound	30.477	110.000	.277			

2 x 3 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	selfe	Sphericity Assumed	1.086	2	.543	7.029	.001	.080
		Greenhouse-Geisser	1.086	1.786	.608	7.029	.002	.080
		Huynh-Feldt	1.086	1.869	.581	7.029	.002	.080
		Lower-bound	1.086	1.000	1.086	7.029	.010	.080
	resi	Sphericity Assumed	.992	2	.496	2.180	.116	.026
		Greenhouse-Geisser	.992	1.839	.539	2.180	.121	.026
		Huynh-Feldt	.992	1.926	.515	2.180	.118	.026
		Lower-bound	.992	1.000	.992	2.180	.144	.026
time * Cohort	selfe	Sphericity Assumed	.038	2	.019	.245	.783	.003
		Greenhouse-Geisser	.038	1.786	.021	.245	.758	.003
		Huynh-Feldt	.038	1.869	.020	.245	.768	.003
		Lower-bound	.038	1.000	.038	.245	.622	.003
	resi	Sphericity Assumed	.157	2	.078	.344	.709	.004
		Greenhouse-Geisser	.157	1.839	.085	.344	.691	.004
		Huynh-Feldt	.157	1.926	.081	.344	.701	.004
		Lower-bound	.157	1.000	.157	.344	.559	.004
time * Condition	selfe	Sphericity Assumed	1.388	2	.694	8.984	.000	.100
		Greenhouse-Geisser	1.388	1.786	.777	8.984	.000	.100
		Huynh-Feldt	1.388	1.869	.743	8.984	.000	.100

		Lower-bound	1.388	1.000	1.388	8.984	.004	.100
	resi	Sphericity Assumed	2.937	2	1.468	6.452	.002	.074
		Greenhouse-Geisser	2.937	1.839	1.597	6.452	.003	.074
		Huynh-Feldt	2.937	1.926	1.524	6.452	.002	.074
		Lower-bound	2.937	1.000	2.937	6.452	.013	.074
Error(time)	selfe	Sphericity Assumed	12.517	162	.077			
		Greenhouse-Geisser	12.517	144.705	.087			
		Huynh-Feldt	12.517	151.403	.083			
		Lower-bound	12.517	81.000	.155			
	resi	Sphericity Assumed	36.868	162	.228			
		Greenhouse-Geisser	36.868	148.983	.247			
		Huynh-Feldt	36.868	156.044	.236			
		Lower-bound	36.868	81.000	.455			

Post-Hoc Comparison

Pairwise Comparisons

Measure	time	(I) Are you taking part in the Mindfulness-Based Strengths Practice?	(J) Are you taking part in the Mindfulness-Based Strengths Practice?	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
							Lower Bound	Upper Bound
selfe	1	MBSP	Control	-.039	.103	.707	-.244	.166
		Control	MBSP	.039	.103	.707	-.166	.244
	2	MBSP	Control	.329*	.085	.000	.161	.497

		Control	MBSP	-.329*	.085	.000	-.497	-.161
	3	MBSP	Control	.195*	.083	.022	.029	.360
		Control	MBSP	-.195*	.083	.022	-.360	-.029
resi	1	MBSP	Control	-.091	.193	.639	-.474	.293
		Control	MBSP	.091	.193	.639	-.293	.474
	2	MBSP	Control	.428*	.159	.008	.112	.743
		Control	MBSP	-.428*	.159	.008	-.743	-.112
	3	MBSP	Control	.304	.173	.082	-.040	.647
		Control	MBSP	-.304	.173	.082	-.647	.040

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Pairwise Comparisons

Measure	Are you taking part in the Mindfulness-Based Strengths Practice?	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
selfe	MBSP	1	2	-.460*	.058	.000	-.601	-.318
			3	-.328*	.061	.000	-.478	-.179
		2	1	.460*	.058	.000	.318	.601
			3	.131*	.045	.013	.022	.241
		3	1	.328*	.061	.000	.179	.478
			2	-.131*	.045	.013	-.241	-.022
	Control	1	2	-.092	.072	.615	-.267	.084
			3	-.095	.076	.651	-.281	.091
		2	1	.092	.072	.615	-.084	.267
			3	-.003	.056	1.000	-.139	.133

		3	1	.095	.076	.651	-.091	.281
			2	.003	.056	1.000	-.133	.139
resi	MBSP	1	2	-.458*	.105	.000	-.715	-.202
			3	-.343*	.096	.002	-.579	-.108
		2	1	.458*	.105	.000	.202	.715
			3	.115	.081	.472	-.082	.312
		3	1	.343*	.096	.002	.108	.579
			2	-.115	.081	.472	-.312	.082
	Control	1	2	.060	.130	1.000	-.259	.379
			3	.051	.120	1.000	-.241	.344
		2	1	-.060	.130	1.000	-.379	.259
			3	-.009	.100	1.000	-.254	.236
		3	1	-.051	.120	1.000	-.344	.241
			2	.009	.100	1.000	-.236	.254

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.15 MANCOVAs for depression, anxiety and stress

2 x 2 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	depr	Sphericity Assumed	6.634	1	6.634	3.335	.071	.032
		Greenhouse-Geisser	6.634	1.000	6.634	3.335	.071	.032
		Huynh-Feldt	6.634	1.000	6.634	3.335	.071	.032
		Lower-bound	6.634	1.000	6.634	3.335	.071	.032

	anxi	Sphericity Assumed	39.711	1	39.711	20.863	.000	.170
		Greenhouse-Geisser	39.711	1.000	39.711	20.863	.000	.170
		Huynh-Feldt	39.711	1.000	39.711	20.863	.000	.170
		Lower-bound	39.711	1.000	39.711	20.863	.000	.170
	stre	Sphericity Assumed	20.425	1	20.425	8.006	.006	.073
		Greenhouse-Geisser	20.425	1.000	20.425	8.006	.006	.073
		Huynh-Feldt	20.425	1.000	20.425	8.006	.006	.073
		Lower-bound	20.425	1.000	20.425	8.006	.006	.073
time * Cohort	depr	Sphericity Assumed	2.091	1	2.091	1.051	.308	.010
		Greenhouse-Geisser	2.091	1.000	2.091	1.051	.308	.010
		Huynh-Feldt	2.091	1.000	2.091	1.051	.308	.010
		Lower-bound	2.091	1.000	2.091	1.051	.308	.010
	anxi	Sphericity Assumed	19.453	1	19.453	10.220	.002	.091
		Greenhouse-Geisser	19.453	1.000	19.453	10.220	.002	.091
		Huynh-Feldt	19.453	1.000	19.453	10.220	.002	.091
		Lower-bound	19.453	1.000	19.453	10.220	.002	.091
	stre	Sphericity Assumed	.913	1	.913	.358	.551	.003
		Greenhouse-Geisser	.913	1.000	.913	.358	.551	.003
		Huynh-Feldt	.913	1.000	.913	.358	.551	.003
		Lower-bound	.913	1.000	.913	.358	.551	.003
time * Condition	depr	Sphericity Assumed	3.420	1	3.420	1.719	.193	.017

		Greenhouse-Geisser	3.420	1.000	3.420	1.719	.193	.017
		Huynh-Feldt	3.420	1.000	3.420	1.719	.193	.017
		Lower-bound	3.420	1.000	3.420	1.719	.193	.017
	anxi	Sphericity Assumed	2.838	1	2.838	1.491	.225	.014
		Greenhouse-Geisser	2.838	1.000	2.838	1.491	.225	.014
		Huynh-Feldt	2.838	1.000	2.838	1.491	.225	.014
		Lower-bound	2.838	1.000	2.838	1.491	.225	.014
	stre	Sphericity Assumed	7.285	1	7.285	2.856	.094	.027
		Greenhouse-Geisser	7.285	1.000	7.285	2.856	.094	.027
		Huynh-Feldt	7.285	1.000	7.285	2.856	.094	.027
		Lower-bound	7.285	1.000	7.285	2.856	.094	.027
Error(time)	depr	Sphericity Assumed	202.887	102	1.989			
		Greenhouse-Geisser	202.887	102.000	1.989			
		Huynh-Feldt	202.887	102.000	1.989			
		Lower-bound	202.887	102.000	1.989			
	anxi	Sphericity Assumed	194.143	102	1.903			
		Greenhouse-Geisser	194.143	102.000	1.903			
		Huynh-Feldt	194.143	102.000	1.903			
		Lower-bound	194.143	102.000	1.903			
	stre	Sphericity Assumed	260.203	102	2.551			
		Greenhouse-Geisser	260.203	102.000	2.551			

		Huynh-Feldt	260.203	102.000	2.551			
		Lower-bound	260.203	102.000	2.551			

2 x 3 MANCOVA

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	depr	Sphericity Assumed	1.410	2	.705	.322	.725	.005
		Greenhouse-Geisser	1.410	1.811	.779	.322	.703	.005
		Huynh-Feldt	1.410	1.908	.739	.322	.715	.005
		Lower-bound	1.410	1.000	1.410	.322	.572	.005
	anxi	Sphericity Assumed	14.904	2	7.452	4.869	.009	.064
		Greenhouse-Geisser	14.904	1.693	8.806	4.869	.013	.064
		Huynh-Feldt	14.904	1.778	8.381	4.869	.012	.064
		Lower-bound	14.904	1.000	14.904	4.869	.031	.064
	stre	Sphericity Assumed	11.121	2	5.560	2.256	.109	.031
		Greenhouse-Geisser	11.121	1.768	6.291	2.256	.115	.031
		Huynh-Feldt	11.121	1.861	5.977	2.256	.113	.031
		Lower-bound	11.121	1.000	11.121	2.256	.138	.031
time * Cohort	depr	Sphericity Assumed	.250	2	.125	.057	.944	.001
		Greenhouse-Geisser	.250	1.811	.138	.057	.931	.001
		Huynh-Feldt	.250	1.908	.131	.057	.938	.001

		Lower-bound	.250	1.000	.250	.057	.812	.001
	anxi	Sphericity Assumed	7.264	2	3.632	2.373	.097	.032
		Greenhouse-Geisser	7.264	1.693	4.292	2.373	.106	.032
		Huynh-Feldt	7.264	1.778	4.085	2.373	.104	.032
		Lower-bound	7.264	1.000	7.264	2.373	.128	.032
	stre	Sphericity Assumed	2.113	2	1.057	.429	.652	.006
		Greenhouse-Geisser	2.113	1.768	1.195	.429	.628	.006
		Huynh-Feldt	2.113	1.861	1.136	.429	.638	.006
		Lower-bound	2.113	1.000	2.113	.429	.515	.006
time * Condition	depr	Sphericity Assumed	1.249	2	.624	.286	.752	.004
		Greenhouse-Geisser	1.249	1.811	.690	.286	.730	.004
		Huynh-Feldt	1.249	1.908	.655	.286	.742	.004
		Lower-bound	1.249	1.000	1.249	.286	.595	.004
	anxi	Sphericity Assumed	1.934	2	.967	.632	.533	.009
		Greenhouse-Geisser	1.934	1.693	1.142	.632	.508	.009
		Huynh-Feldt	1.934	1.778	1.087	.632	.515	.009
		Lower-bound	1.934	1.000	1.934	.632	.429	.009
	stre	Sphericity Assumed	6.650	2	3.325	1.349	.263	.019
		Greenhouse-Geisser	6.650	1.768	3.762	1.349	.262	.019
		Huynh-Feldt	6.650	1.861	3.574	1.349	.263	.019
		Lower-bound	6.650	1.000	6.650	1.349	.249	.019

Error(time)	depr	Sphericity Assumed	310.403	142	2.186			
		Greenhouse-Geisser	310.403	128.550	2.415			
		Huynh-Feldt	310.403	135.436	2.292			
		Lower-bound	310.403	71.000	4.372			
	anxi	Sphericity Assumed	217.310	142	1.530			
		Greenhouse-Geisser	217.310	120.168	1.808			
		Huynh-Feldt	217.310	126.255	1.721			
		Lower-bound	217.310	71.000	3.061			
	stre	Sphericity Assumed	350.066	142	2.465			
		Greenhouse-Geisser	350.066	125.513	2.789			
		Huynh-Feldt	350.066	132.106	2.650			
		Lower-bound	350.066	71.000	4.931			

Appendix 3.16 ANCOVA for Wellbeing

2 x 2 ANCOVA

Tests of Within-Subjects Effects

Measure: well

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	6.236	1	6.236	12.780	.001	.124
	Greenhouse-Geisser	6.236	1.000	6.236	12.780	.001	.124
	Huynh-Feldt	6.236	1.000	6.236	12.780	.001	.124

	Lower-bound	6.236	1.000	6.236	12.780	.001	.124
time * Cohort	Sphericity Assumed	1.518	1	1.518	3.111	.081	.033
	Greenhouse-Geisser	1.518	1.000	1.518	3.111	.081	.033
	Huynh-Feldt	1.518	1.000	1.518	3.111	.081	.033
	Lower-bound	1.518	1.000	1.518	3.111	.081	.033
time * Condition	Sphericity Assumed	4.033	1	4.033	8.265	.005	.084
	Greenhouse-Geisser	4.033	1.000	4.033	8.265	.005	.084
	Huynh-Feldt	4.033	1.000	4.033	8.265	.005	.084
	Lower-bound	4.033	1.000	4.033	8.265	.005	.084
Error(time)	Sphericity Assumed	43.914	90	.488			
	Greenhouse-Geisser	43.914	90.000	.488			
	Huynh-Feldt	43.914	90.000	.488			
	Lower-bound	43.914	90.000	.488			

2 x 3 ANCOVA

Tests of Within-Subjects Effects

Measure: well

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	1.601	2	.801	1.499	.227	.022
	Greenhouse-Geisser	1.601	1.674	.956	1.499	.229	.022
	Huynh-Feldt	1.601	1.762	.909	1.499	.229	.022

	Lower-bound	1.601	1.000	1.601	1.499	.225	.022
time * Cohort	Sphericity Assumed	.283	2	.142	.265	.768	.004
	Greenhouse-Geisser	.283	1.674	.169	.265	.728	.004
	Huynh-Feldt	.283	1.762	.161	.265	.740	.004
	Lower-bound	.283	1.000	.283	.265	.608	.004
time * Condition	Sphericity Assumed	4.247	2	2.123	3.975	.021	.055
	Greenhouse-Geisser	4.247	1.674	2.536	3.975	.028	.055
	Huynh-Feldt	4.247	1.762	2.410	3.975	.026	.055
	Lower-bound	4.247	1.000	4.247	3.975	.050	.055
Error(time)	Sphericity Assumed	72.646	136	.534			
	Greenhouse-Geisser	72.646	113.851	.638			
	Huynh-Feldt	72.646	119.824	.606			
	Lower-bound	72.646	68.000	1.068			

Post-Hoc Comparisons

Pairwise Comparisons

Measure: well

time	(I) Are you taking part in the Mindfulness-Based Strengths Practice?	(J) Are you taking part in the Mindfulness-Based Strengths Practice?	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
1	MBSP	Control	.339	.319	.292	-.298	.975
	Control	MBSP	-.339	.319	.292	-.975	.298
2	MBSP	Control	.911*	.307	.004	.298	1.524

	Control	MBSP	-.911*	.307	.004	-1.524	-.298
3	MBSP	Control	.983*	.335	.005	.315	1.651
	Control	MBSP	-.983*	.335	.005	-1.651	-.315

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 3.17 ANCOVA for work engagement

2 x 2 ANCOVA

Tests of Within-Subjects Effects

Measure: workeng

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	2.679	1	2.679	5.978	.017	.066
	Greenhouse-Geisser	2.679	1.000	2.679	5.978	.017	.066
	Huynh-Feldt	2.679	1.000	2.679	5.978	.017	.066
	Lower-bound	2.679	1.000	2.679	5.978	.017	.066
time * Cohort	Sphericity Assumed	.566	1	.566	1.262	.264	.015
	Greenhouse-Geisser	.566	1.000	.566	1.262	.264	.015
	Huynh-Feldt	.566	1.000	.566	1.262	.264	.015
	Lower-bound	.566	1.000	.566	1.262	.264	.015
time * Condition	Sphericity Assumed	1.119	1	1.119	2.496	.118	.029
	Greenhouse-Geisser	1.119	1.000	1.119	2.496	.118	.029

	Huynh-Feldt	1.119	1.000	1.119	2.496	.118	.029
	Lower-bound	1.119	1.000	1.119	2.496	.118	.029
Error(time)	Sphericity Assumed	38.095	85	.448			
	Greenhouse-Geisser	38.095	85.000	.448			
	Huynh-Feldt	38.095	85.000	.448			
	Lower-bound	38.095	85.000	.448			

2 x 3 ANCOVA

Tests of Within-Subjects Effects

Measure: workeng

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	Sphericity Assumed	1.508	2	.754	1.766	.176	.031
	Greenhouse-Geisser	1.508	1.426	1.058	1.766	.186	.031
	Huynh-Feldt	1.508	1.505	1.002	1.766	.185	.031
	Lower-bound	1.508	1.000	1.508	1.766	.189	.031
time * Cohort	Sphericity Assumed	1.036	2	.518	1.213	.301	.021
	Greenhouse-Geisser	1.036	1.426	.727	1.213	.291	.021
	Huynh-Feldt	1.036	1.505	.689	1.213	.293	.021
	Lower-bound	1.036	1.000	1.036	1.213	.275	.021
time * Condition	Sphericity Assumed	3.235	2	1.617	3.788	.026	.063
	Greenhouse-Geisser	3.235	1.426	2.269	3.788	.041	.063

	Huynh-Feldt	3.235	1.505	2.150	3.788	.038	.063
	Lower-bound	3.235	1.000	3.235	3.788	.057	.063
Error(time)	Sphericity Assumed	47.818	112	.427			
	Greenhouse-Geisser	47.818	79.840	.599			
	Huynh-Feldt	47.818	84.262	.567			
	Lower-bound	47.818	56.000	.854			

Post-Hoc Comparisons

Pairwise Comparisons

Measure: workeng

Are you taking part in the Mindfulness-Based Strengths Practice?	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
MBSP	1	2	-.461*	.162	.019	-.862	-.061
		3	-.371	.172	.108	-.797	.055
	2	1	.461*	.162	.019	.061	.862
		3	.090	.089	.944	-.130	.310
	3	1	.371	.172	.108	-.055	.797
		2	-.090	.089	.944	-.310	.130
Control	1	2	.093	.236	1.000	-.489	.674
		3	.289	.250	.759	-.329	.907
	2	1	-.093	.236	1.000	-.674	.489
		3	.196	.129	.403	-.123	.516
	3	1	-.289	.250	.759	-.907	.329
		2	-.196	.129	.403	-.516	.123

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Pairwise Comparisons

Measure: workeng

(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-.270*	.102	.010	-.473	-.067
2	1	.270*	.102	.010	.067	.473

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

APPENDIX 4.1 Factor Analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.952
Bartlett's Test of Sphericity	Approx. Chi-Square	7393.368
	df	276
	Sig.	.000

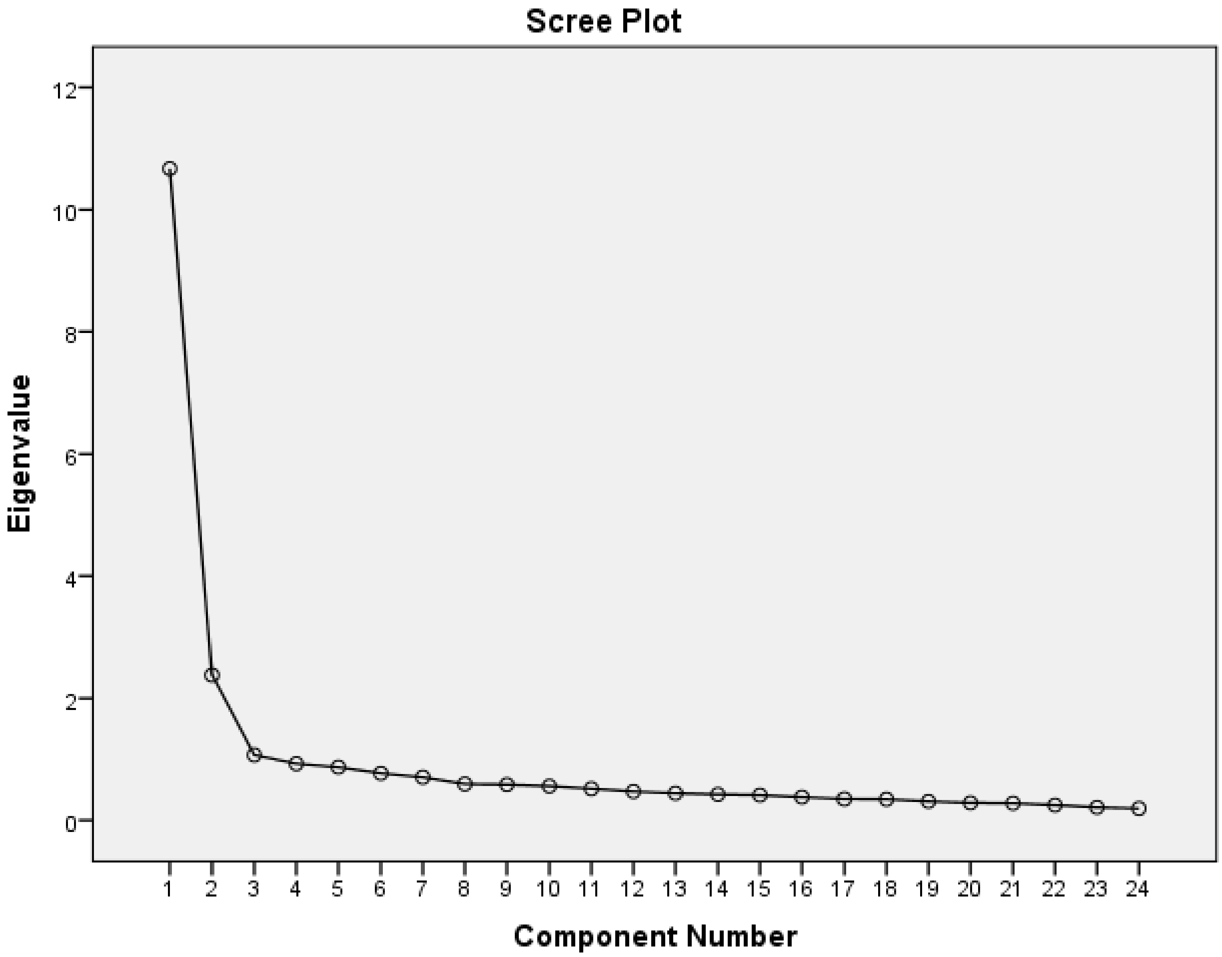
Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	10.674	44.475	44.475	10.674	44.475	44.475	9.621

2	2.380	9.918	54.393	2.380	9.918	54.393	7.367
3	1.070	4.459	58.851	1.070	4.459	58.851	2.318
4	.926	3.860	62.711				
5	.870	3.626	66.338				
6	.770	3.209	69.547				
7	.706	2.940	72.487				
8	.594	2.476	74.963				
9	.585	2.439	77.402				
10	.559	2.331	79.733				
11	.517	2.155	81.888				
12	.471	1.963	83.851				
13	.443	1.845	85.696				
14	.424	1.767	87.463				
15	.412	1.715	89.179				
16	.380	1.582	90.761				
17	.348	1.450	92.211				
18	.344	1.435	93.645				
19	.308	1.285	94.930				
20	.285	1.187	96.117				
21	.278	1.159	97.276				
22	.249	1.037	98.313				
23	.212	.883	99.195				
24	.193	.805	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.



Pattern Matrix[a]

	Component		
	1	2	3
SU8	.772		
SU5	.771		
SU13	.763		
SU14	.753		
SU10	.744		
SU6	.736		
SU1	.716		
SU11	.705		
SU7	.702		-.402

SU9	.701		
SU12	.700		
SU4	.689		
SU2	.679		
SU3	.615		
SE3	.490		
SE5		.861	
SE10		.841	
SE7		.828	
SE9		.787	
SE4		.784	
SE8		.686	
SE6		.514	
SE2			.577
SE1			.479

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.[a]

a. Rotation converged in 6 iterations.

APPENDIX 4.2 Parallel Analysis

Run MATRIX procedure:

PARALLEL ANALYSIS:

Principal Components & Random Normal Data Generation

Specifications for this Run:

Ncases 519

Nvars 24

Ndatsets 1000

Percent 95

Raw Data Eigenvalues, & Mean & Percentile Random Data Eigenvalues

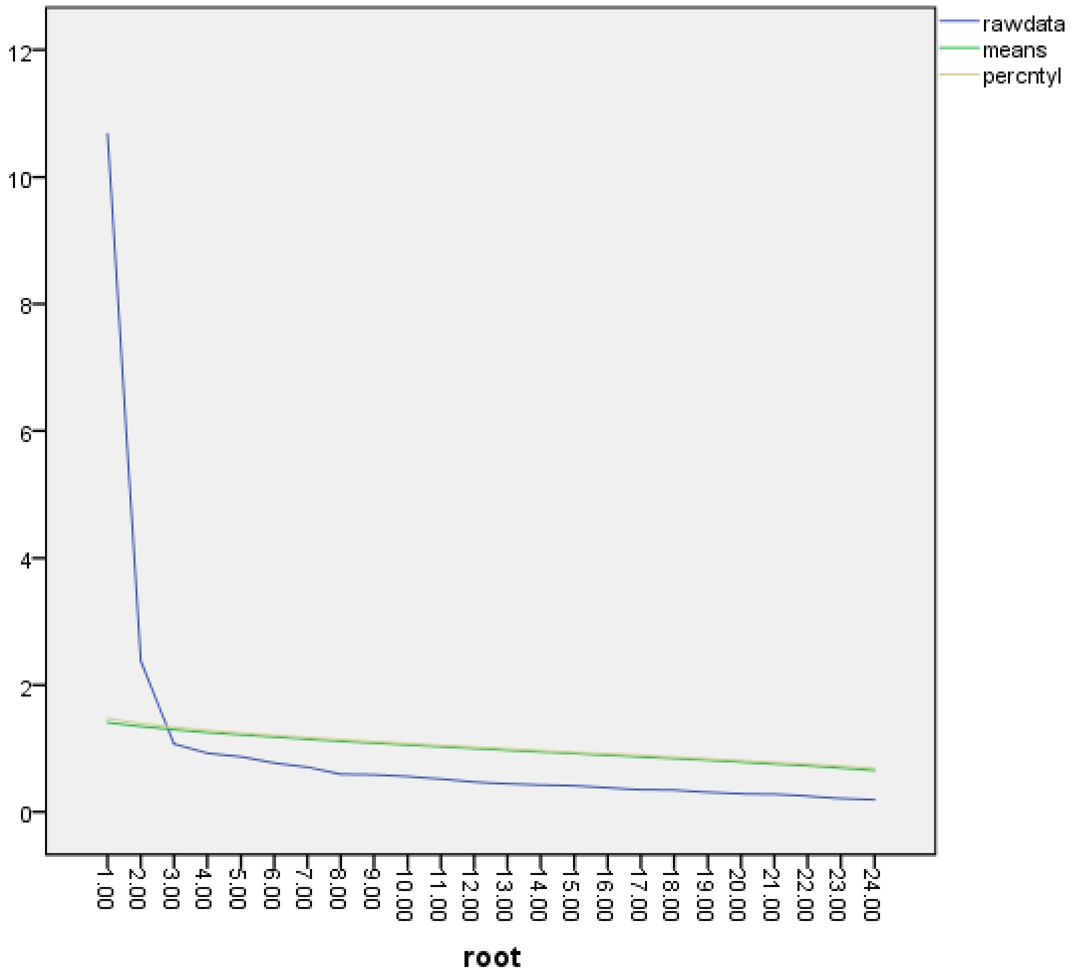
Root	Raw Data	Means	Prcntyle
1.000000	10.673931	1.410875	1.472345
2.000000	2.380271	1.345927	1.391927
3.000000	1.070077	1.296422	1.336145
4.000000	.926449	1.253235	1.288188
5.000000	.870353	1.214850	1.245881
6.000000	.770275	1.180330	1.208385
7.000000	.705629	1.146293	1.174939
8.000000	.594134	1.115606	1.142690
9.000000	.585470	1.085078	1.110186
10.000000	.559355	1.054751	1.079766
11.000000	.517292	1.027575	1.052244
12.000000	.471091	.999952	1.023800
13.000000	.442695	.972726	.996628
14.000000	.424195	.945997	.968914
15.000000	.411667	.919803	.941251
16.000000	.379682	.893783	.916474
17.000000	.347988	.867491	.891470
18.000000	.344280	.840454	.863828
19.000000	.308434	.813531	.838531
20.000000	.284763	.785560	.811268
21.000000	.278257	.756921	.782399
22.000000	.248790	.726877	.753292
23.000000	.211801	.693037	.724064
24.000000	.193120	.652924	.686487

------ END MATRIX -----

Model Description

Model Name		MOD_1
Series or Sequence	1	rawdata
	2	means
	3	percntyl
Transformation		None
Non-Seasonal Differencing		0
Seasonal Differencing		0
Length of Seasonal Period		No periodicity
Horizontal Axis Labels		root
Intervention Onsets		None
For Each Observation		Values not joined

Applying the model specifications from MOD_1



Pattern Matrix[a]

	Component	
	1	2
SU5	.779	-.064
SU13	.767	.065
SU8	.766	-.069
SU14	.752	.090
SU6	.750	.057
SU10	.746	.087
SU1	.724	.004
SU9	.707	.108
SU4	.706	.125
SU12	.701	-.079
SU11	.701	.117
SU2	.697	.044
SU7	.689	-.186
SU3	.632	.131
SE3	.499	.195
SE5	-.022	.839
SE10	-.010	.831
SE9	-.067	.825
SE7	-.058	.782
SE4	.072	.755
SE8	.022	.722
SE6	.117	.637
SE1	.113	.574
SE2	.214	.316

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.[a]

a. Rotation converged in 5 iterations.

APPENDIX 4.3 Correlations between Character Strengths & the PERMA Profiler

Correlations

Control Variables			M	AOB	BRAVERY	CREATIVITY	CURIOSITY	FAIRNESS	FORGIVENESS	GRATITUDE	HONESTY	HOPE	HUMOUR	JUDGMENT	KINDNESS	LEADERSHIP	LOL	LOVE	HUMILITY
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	SU	Correlation	.218	.077	.449	.369	.364	.129	.196	.401	.308	.602	.311	.176	.210	.467	.262	.237	-.118
		Significance (2-tailed)	.000	.078	.000	.000	.000	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.007
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	SE	Correlation	.211	.022	.463	.412	.347	.142	.186	.321	.292	.556	.381	.256	.189	.499	.284	.206	-.011
		Significance (2-tailed)	.000	.622	.000	.000	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.795
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	PE	Correlation	.391	.137	.298	.305	.390	.208	.321	.493	.300	.716	.383	.162	.166	.315	.197	.438	-.037
		Significance (2-tailed)	.000	.002	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.393
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	EN	Correlation	.235	.230	.327	.343	.522	.168	.168	.385	.233	.520	.286	.119	.188	.294	.379	.295	-.029
		Significance (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.006	.000	.000	.000	.000	.501
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	RE	Correlation	.215	.127	.148	.158	.262	.197	.243	.363	.208	.498	.214	.133	.164	.194	.206	.515	-.072
		Significance (2-tailed)	.000	.003	.001	.000	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000	.000	.000	.099
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	ME	Correlation	.282	.107	.362	.333	.356	.160	.272	.477	.304	.688	.270	.174	.138	.356	.244	.414	-.075
		Significance (2-tailed)	.000	.014	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.085
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	AC	Correlation	.317	-.029	.381	.310	.316	.145	.209	.379	.355	.640	.315	.255	.162	.405	.235	.274	-.056
		Significance (2-tailed)	.000	.502	.000	.000	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.196
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	NEG	Correlation	-.453	.031	-.160	-.206	-.252	-.244	-.359	-.294	-.278	-.533	-.263	-.277	-.114	-.173	-.221	-.296	-.031
		Significance (2-tailed)	.000	.484	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.009	.000	.000	.000	.479
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	HE	Correlation	.253	.080	.265	.236	.239	.103	.238	.218	.239	.377	.099	.162	.011	.160	.139	.235	-.022
		Significance (2-tailed)	.000	.067	.000	.000	.000	.018	.000	.000	.000	.000	.023	.000	.795	.000	.001	.000	.617
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	LO	Correlation	-.321	-.017	-.140	-.194	-.231	-.092	-.165	-.250	-.136	-.452	-.230	-.152	-.044	-.167	-.126	-.414	.083
		Significance (2-tailed)	.000	.700	.001	.000	.000	.035	.000	.000	.002	.000	.000	.000	.308	.000	.004	.000	.056
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	HA	Correlation	.345	.044	.243	.281	.319	.183	.298	.435	.294	.656	.294	.209	.141	.302	.166	.405	-.042
		Significance (2-tailed)	.000	.309	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.333
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525
	OWB	Correlation	.357	.125	.368	.359	.441	.208	.300	.512	.346	.752	.354	.207	.194	.381	.295	.459	-.067
		Significance (2-tailed)	.000	.004	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.124
		df	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525	525

Control Variables				PERSEVERANCE	PERSPECTIVE	PRUDENCE	SELFREG	SOCIQ	SPIRITUALITY	TEAMWORK	ZEST
		df	5	525	525	525	525	525	525	525	0
	SU	Correlation	8	.474	.448	.267	.400	.267	.193	.309	.481
		Significance (2-tailed)	7	.000	.000	.000	.000	.000	.000	.000	.000
		df	5	525	525	525	525	525	525	525	525
	SE	Correlation	1	.450	.490	.322	.415	.233	.056	.271	.416
		Significance (2-tailed)	5	.000	.000	.000	.000	.000	.200	.000	.000
		df	5	525	525	525	525	525	525	525	525
	PE	Correlation	7	.378	.321	.221	.335	.312	.211	.297	.636
		Significance (2-tailed)	3	.000	.000	.000	.000	.000	.000	.000	.000
		df	5	525	525	525	525	525	525	525	525
	EN	Correlation	9	.328	.244	.145	.228	.218	.141	.222	.477
		Significance (2-tailed)	1	.000	.000	.001	.000	.000	.001	.000	.000
		df	5	525	525	525	525	525	525	525	525
	RE	Correlation	2	.229	.216	.175	.237	.312	.156	.226	.385
		Significance (2-tailed)	9	.000	.000	.000	.000	.000	.000	.000	.000
		df	5	525	525	525	525	525	525	525	525
	ME	Correlation	5	.438	.360	.241	.402	.324	.231	.298	.563
		Significance (2-tailed)	5	.000	.000	.000	.000	.000	.000	.000	.000
		df	5	525	525	525	525	525	525	525	525
	AC	Correlation	6	.532	.384	.310	.499	.262	.105	.284	.494
		Significance (2-tailed)	6	.000	.000	.000	.000	.000	.016	.000	.000
		df	5	525	525	525	525	525	525	525	525
	NEG	Correlation	1	-.342	-.267	-.258	-.314	-.215	-.032	-.191	-.465
		Significance (2-tailed)	9	.000	.000	.000	.000	.000	.467	.000	.000
		df	5	525	525	525	525	525	525	525	525
	HE	Correlation	2	.350	.219	.243	.380	.156	.078	.119	.404
		Significance (2-tailed)	7	.000	.000	.000	.000	.000	.073	.006	.000
		df	5	525	525	525	525	525	525	525	525
	LO	Correlation	3	-.235	-.163	-.172	-.234	-.250	-.006	-.138	-.418
		Significance (2-tailed)	6	.000	.000	.000	.000	.000	.883	.002	.000
		df	5	525	525	525	525	525	525	525	525
	HA	Correlation	2	.372	.278	.232	.358	.271	.131	.264	.538
		Significance (2-tailed)	3	.000	.000	.000	.000	.000	.003	.000	.000
		df	5	525	525	525	525	525	525	525	525
	OWB	Correlation	7	.467	.371	.268	.420	.342	.205	.323	.629
		Significance (2-tailed)	4	.000	.000	.000	.000	.000	.000	.000	.000
		df	5	525	525	525	525	525	525	525	525

APPENDIX 4.4 CS regressions

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.796[a]	.634	.617	1.20467	.634	37.019	24	512	.000	2.023

a. Predictors: (Constant), ZEST, HUMILITY, AOB, PERSPECTIVE, FAIRNESS, TEAMWORK, JUDGMENT, LOVE, CREATIVITY, SPIRITUALITY, HUMOUR, KINDNESS, LOL, HONESTY, PERSEVERANCE, SOCIQ, BRAVERY, FORGIVENESS, LEADERSHIP, GRATITUDE, PRUDENCE, CURIOSITY, HOPE, SELFREG

b. Dependent Variable: PE

Model Summary[b]

Model	R	R Square			Change Statistics	

			Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.661[a]	.437	.411	1.25206	.437	16.560	24	512	.000	1.966

a. Predictors: (Constant), ZEST, HUMILITY, AOB, PERSPECTIVE, FAIRNESS, TEAMWORK, JUDGMENT, LOVE, CREATIVITY, SPIRITUALITY, HUMOUR, KINDNESS, LOL, HONESTY, PERSEVERANCE, SOCIQ, BRAVERY, FORGIVENESS, LEADERSHIP, GRATITUDE, PRUDENCE, CURIOSITY, HOPE, SELFREG

b. Dependent Variable: EN

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.652[a]	.425	.398	1.63120	.425	15.760	24	512	.000	1.940

a. Predictors: (Constant), ZEST, HUMILITY, AOB, PERSPECTIVE, FAIRNESS, TEAMWORK, JUDGMENT, LOVE, CREATIVITY, SPIRITUALITY, HUMOUR, KINDNESS, LOL, HONESTY, PERSEVERANCE, SOCIQ, BRAVERY, FORGIVENESS, LEADERSHIP, GRATITUDE, PRUDENCE, CURIOSITY, HOPE, SELFREG

b. Dependent Variable: RE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.768[a]	.589	.570	1.57425	.589	30.625	24	512	.000	2.016

a. Predictors: (Constant), ZEST, HUMILITY, AOB, PERSPECTIVE, FAIRNESS, TEAMWORK, JUDGMENT, LOVE, CREATIVITY, SPIRITUALITY, HUMOUR, KINDNESS, LOL, HONESTY, PERSEVERANCE, SOCIQ, BRAVERY, FORGIVENESS, LEADERSHIP, GRATITUDE, PRUDENCE, CURIOSITY, HOPE, SELFREG

b. Dependent Variable: ME

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	

1	.753[a]	.567	.547	1.15514	.567	27.979	24	512	.000	2.059

a. Predictors: (Constant), ZEST, HUMILITY, AOB, PERSPECTIVE, FAIRNESS, TEAMWORK, JUDGMENT, LOVE, CREATIVITY, SPIRITUALITY, HUMOUR, KINDNESS, LOL, HONESTY, PERSEVERANCE, SOCIQ, BRAVERY, FORGIVENESS, LEADERSHIP, GRATITUDE, PRUDENCE, CURIOSITY, HOPE, SELFREG

b. Dependent Variable: AC

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.830[a]	.689	.675	.93180	.689	47.316	24	512	.000	2.019

a. Predictors: (Constant), ZEST, HUMILITY, AOB, PERSPECTIVE, FAIRNESS, TEAMWORK, JUDGMENT, LOVE, CREATIVITY, SPIRITUALITY, HUMOUR, KINDNESS, LOL, HONESTY, PERSEVERANCE, SOCIQ, BRAVERY, FORGIVENESS, LEADERSHIP, GRATITUDE, PRUDENCE, CURIOSITY, HOPE, SELFREG

b. Dependent Variable: OWB

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.310[a]	.096	.088	.80641	.096	11.284	5	531	.000	1.975

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: AOB

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.426[a]	.182	.174	.69268	.182	23.553	5	531	.000	1.920

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: BRAVERY

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.395[a]	.156	.148	.69758	.156	19.617	5	531	.000	1.938

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: CREATIVITY

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.533[a]	.284	.277	.64619	.284	42.096	5	531	.000	1.864

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: CURIOSITY

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.251[a]	.063	.054	.77776	.063	7.159	5	531	.000	2.076

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: FAIRNESS

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.344[a]	.118	.110	.74689	.118	14.215	5	531	.000	1.985

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: FORGIVENESS

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.547[a]	.299	.292	.56459	.299	45.299	5	531	.000	1.932

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: GRATITUDE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.369[a]	.136	.128	.71421	.136	16.717	5	531	.000	1.979

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: HONESTY

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.775[a]	.600	.597	.52747	.600	159.560	5	531	.000	2.009

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: HOPE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.403[a]	.163	.155	.77259	.163	20.643	5	531	.000	1.898

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: HUMOUR

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.264[a]	.070	.061	.63109	.070	7.958	5	531	.000	2.030

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: JUDGMENT

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.242[a]	.058	.049	.69226	.058	6.578	5	531	.000	1.981

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: KINDNESS

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.439[a]	.192	.185	.69720	.192	25.300	5	531	.000	1.941

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: LEADERSHIP

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.396[a]	.157	.149	.62650	.157	19.741	5	531	.000	1.859

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: LOL

Model Summary[b]

Model	R	R Square			Change Statistics	

			Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.554[a]	.307	.300	.77446	.307	46.956	5	531	.000	1.994

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: LOVE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.071[a]	.005	-.004	.67790	.005	.531	5	531	.753	1.822

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: HUMILITY

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.550[a]	.302	.296	.67752	.302	46.052	5	531	.000	1.938

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: PERSEVERANCE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.404[a]	.164	.156	.63259	.164	20.772	5	531	.000	1.752

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: PERSPECTIVE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.321[a]	.103	.095	.72912	.103	12.205	5	531	.000	1.856

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: PRUDENCE

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.508[a]	.258	.251	.68302	.258	36.990	5	531	.000	1.933

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: SELFREG

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.391[a]	.153	.145	.75866	.153	19.217	5	531	.000	1.997

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: SOCIQ

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.301[a]	.091	.082	1.11929	.091	10.569	5	531	.000	1.721

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: SPIRITUALITY

Model Summary[b]

Model	R	R Square			Change Statistics	

			Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.344[a]	.118	.110	.71931	.118	14.247	5	531	.000	2.104

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: TEAMWORK

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.665[a]	.443	.437	.67926	.443	84.326	5	531	.000	2.002

a. Predictors: (Constant), AC, RE, EN, ME, PE

b. Dependent Variable: ZEST

APPENDIX 4.5 Variable regressions

Mindfulness

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.535[a]	.287	.253	.63681	1.980

a. Predictors: (Constant), ZEST, HUMILITY, AOB, PERSPECTIVE, FAIRNESS, TEAMWORK, JUDGMENT, LOVE, CREATIVITY, SPIRITUALITY, HUMOUR, KINDNESS, LOL, HONESTY, PERSEVERANCE, SOCIQ, BRAVERY, FORGIVENESS, LEADERSHIP, GRATITUDE, PRUDENCE, CURIOSITY, HOPE, SELFREG

b. Dependent Variable: M

Model Summary[f]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson

1	.363[a]	.132	.130	.68711	
2	.467[b]	.218	.216	.65263	
3	.486[c]	.237	.232	.64560	
4	.500[d]	.250	.244	.64051	
5	.508[e]	.258	.251	.63764	1.965

a. Predictors: (Constant), PRUDENCE

b. Predictors: (Constant), PRUDENCE, ZEST

c. Predictors: (Constant), PRUDENCE, ZEST, HONESTY

d. Predictors: (Constant), PRUDENCE, ZEST, HONESTY, SOCIQ

e. Predictors: (Constant), PRUDENCE, ZEST, HONESTY, SOCIQ, JUDGMENT

f. Dependent Variable: M

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.434	1	38.434	81.407	.000[b]
	Residual	252.581	535	.472		
	Total	291.015	536			
2	Regression	63.572	2	31.786	74.628	.000[c]
	Residual	227.443	534	.426		
	Total	291.015	536			
3	Regression	68.860	3	22.953	55.071	.000[d]
	Residual	222.154	533	.417		
	Total	291.015	536			
4	Regression	72.763	4	18.191	44.341	.000[e]
	Residual	218.252	532	.410		
	Total	291.015	536			

5	Regression	75.117	5	15.023	36.950	.000[f]
	Residual	215.898	531	.407		
	Total	291.015	536			

a. Dependent Variable: M

b. Predictors: (Constant), PRUDENCE

c. Predictors: (Constant), PRUDENCE, ZEST

d. Predictors: (Constant), PRUDENCE, ZEST, HONESTY

e. Predictors: (Constant), PRUDENCE, ZEST, HONESTY, SOCIQ

f. Predictors: (Constant), PRUDENCE, ZEST, HONESTY, SOCIQ, JUDGMENT

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.521	.138		18.315	.000	2.251	2.791
	PRUDENCE	.349	.039	.363	9.023	.000	.273	.426
2	(Constant)	1.991	.148		13.468	.000	1.701	2.281
	PRUDENCE	.297	.037	.309	7.943	.000	.224	.371
	ZEST	.243	.032	.299	7.682	.000	.181	.305
3	(Constant)	1.686	.170		9.943	.000	1.353	2.019
	PRUDENCE	.246	.040	.255	6.183	.000	.168	.324
	ZEST	.221	.032	.272	6.923	.000	.158	.284
	HONESTY	.144	.040	.149	3.562	.000	.065	.223
4	(Constant)	1.476	.181		8.137	.000	1.120	1.832
	PRUDENCE	.231	.040	.240	5.808	.000	.153	.309
	ZEST	.200	.032	.245	6.157	.000	.136	.263
	HONESTY	.131	.040	.136	3.248	.001	.052	.210

	SOCIQ	.110	.036	.123	3.084	.002	.040	.180
5	(Constant)	1.295	.196		6.616	.000	.910	1.679
	PRUDENCE	.163	.048	.170	3.372	.001	.068	.259
	ZEST	.198	.032	.243	6.117	.000	.134	.261
	HONESTY	.117	.041	.122	2.896	.004	.038	.197
	SOCIQ	.115	.036	.129	3.243	.001	.045	.185
	JUDGMENT	.133	.055	.118	2.406	.016	.024	.242

a. Dependent Variable: M

Strengths Use

Model Summary[j]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.584[a]	.341	.340	.61216	
2	.632[b]	.400	.397	.58478	
3	.661[c]	.437	.434	.56683	
4	.681[d]	.463	.459	.55380	
5	.693[e]	.480	.475	.54594	
6	.697[f]	.486	.480	.54311	
7	.700[g]	.490	.484	.54125	
8	.703[h]	.495	.487	.53957	
9	.707[i]	.500	.491	.53723	1.997

a. Predictors: (Constant), HOPE

b. Predictors: (Constant), HOPE, PERSPECTIVE

c. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE

d. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY

e. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY

f. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP

g. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP, CURIOSITY

h. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP, CURIOSITY, SOCIQ

i. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP, CURIOSITY, SOCIQ, TEAMWORK

j. Dependent Variable: SU

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	103.621	1	103.621	276.515	.000[b]
	Residual	200.485	535	.375		
	Total	304.105	536			
2	Regression	121.493	2	60.746	177.635	.000[c]
	Residual	182.613	534	.342		
	Total	304.105	536			
3	Regression	132.855	3	44.285	137.833	.000[d]
	Residual	171.250	533	.321		
	Total	304.105	536			
4	Regression	140.943	4	35.236	114.888	.000[e]
	Residual	163.162	532	.307		
	Total	304.105	536			
5	Regression	145.840	5	29.168	97.862	.000[f]
	Residual	158.265	531	.298		

	Total	304.105	536			
6	Regression	147.774	6	24.629	83.499	.000[g]
	Residual	156.331	530	.295		
	Total	304.105	536			
7	Regression	149.134	7	21.305	72.725	.000[h]
	Residual	154.972	529	.293		
	Total	304.105	536			
8	Regression	150.386	8	18.798	64.569	.000[i]
	Residual	153.719	528	.291		
	Total	304.105	536			
9	Regression	152.004	9	16.889	58.518	.000[j]
	Residual	152.101	527	.289		
	Total	304.105	536			

a. Dependent Variable: SU

b. Predictors: (Constant), HOPE

c. Predictors: (Constant), HOPE, PERSPECTIVE

d. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE

e. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY

f. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY

g. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP

h. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP, CURIOSITY

i. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP, CURIOSITY, SOCIQ

j. Predictors: (Constant), HOPE, PERSPECTIVE, PERSEVERANCE, BRAVERY, HUMILITY, LEADERSHIP, CURIOSITY, SOCIQ, TEAMWORK

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound
1	(Constant)	1.723	.114		15.126	.000	1.499	1.946
	HOPE	.529	.032	.584	16.629	.000	.467	.592
2	(Constant)	1.005	.147		6.822	.000	.715	1.294
	HOPE	.439	.033	.484	13.332	.000	.374	.503
	PERSPECTIVE	.287	.040	.262	7.229	.000	.209	.365
3	(Constant)	.786	.147		5.332	.000	.496	1.076
	HOPE	.362	.034	.399	10.500	.000	.294	.429
	PERSPECTIVE	.255	.039	.233	6.570	.000	.179	.331
	PERSEVERANCE	.203	.034	.218	5.947	.000	.136	.270
4	(Constant)	.564	.150		3.754	.000	.269	.860
	HOPE	.319	.035	.352	9.200	.000	.251	.387
	PERSPECTIVE	.213	.039	.195	5.479	.000	.137	.289
	PERSEVERANCE	.181	.034	.194	5.373	.000	.115	.247
	BRAVERY	.182	.035	.184	5.135	.000	.112	.251
5	(Constant)	1.048	.190		5.507	.000	.674	1.421
	HOPE	.311	.034	.343	9.079	.000	.243	.378
	PERSPECTIVE	.216	.038	.198	5.647	.000	.141	.291
	PERSEVERANCE	.206	.034	.220	6.098	.000	.139	.272
	BRAVERY	.163	.035	.165	4.643	.000	.094	.232
	HUMILITY	-.145	.036	-.130	-4.053	.000	-.215	-.075
6	(Constant)	.970	.192		5.061	.000	.593	1.346
	HOPE	.298	.034	.329	8.675	.000	.231	.366
	PERSPECTIVE	.190	.039	.174	4.826	.000	.113	.268

	PERSEVERANCE	.198	.034	.212	5.884	.000	.132	.264
	BRAVERY	.128	.038	.129	3.392	.001	.054	.202
	HUMILITY	-.133	.036	-.119	-3.709	.000	-.203	-.062
	LEADERSHIP	.099	.039	.101	2.561	.011	.023	.175
7	(Constant)	.864	.197		4.381	.000	.477	1.251
	HOPE	.282	.035	.310	8.016	.000	.213	.351
	PERSPECTIVE	.177	.040	.162	4.453	.000	.099	.255
	PERSEVERANCE	.199	.034	.213	5.923	.000	.133	.265
	BRAVERY	.110	.038	.111	2.868	.004	.035	.186
	HUMILITY	-.139	.036	-.125	-3.895	.000	-.210	-.069
	LEADERSHIP	.098	.038	.100	2.545	.011	.022	.173
	CURIOSITY	.076	.035	.077	2.154	.032	.007	.145
8	(Constant)	.917	.198		4.625	.000	.528	1.307
	HOPE	.296	.036	.326	8.290	.000	.226	.366
	PERSPECTIVE	.197	.041	.180	4.832	.000	.117	.277
	PERSEVERANCE	.197	.033	.211	5.874	.000	.131	.262
	BRAVERY	.104	.038	.105	2.699	.007	.028	.179
	HUMILITY	-.137	.036	-.123	-3.823	.000	-.207	-.066
	LEADERSHIP	.115	.039	.118	2.942	.003	.038	.193
	CURIOSITY	.081	.035	.082	2.307	.021	.012	.151
	SOCIQ	-.069	.033	-.075	-2.074	.039	-.134	-.004
9	(Constant)	.795	.204		3.900	.000	.395	1.196
	HOPE	.284	.036	.313	7.900	.000	.213	.354
	PERSPECTIVE	.194	.041	.178	4.783	.000	.115	.274
	PERSEVERANCE	.194	.033	.208	5.822	.000	.129	.260
	BRAVERY	.107	.038	.108	2.787	.006	.031	.182
	HUMILITY	-.137	.036	-.123	-3.841	.000	-.206	-.067

LEADERSHIP	.102	.039	.105	2.589	.010	.025	.180
CURIOSITY	.082	.035	.082	2.328	.020	.013	.151
SOCIQ	-.083	.034	-.090	-2.460	.014	-.149	-.017
TEAMWORK	.079	.033	.080	2.368	.018	.013	.145

a. Dependent Variable: SU

Self-Efficacy

Model Summary[k]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.551[a]	.304	.303	.55803	
2	.628[b]	.395	.392	.52089	
3	.663[c]	.440	.437	.50158	
4	.683[d]	.466	.462	.48998	
5	.693[e]	.480	.475	.48436	
6	.705[f]	.496	.491	.47689	
7	.710[g]	.504	.497	.47393	
8	.714[h]	.510	.503	.47134	
9	.718[i]	.515	.507	.46919	
10	.721[j]	.520	.511	.46733	1.929

a. Predictors: (Constant), HOPE

b. Predictors: (Constant), HOPE, PERSPECTIVE

c. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP

d. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE

e. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR

f. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ

g. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY

h. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY, SPIRITUALITY

i. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY, SPIRITUALITY, BRAVERY

j. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY, SPIRITUALITY, BRAVERY, PRUDENCE

k. Dependent Variable: SE

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.793	1	72.793	233.767	.000[b]
	Residual	166.595	535	.311		
	Total	239.388	536			
2	Regression	94.500	2	47.250	174.146	.000[c]
	Residual	144.888	534	.271		
	Total	239.388	536			
3	Regression	105.293	3	35.098	139.506	.000[d]
	Residual	134.095	533	.252		
	Total	239.388	536			
4	Regression	111.665	4	27.916	116.278	.000[e]
	Residual	127.723	532	.240		
	Total	239.388	536			
5	Regression	114.813	5	22.963	97.878	.000[f]
	Residual	124.575	531	.235		
	Total	239.388	536			
6	Regression	118.853	6	19.809	87.100	.000[g]

	Residual	120.535	530	.227		
	Total	239.388	536			
7	Regression	120.571	7	17.224	76.687	.000[h]
	Residual	118.817	529	.225		
	Total	239.388	536			
8	Regression	122.086	8	15.261	68.691	.000[i]
	Residual	117.302	528	.222		
	Total	239.388	536			
9	Regression	123.373	9	13.708	62.270	.000[j]
	Residual	116.015	527	.220		
	Total	239.388	536			
10	Regression	124.513	10	12.451	57.013	.000[k]
	Residual	114.875	526	.218		
	Total	239.388	536			

a. Dependent Variable: SE

b. Predictors: (Constant), HOPE

c. Predictors: (Constant), HOPE, PERSPECTIVE

d. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP

e. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE

f. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR

g. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ

h. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY

i. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY, SPIRITUALITY

j. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY, SPIRITUALITY, BRAVERY

k. Predictors: (Constant), HOPE, PERSPECTIVE, LEADERSHIP, PERSEVERANCE, HUMOUR, SOCIQ, CREATIVITY, SPIRITUALITY, BRAVERY, PRUDENCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.099	.104		20.218	.000	1.895	2.303
	HOPE	.444	.029	.551	15.289	.000	.387	.501
2	(Constant)	1.308	.131		9.969	.000	1.050	1.566
	HOPE	.344	.029	.427	11.728	.000	.286	.401
	PERSPECTIVE	.316	.035	.326	8.945	.000	.247	.386
3	(Constant)	1.105	.130		8.498	.000	.850	1.361
	HOPE	.289	.029	.359	9.804	.000	.231	.347
	PERSPECTIVE	.239	.036	.246	6.633	.000	.168	.310
	LEADERSHIP	.212	.032	.245	6.550	.000	.149	.276
4	(Constant)	.958	.130		7.351	.000	.702	1.213
	HOPE	.235	.031	.292	7.691	.000	.175	.295
	PERSPECTIVE	.222	.035	.228	6.267	.000	.152	.291
	LEADERSHIP	.195	.032	.225	6.104	.000	.132	.257
	PERSEVERANCE	.153	.030	.185	5.152	.000	.095	.211
5	(Constant)	.807	.135		5.974	.000	.542	1.073
	HOPE	.207	.031	.257	6.639	.000	.146	.268
	PERSPECTIVE	.200	.035	.206	5.628	.000	.130	.269
	LEADERSHIP	.171	.032	.197	5.311	.000	.108	.234
	PERSEVERANCE	.167	.030	.202	5.657	.000	.109	.226

	HUMOUR	.103	.028	.130	3.663	.000	.048	.158
6	(Constant)	.906	.135		6.709	.000	.641	1.172
	HOPE	.229	.031	.285	7.358	.000	.168	.290
	PERSPECTIVE	.234	.036	.241	6.522	.000	.163	.304
	LEADERSHIP	.195	.032	.225	6.051	.000	.131	.258
	PERSEVERANCE	.166	.029	.200	5.690	.000	.109	.223
	HUMOUR	.118	.028	.148	4.219	.000	.063	.173
	SOCIQ	-.124	.029	-.152	-4.215	.000	-.182	-.066
7	(Constant)	.795	.140		5.672	.000	.520	1.070
	HOPE	.218	.031	.271	6.976	.000	.157	.279
	PERSPECTIVE	.221	.036	.227	6.138	.000	.150	.291
	LEADERSHIP	.169	.033	.195	5.060	.000	.103	.234
	PERSEVERANCE	.163	.029	.196	5.607	.000	.106	.220
	HUMOUR	.109	.028	.136	3.883	.000	.054	.163
	SOCIQ	-.116	.029	-.142	-3.932	.000	-.173	-.058
	CREATIVITY	.087	.031	.098	2.766	.006	.025	.148
8	(Constant)	.858	.141		6.065	.000	.580	1.136
	HOPE	.231	.031	.287	7.345	.000	.169	.293
	PERSPECTIVE	.219	.036	.226	6.134	.000	.149	.289
	LEADERSHIP	.175	.033	.203	5.274	.000	.110	.241
	PERSEVERANCE	.159	.029	.192	5.504	.000	.102	.216
	HUMOUR	.107	.028	.135	3.853	.000	.053	.162
	SOCIQ	-.104	.030	-.128	-3.516	.000	-.162	-.046
	CREATIVITY	.085	.031	.096	2.716	.007	.023	.146
	SPIRITUALITY	-.048	.018	-.084	-2.611	.009	-.084	-.012
9	(Constant)	.828	.141		5.855	.000	.550	1.106
	HOPE	.225	.031	.279	7.144	.000	.163	.286

	PERSPECTIVE	.215	.036	.221	6.022	.000	.145	.285
	LEADERSHIP	.151	.035	.175	4.369	.000	.083	.219
	PERSEVERANCE	.151	.029	.182	5.218	.000	.094	.208
	HUMOUR	.098	.028	.123	3.496	.001	.043	.153
	SOCIQ	-.098	.030	-.120	-3.321	.001	-.156	-.040
	CREATIVITY	.063	.032	.072	1.965	.050	.000	.127
	SPIRITUALITY	-.053	.018	-.093	-2.883	.004	-.089	-.017
	BRAVERY	.083	.034	.095	2.418	.016	.016	.151
10	(Constant)	.720	.148		4.853	.000	.429	1.012
	HOPE	.228	.031	.283	7.262	.000	.166	.289
	PERSPECTIVE	.182	.038	.188	4.767	.000	.107	.257
	LEADERSHIP	.155	.034	.180	4.505	.000	.088	.223
	PERSEVERANCE	.120	.032	.145	3.774	.000	.058	.183
	HUMOUR	.103	.028	.129	3.677	.000	.048	.157
	SOCIQ	-.102	.029	-.126	-3.469	.001	-.160	-.044
	CREATIVITY	.057	.032	.064	1.752	.080	-.007	.120
	SPIRITUALITY	-.052	.018	-.090	-2.818	.005	-.088	-.016
	BRAVERY	.097	.035	.111	2.794	.005	.029	.166
	PRUDENCE	.075	.033	.087	2.284	.023	.011	.140

a. Dependent Variable: SE

Wellbeing

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics: R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.823[a]	.678	.674	.93329	.678	159.043	7	529	.000	1.995

a. Predictors: (Constant), ZEST, LOVE, SELFREG, CURIOSITY, GRATITUDE, PERSEVERANCE, HOPE

b. Dependent Variable: OWB

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-.061	.278		-.221	.825	-.607	.484		
	CURIOSITY	.211	.061	.098	3.469	.001	.091	.330	.761	1.313
	GRATITUDE	.182	.075	.075	2.426	.016	.035	.330	.639	1.564
	HOPE	.874	.072	.444	12.133	.000	.732	1.015	.455	2.200
	LOVE	.346	.048	.196	7.212	.000	.252	.440	.825	1.212
	PERSEVERANCE	.161	.073	.080	2.209	.028	.018	.304	.470	2.129
	SELFREG	.210	.072	.101	2.931	.004	.069	.350	.510	1.962
	ZEST	.244	.062	.135	3.900	.000	.121	.367	.507	1.971

a. Dependent Variable: OWB

KEY REGRESSIONS

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	8.081	.189		42.835	.000	7.711	8.452
	Gender	-.452	.116	-.167	-3.909	.000	-.680	-.225
	Centr	.006	.008	.033	.781	.435	-.010	.022
2	(Constant)	1.211	.373		3.245	.001	.478	1.945
	Gender	-.491	.085	-.182	-5.796	.000	-.657	-.324
	Centr	.005	.006	.028	.900	.368	-.006	.017

	M	.462	.071	.209	6.484	.000	.322	.602
	SU	1.008	.088	.465	11.489	.000	.836	1.181
	SE	.441	.099	.180	4.466	.000	.247	.635
3	(Constant)	-3.870	1.459		-2.653	.008	-6.736	-1.004
	Gender	-.477	.084	-.176	-5.687	.000	-.641	-.312
	Centr	.009	.006	.048	1.511	.131	-.003	.021
	M	1.187	.368	.536	3.226	.001	.464	1.910
	SU	1.756	.465	.809	3.775	.000	.842	2.669
	SE	1.904	.478	.779	3.984	.000	.965	2.842
	M_SU	.002	.106	.005	.019	.984	-.207	.211
	M_SE	-.200	.114	-.494	-1.747	.081	-.424	.025
	SU_SE	-.220	.081	-.589	-2.710	.007	-.380	-.061
4	(Constant)	-10.481	4.025		-2.604	.009	-18.388	-2.573
	Gender	-.480	.084	-.178	-5.731	.000	-.644	-.315
	Centr	.009	.006	.048	1.530	.127	-.003	.021
	M	2.990	1.087	1.349	2.750	.006	.854	5.126
	SU	3.762	1.230	1.735	3.059	.002	1.346	6.178
	SE	3.960	1.261	1.620	3.141	.002	1.483	6.436
	M_SU	-.538	.324	-1.401	-1.659	.098	-1.176	.099
	M_SE	-.757	.336	-1.872	-2.251	.025	-1.417	-.096
	SU_SE	-.822	.351	-2.200	-2.341	.020	-1.511	-.132
	M_SU_SE	.161	.091	2.105	1.762	.079	-.019	.341

a. Dependent Variable: OWB

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound

1	(Constant)	1.434	.142		10.102	.000	1.155	1.712
	M	.070	.031	.077	2.251	.025	.009	.131
	SU	.547	.030	.616	18.040	.000	.487	.606

a. Dependent Variable: SE

Spreadsheet by Roger Giner-Sorolla, 2002-2011
t-test between two dependent betas in 2-IV multiple regression (predicting same DV)

beta1	0.077							
beta2	0.616							
R-squared of regression	0.404		SE diff	0.047246				
number of participants (N)	537		t	-11.4083	p	0.00000		
(N = 'total df' from regression +1)								
total number of IVs	2		df	534				
inverse matrix								
r IV1/IV1	1							
r IV2/IV2	1							
rIV1/IV2	0	corr. matrix						
			1	0	determinant	1	1	0
		r(IV1,IV2)		1			0	1

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound
1	(Constant)	2.600	.268		9.702	.000	2.073	3.126
	SU	1.345	.074	.620	18.295	.000	1.201	1.490
2	(Constant)	1.166	.340		3.431	.001	.499	1.834
	SU	1.244	.073	.573	17.130	.000	1.101	1.386
	M	.481	.074	.217	6.483	.000	.335	.627

a. Dependent Variable: OWB

Spreadsheet by Roger Giner-Sorolla, 2002-2011
t-test between two dependent betas in 2-IV multiple regression (predicting same DV)

beta1	0.573							
beta2	0.217							
R-squared of regression	0.428		SE diff	0.046285				
number of participants (N)	537		t	7.691439	p	0.00000		
(N = 'total df' from regression +1)								
total number of IVs	2		df	534				
inverse matrix								
r IV1/IV1	1							
r IV2/IV2	1							
rIV1/IV2	0	corr. matrix						
			1	0	determinant	1	1	0
		r(IV1,IV2)		1			0	1

APPENDIX 5.6 Mediation models

Model 1

Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.00 ****************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2018). www.guilford.com/p/hayes3

****

Model : 4

Y : OWB

X : M

M : SE

Sample

Size: 537

****

OUTCOME VARIABLE:

SE

Model Summary

R	R-sq	MSE	F	df1	df2	p
.2103	.0442	.4277	24.7466	1.0000	535.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.9308	.1459	20.0884	.0000	2.6442	3.2174
M	.1907	.0383	4.9746	.0000	.1154	.2660

Covariance matrix of regression parameter estimates:

	constant	M
constant	.0213	-.0055
M	-.0055	.0015

****

OUTCOME VARIABLE:

OWB

Model Summary

R	R-sq	MSE	F	df1	df2	p
.5735	.3289	1.7977	130.8663	2.0000	534.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.1933	.3962	3.0121	.0027	.4151	1.9716
M	.5364	.0804	6.6726	.0000	.3785	.6944
SE	1.1528	.0886	13.0055	.0000	.9787	1.3269

Covariance matrix of regression parameter estimates:

	constant	M	SE
constant	.1570	-.0187	-.0230
M	-.0187	.0065	-.0015
SE	-.0230	-.0015	.0079

************************* TOTAL EFFECT MODEL ****************************

OUTCOME VARIABLE:

OWB

Model Summary

R	R-sq	MSE	F	df1	df2	p
.3411	.1164	2.3627	70.4479	1.0000	535.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI

constant	4.5720	.3429	13.3326	.0000	3.8983	5.2456
M	.7563	.0901	8.3933	.0000	.5793	.9333

Covariance matrix of regression parameter estimates:

	constant	M
constant	.1176	-.0303
M	-.0303	.0081

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_ps	c_cs
.7563	.0901	8.3933	.0000	.5793	.9333	.4629	.3411

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.5364	.0804	6.6726	.0000	.3785	.6944	.3284	.2420

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SE	.2198	.0575	.1124	.3386

Partially standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SE	.1346	.0337	.0705	.2019

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SE	.0992	.0246	.0516	.1485

********************** ANALYSIS NOTES AND ERRORS ***********************

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

------ END MATRIX -----

Model 2

Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.00 *****************

Written by Andrew F. Hayes, Ph.D.   www.afhayes.com

Documentation available in Hayes (2018). www.guilford.com/p/hayes3

****

Model : 4

Y : OWB

X : SU

M : SE

Sample

Size: 537

****

OUTCOME VARIABLE:

SE

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6329	.4005	.2682	357.4100	1.0000	535.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.6413	.1082	15.1685	.0000	1.4287	1.8539
SU	.5615	.0297	18.9053	.0000	.5031	.6198

Covariance matrix of regression parameter estimates:

	constant	SU
constant	.0117	-.0031
SU	-.0031	.0009

****

OUTCOME VARIABLE:

OWB

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6426	.4130	1.5725	187.8421	2.0000	534.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.7305	.3133	5.5234	.0000	1.1150	2.3459
SU	1.0482	.0929	11.2859	.0000	.8657	1.2306
SE	.5295	.1047	5.0587	.0000	.3239	.7352

Covariance matrix of regression parameter estimates:

	constant	SU	SE
constant	.0982	-.0083	-.0180
SU	-.0083	.0086	-.0062
SE	-.0180	-.0062	.0110

************************** TOTAL EFFECT MODEL ****************************

OUTCOME VARIABLE:

OWB

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6204	.3849	1.6448	334.7090	1.0000	535.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.5996	.2679	9.7022	.0000	2.0732	3.1259
SU	1.3455	.0735	18.2951	.0000	1.2010	1.4900

Covariance matrix of regression parameter estimates:

	constant	SU
constant	.0718	-.0193
SU	-.0193	.0054

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y

Effect	se	t	p	LLCI	ULCI	c_ps	c_cs
1.3455	.0735	18.2951	.0000	1.2010	1.4900	.8236	.6204

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
1.0482	.0929	11.2859	.0000	.8657	1.2306	.6416	.4833

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SE	.2973	.0678	.1715	.4340

Partially standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SE	.1820	.0402	.1074	.2625

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SE	.1371	.0306	.0794	.1975

********************** ANALYSIS NOTES AND ERRORS ***********************

Level of confidence for all confidence intervals in output:

95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:

5000

------ END MATRIX -----

Moderation

Run MATRIX procedure:

**************** PROCESS Procedure for SPSS Version 3.00 *****************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

Documentation available in Hayes (2018). www.guilford.com/p/hayes3

****

Model : 1

Y : SE

X : SU

W : M

Sample

Size: 537

****

OUTCOME VARIABLE:

SE

Model Summary

R	R-sq	MSE	F	df1	df2	p
.6378	.4068	.2664	121.8594	3.0000	533.0000	.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.6393	.0227	160.2477	.0000	3.5947	3.6839
SU	.5499	.0306	17.9825	.0000	.4898	.6100
M	.0681	.0311	2.1929	.0287	.0071	.1291
Int_1	.0295	.0370	.7965	.4261	-.0432	.1021

Product terms key:

Int_1 : SU x M

Covariance matrix of regression parameter estimates:

	constant	SU	M	Int_1
constant	.0005	.0000	.0000	-.0002
SU	.0000	.0009	-.0002	.0001
M	.0000	-.0002	.0010	-.0001
Int_1	-.0002	.0001	-.0001	.0014

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	.0007	.6345	1.0000	533.0000	.4261

Focal predict: SU (X)

Mod var: M (W)

Data for visualizing the conditional effect of the focal predictor:

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/

```
SU     M     SE     .
BEGIN DATA.
  -.7790   -.7285   3.1780
   .0782   -.7285   3.6310
   .7210   -.7285   3.9707
  -.7790   -.0672   3.2079
   .0782   -.0672   3.6776
   .7210   -.0672   4.0298
  -.7790    .7328   3.2440
   .0782    .7328   3.7339
   .7210    .7328   4.1013
END DATA.
GRAPH/SCATTERPLOT=
SU    WITH   SE    BY    M    .

********************** ANALYSIS NOTES AND ERRORS ***********************

Level of confidence for all confidence intervals in output:
 95.0000

NOTE: The following variables were mean centered prior to analysis:
     M     SU

------ END MATRIX -----
```

APPENDIX 4.7 SEMs

Model 3

Analysis Summary

Date and Time

Date: 12 August 2019

Time: 11:32:21

Title

Standard

Groups

Group number 1 (Group number 1)

Notes for Group (Group number 1)

The model is recursive.

Sample size = 537

Variable Summary (Group number 1)

Your model contains the following variables (Group number 1)

Observed, endogenous variables

SE

OWB

Observed, exogenous variables

M

SU

Unobserved, exogenous variables

E1

E2

Variable counts (Group number 1)

Number of variables in your model:	6
Number of observed variables:	4
Number of unobserved variables:	2
Number of exogenous variables:	4
Number of endogenous variables:	2

Parameter Summary (Group number 1)

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	2	0	0	0	0	2
Labeled	0	0	0	0	0	0
Unlabeled	3	1	4	0	0	8

	Weights	Covariances	Variances	Means	Intercepts	Total
Total	5	1	4	0	0	10

Assessment of normality (Group number 1)

Variable	min	max	skew	c.r.	kurtosis	c.r.
SU	1.071	5.000	-.679	-6.428	.542	2.566
M	1.357	6.000	.038	.355	-.027	-.128
SE	1.100	5.000	-.901	-8.520	1.218	5.760
OWB	1.400	11.000	-.675	-6.386	.279	1.318
Multivariate					4.526	7.569

Observations farthest from the centroid (Mahalanobis distance) (Group number 1)

Observation number	Mahalanobis d-squared	p1	p2
64	34.316	.000	.000
125	20.459	.000	.020
279	18.117	.001	.026
45	17.944	.001	.005
333	16.358	.003	.013
6	15.912	.003	.008
39	15.786	.003	.002
153	15.728	.003	.001
379	14.793	.005	.002
530	14.218	.007	.004
140	14.012	.007	.002
225	13.873	.008	.001
202	13.806	.008	.000
280	13.578	.009	.000
370	13.386	.010	.000
146	13.290	.010	.000

Observation number	Mahalanobis d-squared	p1	p2
201	13.194	.010	.000
72	12.963	.011	.000
224	12.791	.012	.000
195	12.581	.014	.000
273	12.452	.014	.000
502	12.445	.014	.000
109	12.106	.017	.000
458	11.925	.018	.000
19	11.915	.018	.000
434	11.249	.024	.001
430	11.217	.024	.000
174	11.186	.025	.000
216	10.977	.027	.000
167	10.700	.030	.001
366	10.493	.033	.002
264	10.370	.035	.002
119	10.195	.037	.004
471	10.167	.038	.003
208	10.013	.040	.004
388	9.997	.040	.003
389	9.863	.043	.004
295	9.520	.049	.018
450	9.516	.049	.012
244	9.440	.051	.012
489	9.291	.054	.019
61	9.288	.054	.012
113	9.233	.056	.011

Observation number	Mahalanobis d-squared	p1	p2
336	9.150	.057	.012
398	9.145	.058	.008
266	9.141	.058	.005
248	9.103	.059	.004
417	9.003	.061	.006
250	8.879	.064	.009
482	8.655	.070	.028
469	8.511	.075	.046
177	8.498	.075	.036
22	8.253	.083	.105
421	8.232	.083	.090
293	8.167	.086	.097
346	8.138	.087	.087
17	8.122	.087	.073
60	8.092	.088	.065
172	8.070	.089	.056
18	7.975	.093	.074
38	7.948	.094	.067
233	7.941	.094	.053
179	7.879	.096	.058
75	7.753	.101	.095
483	7.585	.108	.182
507	7.469	.113	.254
116	7.458	.114	.224
313	7.457	.114	.188
416	7.278	.122	.339
74	7.117	.130	.505

Observation number	Mahalanobis d-squared	p1	p2
526	7.116	.130	.455
494	7.091	.131	.439
268	7.072	.132	.416
105	7.040	.134	.411
455	6.986	.137	.438
487	6.861	.143	.568
457	6.831	.145	.563
26	6.797	.147	.564
214	6.789	.147	.528
429	6.726	.151	.573
258	6.711	.152	.547
29	6.707	.152	.505
409	6.627	.157	.579
292	6.587	.159	.592
495	6.579	.160	.558
246	6.488	.166	.649
101	6.464	.167	.642
446	6.442	.168	.629
465	6.359	.174	.708
290	6.356	.174	.672
100	6.317	.177	.687
304	6.297	.178	.675
419	6.265	.180	.682
514	6.245	.182	.669
402	6.208	.184	.684
456	6.202	.185	.653
358	6.144	.189	.699

Observation number	Mahalanobis d-squared	p1	p2
30	6.121	.190	.694
205	6.095	.192	.693
139	6.079	.193	.678

Models

Default model (Default model)

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	10
Number of distinct parameters to be estimated:	8
Degrees of freedom (10 - 8):	2

Result (Default model)

Minimum was achieved

Chi-square = 151.139

Degrees of freedom = 2

Probability level = .000

Group number 1 (Group number 1 - Default model)

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
SE	<---	M	.070	.031	2.255	.024	
SE	<---	SU	.547	.030	18.074	***	
OWB	<---	SE	1.277	.090	14.186	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
SE	<---	M	.077

			Estimate
SE	<---	SU	.616
OWB	<---	SE	.522

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
M	<-->	SU	.120	.024	4.898	***	

Correlations: (Group number 1 - Default model)

			Estimate
M	<-->	SU	.216

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
M	.542	.033	16.371	***	
SU	.566	.035	16.371	***	
E1	.265	.016	16.371	***	
E2	1.937	.118	16.371	***	

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
SE	.406
OWB	.273

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

	SU	M	SE
SE	.547	.070	.000
OWB	.698	.089	1.277

Standardized Total Effects (Group number 1 - Default model)

	SU	M	SE
SE	.616	.077	.000

	SU	M	SE
OWB	.322	.040	.522

Direct Effects (Group number 1 - Default model)

	SU	M	SE
SE	.547	.070	.000
OWB	.000	.000	1.277

Standardized Direct Effects (Group number 1 - Default model)

	SU	M	SE
SE	.616	.077	.000
OWB	.000	.000	.522

Indirect Effects (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.698	.089	.000

Standardized Indirect Effects (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.322	.040	.000

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

	M.I.	Par Change
E2 <--> SU	44.430	.294
E2 <--> M	21.973	.203
E2 <--> E1	47.842	-.214

Variances: (Group number 1 - Default model)

M.I. Par Change

Regression Weights: (Group number 1 - Default model)

	M.I.	Par Change
OWB <--- SU	61.884	.628
OWB <--- M	39.428	.513

Bootstrap (Group number 1 - Default model)

Bootstrap standard errors (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
SE <--- M	.037	.001	.068	-.002	.001
SE <--- SU	.037	.001	.547	.000	.001
OWB <--- SE	.103	.002	1.279	.002	.003

Standardized Regression Weights: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
SE <--- M	.041	.001	.075	-.002	.001
SE <--- SU	.032	.001	.617	.001	.001
OWB <--- SE	.037	.001	.522	.000	.001

Covariances: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M <--> SU	.027	.001	.120	.001	.001

Correlations: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M <--> SU	.045	.001	.217	.001	.001

Variances: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M	.032	.001	.541	-.001	.001
SU	.040	.001	.567	.001	.001
E1	.021	.000	.263	-.002	.001

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
E2	.118	.003	1.934	-.003	.004

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
SE	.038	.001	.409	.003	.001
OWB	.039	.001	.274	.001	.001

Matrices (Group number 1 - Default model)

Total Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.037	.037	.000
OWB	.077	.050	.103

Standardized Total Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.032	.041	.000
OWB	.034	.022	.037

Direct Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.037	.037	.000
OWB	.000	.000	.103

Standardized Direct Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.032	.041	.000
OWB	.000	.000	.037

Indirect Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.077	.050	.000

Standardized Indirect Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.034	.022	.000

Bootstrap Confidence (Group number 1 - Default model)

Percentile method (Group number 1 - Default model)

95% confidence intervals (percentile method)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	M	.070	-.007	.140	.075
SE	<---	SU	.547	.472	.620	.002
OWB	<---	SE	1.277	1.078	1.483	.002

Standardized Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	M	.077	-.007	.155	.075
SE	<---	SU	.616	.550	.676	.002
OWB	<---	SE	.522	.448	.595	.002

Covariances: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.120	.070	.173	.002

Correlations: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.216	.126	.302	.002

Variances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M	.542	.476	.605	.002
SU	.566	.489	.646	.002
E1	.265	.224	.305	.002

Parameter	Estimate	Lower	Upper	P
E2	1.937	1.704	2.186	.002

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
SE	.406	.332	.489	.002
OWB	.273	.201	.354	.002

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

Total Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.472	-.007	.000
OWB	.544	-.007	1.078

Total Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.620	.140	.000
OWB	.852	.181	1.483

Total Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	.002	.075	.002

Standardized Total Effects (Group number 1 - Default model)

Standardized Total Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.550	-.007	.000
OWB	.255	-.003	.448

Standardized Total Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.676	.155	.000

	SU	M	SE
OWB	.391	.081	.595

Standardized Total Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	.002	.075	.002

Direct Effects (Group number 1 - Default model)

Direct Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.472	-.007	.000
OWB	.000	.000	1.078

Direct Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.620	.140	.000
OWB	.000	.000	1.483

Direct Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	...	...	.002

Standardized Direct Effects (Group number 1 - Default model)

Standardized Direct Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.550	-.007	.000
OWB	.000	.000	.448

Standardized Direct Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.676	.155	.000

	SU	M	SE
OWB	.000	.000	.595

Standardized Direct Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	...	...	.002

Indirect Effects (Group number 1 - Default model)

Indirect Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.544	-.007	.000

Indirect Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.852	.181	.000

Indirect Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	.075	...

Standardized Indirect Effects (Group number 1 - Default model)

Standardized Indirect Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.255	-.003	.000

Standardized Indirect Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000

	SU	M	SE
OWB	.391	.081	.000

Standardized Indirect Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	.075	...

Bias-corrected percentile method (Group number 1 - Default model)

95% confidence intervals (bias-corrected percentile method)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	M	.070	-.008	.136	.080
SE	<---	SU	.547	.474	.621	.002
OWB	<---	SE	1.277	1.066	1.469	.003

Standardized Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	M	.077	-.008	.154	.079
SE	<---	SU	.616	.548	.673	.003
OWB	<---	SE	.522	.446	.591	.003

Covariances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M <--> SU	.120	.065	.171	.003

Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M <--> SU	.216	.119	.296	.003

Variances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M	.542	.478	.608	.002
SU	.566	.491	.647	.002
E1	.265	.228	.312	.001
E2	1.937	1.715	2.193	.002

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
SE	.406	.323	.483	.004
OWB	.273	.199	.349	.003

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

Total Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.474	-.008	.000
OWB	.544	-.010	1.066

Total Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.621	.136	.000
OWB	.851	.181	1.469

Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.080	...
OWB	.002	.081	.003

Standardized Total Effects (Group number 1 - Default model)

Standardized Total Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.548	-.008	.000

SU M SE

OWB .254 -.003 .446

Standardized Total Effects - Upper Bounds (BC) (Group number 1 - Default model)

SU M SE

SE .673 .154 .000

OWB .389 .081 .591

Standardized Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

SU M SE

SE .003 .079 ...

OWB .002 .073 .003

Direct Effects (Group number 1 - Default model)

Direct Effects - Lower Bounds (BC) (Group number 1 - Default model)

SU M SE

SE .474 -.008 .000

OWB .000 .000 1.066

Direct Effects - Upper Bounds (BC) (Group number 1 - Default model)

SU M SE

SE .621 .136 .000

OWB .000 .000 1.469

Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

SU M SE

SE .002 .080 ...

OWB ... ... .003

Standardized Direct Effects (Group number 1 - Default model)

Standardized Direct Effects - Lower Bounds (BC) (Group number 1 - Default model)

SU M SE

SE .548 -.008 .000

	SU	M	SE
OWB	.000	.000	.446

Standardized Direct Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.673	.154	.000
OWB	.000	.000	.591

Standardized Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.003	.079	...
OWB	...	...	.003

Indirect Effects (Group number 1 - Default model)

Indirect Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.544	-.010	.000

Indirect Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.851	.181	.000

Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	.081	...

Standardized Indirect Effects (Group number 1 - Default model)

Standardized Indirect Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000

	SU	M	SE
OWB	.254	-.003	.000

Standardized Indirect Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.389	.081	.000

Standardized Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	.073	...

Minimization History (Default model)

Iteration		Negative eigenvalues	Condition #	Smallest eigenvalue	Diameter	F	NTries	Ratio
0	e	0	19.098		9999.000	499.046	0	9999.000
1	e	0	7.813		.559	287.962	4	.000
2	e	0	7.973		.669	221.726	1	.410
3	e	0	4.833		.181	161.289	1	1.185
4	e	0	4.904		.091	151.788	1	1.144
5	e	0	4.857		.031	151.144	1	1.055
6	e	0	4.766		.003	151.139	1	1.006
7	e	0	4.751		.000	151.139	1	1.000

Bootstrap (Default model)

Summary of Bootstrap Iterations (Default model)

(Default model)

Iterations	Method 0	Method 1	Method 2
1	0	0	0
2	0	0	0

Iterations	Method 0	Method 1	Method 2
3	0	100	0
4	0	490	0
5	0	374	0
6	0	36	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
Total	0	1000	0

0 bootstrap samples were unused because of a singular covariance matrix.

0 bootstrap samples were unused because a solution was not found.

1000 usable bootstrap samples were obtained.

Bootstrap Distributions (Default model)

ML discrepancy (implied vs sample) (Default model)

```
       |--------------------
71.847 |*
85.627 |*
99.408 |***
```

113.188 |*******

126.969 |***************

140.749 |********************

154.530 |*******************

N = 1000 168.310 |***************

Mean = 153.292 182.091 |************

S. e. = .860 195.872 |******

209.652 |***

223.433 |**

237.213 |*

250.994 |

264.774 |*

|--------------------

ML discrepancy (implied vs pop) (Default model)

|--------------------

153.052 |*

156.362 |*********

159.672 |********************

162.982 |********************

166.292 |***************

169.602 |***********

172.911 |*******

N = 1000 176.221 |*****

Mean = 165.751 179.531 |***

S. e. = .229 182.841 |**

186.151 |*

189.461 |*

192.771 |*

```
                 196.081 |
                 199.391 |*
                         |--------------------
```

K-L overoptimism (unstabilized) (Default model)

```
                         |--------------------
                -252.283 |*
                -209.600 |*
                -166.917 |**
                -124.234 |******
                 -81.551 |***********
                 -38.868 |*****************
                   3.816 |********************
N = 1000          46.499 |********************
Mean = 26.278     89.182 |******************
S. e. = 2.899    131.865 |*********
                 174.548 |*******
                 217.231 |**
                 259.914 |**
                 302.597 |*
                 345.281 |*
                         |--------------------
```

K-L overoptimism (stabilized) (Default model)

```
                         |--------------------
                 -66.784 |*
                 -51.978 |*
                 -37.171 |**
                 -22.364 |******
                  -7.557 |***********
```

```
                         7.250 |****************
                        22.057 |******************
N = 1000                36.863 |*******************
Mean = 28.972           51.670 |****************
S. e. = .940            66.477 |*********
                        81.284 |*****
                        96.091 |**
                       110.897 |*
                       125.704 |*
                       140.511 |*
                               |--------------------
```

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	8	151.139	2	.000	75.570
Saturated model	10	.000	0		
Independence model	4	627.036	6	.000	104.506

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.143	.891	.453	.178
Saturated model	.000	1.000		
Independence model	.346	.612	.354	.367

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.759	.277	.761	.280	.760
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.333	.253	.253
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	149.139	112.469	193.222
Saturated model	.000	.000	.000
Independence model	621.036	542.516	706.954

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.282	.278	.210	.360
Saturated model	.000	.000	.000	.000
Independence model	1.170	1.159	1.012	1.319

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.373	.324	.425	.000
Independence model	.439	.411	.469	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	167.139	167.290	201.427	209.427
Saturated model	20.000	20.188	62.860	72.860
Independence model	635.036	635.111	652.180	656.180

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.312	.243	.394	.312

Model	ECVI	LO 90	HI 90	MECVI
Saturated model	.037	.037	.037	.038
Independence model	1.185	1.038	1.345	1.185

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	22	33
Independence model	11	15

Execution time summary

Minimization:	.001
Miscellaneous:	.128
Bootstrap:	.113
Total:	.242

Model 4

Analysis Summary

Date and Time

Date: 12 August 2019

Time: 11:44:12

Title

Standard

Groups

Group number 1 (Group number 1)

Notes for Group (Group number 1)

The model is recursive.

Sample size = 537

Variable Summary (Group number 1)

Your model contains the following variables (Group number 1)

Observed, endogenous variables

SE

OWB

Observed, exogenous variables

M

SU

Unobserved, exogenous variables

E1

E2

Variable counts (Group number 1)

Number of variables in your model:	6
Number of observed variables:	4
Number of unobserved variables:	2
Number of exogenous variables:	4
Number of endogenous variables:	2

Parameter Summary (Group number 1)

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	2	0	0	0	0	2
Labeled	0	0	0	0	0	0
Unlabeled	5	1	4	0	0	10
Total	7	1	4	0	0	12

Assessment of normality (Group number 1)

Variable	min	max	skew	c.r.	kurtosis	c.r.
SU	1.071	5.000	-.679	-6.428	.542	2.566
M	1.357	6.000	.038	.355	-.027	-.128
SE	1.100	5.000	-.901	-8.520	1.218	5.760
OWB	1.400	11.000	-.675	-6.386	.279	1.318
Multivariate					4.526	7.569

Observations farthest from the centroid (Mahalanobis distance) (Group number 1)

Observation number	Mahalanobis d-squared	p1	p2
64	34.316	.000	.000
125	20.459	.000	.020
279	18.117	.001	.026
45	17.944	.001	.005
333	16.358	.003	.013
6	15.912	.003	.008
39	15.786	.003	.002
153	15.728	.003	.001
379	14.793	.005	.002
530	14.218	.007	.004
140	14.012	.007	.002
225	13.873	.008	.001
202	13.806	.008	.000
280	13.578	.009	.000
370	13.386	.010	.000
146	13.290	.010	.000
201	13.194	.010	.000
72	12.963	.011	.000
224	12.791	.012	.000
195	12.581	.014	.000
273	12.452	.014	.000
502	12.445	.014	.000
109	12.106	.017	.000
458	11.925	.018	.000
19	11.915	.018	.000
434	11.249	.024	.001
430	11.217	.024	.000

Observation number	Mahalanobis d-squared	p1	p2
174	11.186	.025	.000
216	10.977	.027	.000
167	10.700	.030	.001
366	10.493	.033	.002
264	10.370	.035	.002
119	10.195	.037	.004
471	10.167	.038	.003
208	10.013	.040	.004
388	9.997	.040	.003
389	9.863	.043	.004
295	9.520	.049	.018
450	9.516	.049	.012
244	9.440	.051	.012
489	9.291	.054	.019
61	9.288	.054	.012
113	9.233	.056	.011
336	9.150	.057	.012
398	9.145	.058	.008
266	9.141	.058	.005
248	9.103	.059	.004
417	9.003	.061	.006
250	8.879	.064	.009
482	8.655	.070	.028
469	8.511	.075	.046
177	8.498	.075	.036
22	8.253	.083	.105
421	8.232	.083	.090

Observation number	Mahalanobis d-squared	p1	p2
293	8.167	.086	.097
346	8.138	.087	.087
17	8.122	.087	.073
60	8.092	.088	.065
172	8.070	.089	.056
18	7.975	.093	.074
38	7.948	.094	.067
233	7.941	.094	.053
179	7.879	.096	.058
75	7.753	.101	.095
483	7.585	.108	.182
507	7.469	.113	.254
116	7.458	.114	.224
313	7.457	.114	.188
416	7.278	.122	.339
74	7.117	.130	.505
526	7.116	.130	.455
494	7.091	.131	.439
268	7.072	.132	.416
105	7.040	.134	.411
455	6.986	.137	.438
487	6.861	.143	.568
457	6.831	.145	.563
26	6.797	.147	.564
214	6.789	.147	.528
429	6.726	.151	.573
258	6.711	.152	.547

Observation number	Mahalanobis d-squared	p1	p2
29	6.707	.152	.505
409	6.627	.157	.579
292	6.587	.159	.592
495	6.579	.160	.558
246	6.488	.166	.649
101	6.464	.167	.642
446	6.442	.168	.629
465	6.359	.174	.708
290	6.356	.174	.672
100	6.317	.177	.687
304	6.297	.178	.675
419	6.265	.180	.682
514	6.245	.182	.669
402	6.208	.184	.684
456	6.202	.185	.653
358	6.144	.189	.699
30	6.121	.190	.694
205	6.095	.192	.693
139	6.079	.193	.678

Models
Default model (Default model)
Notes for Model (Default model)
Computation of degrees of freedom (Default model)

Number of distinct sample moments:	10
Number of distinct parameters to be estimated:	10
Degrees of freedom (10 - 10):	0

Result (Default model)
Minimum was achieved

Chi-square = .000

Degrees of freedom = 0

Probability level cannot be computed

Group number 1 (Group number 1 - Default model)
Estimates (Group number 1 - Default model)
Scalar Estimates (Group number 1 - Default model)
Maximum Likelihood Estimates
Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
SE	<---	M	.070	.031	2.255	.024	
SE	<---	SU	.547	.030	18.074	***	
OWB	<---	SE	.469	.101	4.623	***	
OWB	<---	M	.448	.073	6.144	***	
OWB	<---	SU	.987	.090	10.950	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
SE	<---	M	.077
SE	<---	SU	.616
OWB	<---	SE	.192
OWB	<---	M	.202
OWB	<---	SU	.455

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
M	<-->	SU	.120	.024	4.898	***	

Correlations: (Group number 1 - Default model)

			Estimate
M	<-->	SU	.216

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
M	.542	.033	16.371	***	
SU	.566	.035	16.371	***	
E1	.265	.016	16.371	***	
E2	1.461	.089	16.371	***	

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
SE	.406
OWB	.452

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

	SU	M	SE
SE	.547	.070	.000
OWB	1.244	.481	.469

Standardized Total Effects (Group number 1 - Default model)

	SU	M	SE
SE	.616	.077	.000
OWB	.573	.217	.192

Direct Effects (Group number 1 - Default model)

	SU	M	SE
SE	.547	.070	.000
OWB	.987	.448	.469

Standardized Direct Effects (Group number 1 - Default model)

	SU	M	SE
SE	.616	.077	.000
OWB	.455	.202	.192

Indirect Effects (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.256	.033	.000

Standardized Indirect Effects (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.118	.015	.000

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

M.I. Par Change

Variances: (Group number 1 - Default model)

M.I. Par Change

Regression Weights: (Group number 1 - Default model)

M.I. Par Change

Bootstrap (Group number 1 - Default model)

Bootstrap standard errors (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter			SE	SE-SE	Mean	Bias	SE-Bias
SE	<---	M	.037	.001	.068	-.002	.001
SE	<---	SU	.037	.001	.547	.000	.001
OWB	<---	SE	.108	.002	.471	.002	.003
OWB	<---	M	.072	.002	.449	.001	.002
OWB	<---	SU	.092	.002	.985	-.002	.003

Standardized Regression Weights: (Group number 1 - Default model)

Parameter			SE	SE-SE	Mean	Bias	SE-Bias
SE	<---	M	.041	.001	.075	-.002	.001
SE	<---	SU	.032	.001	.617	.001	.001
OWB	<---	SE	.044	.001	.192	.000	.001
OWB	<---	M	.034	.001	.203	.000	.001
OWB	<---	SU	.043	.001	.454	-.001	.001

Covariances: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M <--> SU	.027	.001	.120	.001	.001

Correlations: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M <--> SU	.045	.001	.217	.001	.001

Variances: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M	.032	.001	.541	-.001	.001
SU	.040	.001	.567	.001	.001
E1	.021	.000	.263	-.002	.001
E2	.102	.002	1.454	-.007	.003

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
SE	.038	.001	.409	.003	.001
OWB	.038	.001	.454	.002	.001

Matrices (Group number 1 - Default model)

Total Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.037	.037	.000
OWB	.076	.074	.108

Standardized Total Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.032	.041	.000
OWB	.032	.034	.044

Direct Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.037	.037	.000
OWB	.092	.072	.108

Standardized Direct Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.032	.041	.000
OWB	.043	.034	.044

Indirect Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.063	.020	.000

Standardized Indirect Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.028	.009	.000

Bootstrap Confidence (Group number 1 - Default model)

Percentile method (Group number 1 - Default model)

95% confidence intervals (percentile method)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
SE <--- M	.070	-.007	.140	.075
SE <--- SU	.547	.472	.620	.002
OWB <--- SE	.469	.264	.677	.002
OWB <--- M	.448	.303	.580	.002
OWB <--- SU	.987	.797	1.168	.002

Standardized Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	M	.077	-.007	.155	.075
SE	<---	SU	.616	.550	.676	.002
OWB	<---	SE	.192	.109	.276	.002
OWB	<---	M	.202	.135	.267	.002
OWB	<---	SU	.455	.368	.535	.002

Covariances: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.120	.070	.173	.002

Correlations: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.216	.126	.302	.002

Variances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M	.542	.476	.605	.002
SU	.566	.489	.646	.002
E1	.265	.224	.305	.002
E2	1.461	1.259	1.653	.002

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
SE	.406	.332	.489	.002
OWB	.452	.381	.530	.002

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

Total Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.472	-.007	.000
OWB	1.095	.343	.264

Total Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.620	.140	.000
OWB	1.395	.623	.677

Total Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	.002	.002	.002

Standardized Total Effects (Group number 1 - Default model)

Standardized Total Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.550	-.007	.000
OWB	.511	.152	.109

Standardized Total Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.676	.155	.000
OWB	.630	.282	.276

Standardized Total Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	.002	.002	.002

Direct Effects (Group number 1 - Default model)

Direct Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.472	-.007	.000
OWB	.797	.303	.264

Direct Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.620	.140	.000
OWB	1.168	.580	.677

Direct Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	.002	.002	.002

Standardized Direct Effects (Group number 1 - Default model)

Standardized Direct Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.550	-.007	.000
OWB	.368	.135	.109

Standardized Direct Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.676	.155	.000
OWB	.535	.267	.276

Standardized Direct Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.075	...
OWB	.002	.002	.002

Indirect Effects (Group number 1 - Default model)

Indirect Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.143	-.003	.000

Indirect Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.385	.076	.000

Indirect Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	.075	...

Standardized Indirect Effects (Group number 1 - Default model)

Standardized Indirect Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.066	-.001	.000

Standardized Indirect Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.176	.033	.000

Standardized Indirect Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...

	SU	M SE
OWB	.002	.075 ...

Bias-corrected percentile method (Group number 1 - Default model)

95% confidence intervals (bias-corrected percentile method)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	M	.070	-.008	.136	.080
SE	<---	SU	.547	.474	.621	.002
OWB	<---	SE	.469	.263	.675	.002
OWB	<---	M	.448	.298	.580	.002
OWB	<---	SU	.987	.809	1.179	.001

Standardized Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	M	.077	-.008	.154	.079
SE	<---	SU	.616	.548	.673	.003
OWB	<---	SE	.192	.109	.275	.002
OWB	<---	M	.202	.134	.267	.002
OWB	<---	SU	.455	.373	.540	.001

Covariances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M <--> SU	.120	.065	.171	.003

Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M <--> SU	.216	.119	.296	.003

Variances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M	.542	.478	.608	.002
SU	.566	.491	.647	.002
E1	.265	.228	.312	.001
E2	1.461	1.273	1.684	.001

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
SE	.406	.323	.483	.004
OWB	.452	.378	.523	.003

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

Total Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.474	-.008	.000
OWB	1.095	.336	.263

Total Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.621	.136	.000
OWB	1.395	.622	.675

Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.080	...
OWB	.002	.002	.002

Standardized Total Effects (Group number 1 - Default model)

Standardized Total Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.548	-.008	.000
OWB	.508	.152	.109

Standardized Total Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.673	.154	.000
OWB	.630	.282	.275

Standardized Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.003	.079	...
OWB	.002	.002	.002

Direct Effects (Group number 1 - Default model)

Direct Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.474	-.008	.000
OWB	.809	.298	.263

Direct Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.621	.136	.000
OWB	1.179	.580	.675

Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	.080	...
OWB	.001	.002	.002

Standardized Direct Effects (Group number 1 - Default model)

Standardized Direct Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.548	-.008	.000
OWB	.373	.134	.109

Standardized Direct Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.673	.154	.000
OWB	.540	.267	.275

Standardized Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.003	.079	...
OWB	.001	.002	.002

Indirect Effects (Group number 1 - Default model)

Indirect Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.144	-.001	.000

Indirect Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.385	.078	.000

Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	.055	...

Standardized Indirect Effects (Group number 1 - Default model)

Standardized Indirect Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.066	.000	.000

Standardized Indirect Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.176	.035	.000

Standardized Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	.052	...

Minimization History (Default model)

Iteration		Negative eigenvalues	Condition #	Smallest eigenvalue	Diameter	F	NTries	Ratio
0	e	0	46.725		9999.000	418.055	0	9999.000
1	e	0	10.699		.535	183.201	5	.000
2	e	0	5.768		.480	30.213	2	.000
3	e	0	6.982		.147	1.601	1	1.097
4	e	0	7.419		.043	.020	1	1.068
5	e	0	7.686		.005	.000	1	1.011
6	e	0	7.588		.000	.000	1	1.000

Bootstrap (Default model)

Summary of Bootstrap Iterations (Default model)

(Default model)

Iterations	Method 0	Method 1	Method 2
1	0	0	0
2	0	0	0
3	0	22	0
4	0	403	0
5	0	497	0
6	0	76	0
7	0	2	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
Total	0	1000	0

0 bootstrap samples were unused because of a singular covariance matrix.

0 bootstrap samples were unused because a solution was not found.

1000 usable bootstrap samples were obtained.

Bootstrap Distributions (Default model)

ML discrepancy (implied vs sample) (Default model)

```
     |--------------------
.000 |********************
```

```
                    .000 |**
                    .000 |*
                    .000 |*
                    .000 |*
                    .000 |
                    .000 |
N = 1000            .000 |
Mean = .000         .000 |
S. e. = .000        .000 |
                    .000 |
                    .000 |
                    .000 |
                    .000 |
                    .000 |
                         |--------------------
```

ML discrepancy (implied vs pop) (Default model)

```
                         |--------------------
                   2.735 |*
                   6.499 |*******
                  10.263 |*******************
                  14.027 |********************
                  17.790 |******************
                  21.554 |*************
                  25.318 |********
N = 1000          29.082 |****
Mean = 16.859     32.845 |***
S. e. = .228      36.609 |*
```

```
 40.373 |*
 44.136 |*
 47.900 |*
 51.664 |
 55.428 |*
        |--------------------
```

K-L overoptimism (unstabilized) (Default model)

```
                          |--------------------
                 -235.876 |*
                 -196.178 |*
                 -156.479 |**
                 -116.780 |******
                  -77.081 |**********
                  -37.383 |*****************
                    2.316 |*******************
N = 1000           42.015 |********************
Mean = 30.678      81.714 |*****************
S. e. = 2.713     121.412 |*************
                  161.111 |******
                  200.810 |****
                  240.508 |**
                  280.207 |*
                  319.906 |*
                          |--------------------
```

K-L overoptimism (stabilized) (Default model)

```
        |--------------------
```

```
                   11.713 |*
                   17.305 |*********
                   22.898 |*****************
                   28.491 |********************
                   34.083 |*****************
                   39.676 |*************
                   45.269 |********
N = 1000           50.862 |****
Mean = 33.372      56.454 |***
S. e. = .382       62.047 |**
                   67.640 |**
                   73.232 |*
                   78.825 |*
                   84.418 |
                   90.011 |*
                          |--------------------
```

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	10	.000	0		
Saturated model	10	.000	0		
Independence model	4	627.036	6	.000	104.506

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.000	1.000		
Saturated model	.000	1.000		
Independence model	.346	.612	.354	.367

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	1.000		1.000		1.000
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.000	.000	.000
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	.000	.000	.000
Saturated model	.000	.000	.000
Independence model	621.036	542.516	706.954

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.000	.000	.000	.000
Saturated model	.000	.000	.000	.000
Independence model	1.170	1.159	1.012	1.319

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Independence model	.439	.411	.469	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	20.000	20.188	62.860	72.860
Saturated model	20.000	20.188	62.860	72.860
Independence model	635.036	635.111	652.180	656.180

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.037	.037	.037	.038
Saturated model	.037	.037	.037	.038
Independence model	1.185	1.038	1.345	1.185

HOELTER

Model	HOELTER .05	HOELTER .01
Default model		
Independence model	11	15

Execution time summary

Minimization:	.000
Miscellaneous:	.139
Bootstrap:	.120
Total:	.259

MODEL 5

Analysis Summary

Date and Time

Date: 12 August 2019

Time: 12:09:20

Title

Standard

Groups

Group number 1 (Group number 1)

Notes for Group (Group number 1)

The model is recursive.

Sample size = 537

Variable Summary (Group number 1)

Your model contains the following variables (Group number 1)

Observed, endogenous variables

SE

OWB

Observed, exogenous variables

M

SU

Unobserved, exogenous variables

E1

E2

Variable counts (Group number 1)

Number of variables in your model:	6
Number of observed variables:	4
Number of unobserved variables:	2
Number of exogenous variables:	4
Number of endogenous variables:	2

Parameter Summary (Group number 1)

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	2	0	0	0	0	2
Labeled	0	0	0	0	0	0

	Weights	Covariances	Variances	Means	Intercepts	Total
Unlabeled	4	1	4	0	0	9
Total	6	1	4	0	0	11

Assessment of normality (Group number 1)

Variable	min	max	skew	c.r.	kurtosis	c.r.
SU	1.071	5.000	-.679	-6.428	.542	2.566
M	1.357	6.000	.038	.355	-.027	-.128
SE	1.100	5.000	-.901	-8.520	1.218	5.760
OWB	1.400	11.000	-.675	-6.386	.279	1.318
Multivariate					4.526	7.569

Observations farthest from the centroid (Mahalanobis distance) (Group number 1)

Observation number	Mahalanobis d-squared	p1	p2
64	34.316	.000	.000
125	20.459	.000	.020
279	18.117	.001	.026
45	17.944	.001	.005
333	16.358	.003	.013
6	15.912	.003	.008
39	15.786	.003	.002
153	15.728	.003	.001
379	14.793	.005	.002
530	14.218	.007	.004
140	14.012	.007	.002
225	13.873	.008	.001
202	13.806	.008	.000
280	13.578	.009	.000

Observation number	Mahalanobis d-squared	p1	p2
370	13.386	.010	.000
146	13.290	.010	.000
201	13.194	.010	.000
72	12.963	.011	.000
224	12.791	.012	.000
195	12.581	.014	.000
273	12.452	.014	.000
502	12.445	.014	.000
109	12.106	.017	.000
458	11.925	.018	.000
19	11.915	.018	.000
434	11.249	.024	.001
430	11.217	.024	.000
174	11.186	.025	.000
216	10.977	.027	.000
167	10.700	.030	.001
366	10.493	.033	.002
264	10.370	.035	.002
119	10.195	.037	.004
471	10.167	.038	.003
208	10.013	.040	.004
388	9.997	.040	.003
389	9.863	.043	.004
295	9.520	.049	.018
450	9.516	.049	.012
244	9.440	.051	.012
489	9.291	.054	.019

Observation number	Mahalanobis d-squared	p1	p2
61	9.288	.054	.012
113	9.233	.056	.011
336	9.150	.057	.012
398	9.145	.058	.008
266	9.141	.058	.005
248	9.103	.059	.004
417	9.003	.061	.006
250	8.879	.064	.009
482	8.655	.070	.028
469	8.511	.075	.046
177	8.498	.075	.036
22	8.253	.083	.105
421	8.232	.083	.090
293	8.167	.086	.097
346	8.138	.087	.087
17	8.122	.087	.073
60	8.092	.088	.065
172	8.070	.089	.056
18	7.975	.093	.074
38	7.948	.094	.067
233	7.941	.094	.053
179	7.879	.096	.058
75	7.753	.101	.095
483	7.585	.108	.182
507	7.469	.113	.254
116	7.458	.114	.224
313	7.457	.114	.188

Observation number	Mahalanobis d-squared	p1	p2
416	7.278	.122	.339
74	7.117	.130	.505
526	7.116	.130	.455
494	7.091	.131	.439
268	7.072	.132	.416
105	7.040	.134	.411
455	6.986	.137	.438
487	6.861	.143	.568
457	6.831	.145	.563
26	6.797	.147	.564
214	6.789	.147	.528
429	6.726	.151	.573
258	6.711	.152	.547
29	6.707	.152	.505
409	6.627	.157	.579
292	6.587	.159	.592
495	6.579	.160	.558
246	6.488	.166	.649
101	6.464	.167	.642
446	6.442	.168	.629
465	6.359	.174	.708
290	6.356	.174	.672
100	6.317	.177	.687
304	6.297	.178	.675
419	6.265	.180	.682
514	6.245	.182	.669
402	6.208	.184	.684

Observation number	Mahalanobis d-squared	p1	p2
456	6.202	.185	.653
358	6.144	.189	.699
30	6.121	.190	.694
205	6.095	.192	.693
139	6.079	.193	.678

Models

Default model (Default model)

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	10
Number of distinct parameters to be estimated:	9
Degrees of freedom (10 - 9):	1

Result (Default model)

Minimum was achieved

Chi-square = 5.062

Degrees of freedom = 1

Probability level = .024

Group number 1 (Group number 1 - Default model)

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
SE	<---	SU	.561	.030	18.923	***	
OWB	<---	SE	.469	.101	4.645	***	
OWB	<---	M	.448	.073	6.173	***	

	Estimate	S.E.	C.R.	P	Label
OWB <--- SU	.987	.091	10.859	***	

Standardized Regression Weights: (Group number 1 - Default model)

	Estimate
SE <--- SU	.633
OWB <--- SE	.192
OWB <--- M	.203
OWB <--- SU	.456

Covariances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
M <--> SU	.120	.024	4.898	***	

Correlations: (Group number 1 - Default model)

	Estimate
M <--> SU	.216

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
M	.542	.033	16.371	***	
SU	.566	.035	16.371	***	
E1	.267	.016	16.371	***	
E2	1.461	.089	16.371	***	

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
SE	.400
OWB	.448

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

	SU	M	SE
SE	.561	.000	.000
OWB	1.251	.448	.469

Standardized Total Effects (Group number 1 - Default model)

	SU	M	SE
SE	.633	.000	.000
OWB	.578	.203	.192

Direct Effects (Group number 1 - Default model)

	SU	M	SE
SE	.561	.000	.000
OWB	.987	.448	.469

Standardized Direct Effects (Group number 1 - Default model)

	SU	M	SE
SE	.633	.000	.000
OWB	.456	.203	.192

Indirect Effects (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.263	.000	.000

Standardized Indirect Effects (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.122	.000	.000

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

	M.I.	Par Change
E1 <--> M	5.038	.036

Variances: (Group number 1 - Default model)

M.I.	Par Change

Regression Weights: (Group number 1 - Default model)

	M.I.	Par Change
SE <--- M	4.802	.066

Bootstrap (Group number 1 - Default model)

Bootstrap standard errors (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
SE <--- SU	.036	.001	.562	.000	.001
OWB <--- SE	.108	.002	.471	.002	.003
OWB <--- M	.072	.002	.449	.001	.002
OWB <--- SU	.092	.002	.985	-.002	.003

Standardized Regression Weights: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
SE <--- SU	.030	.001	.633	.000	.001
OWB <--- SE	.044	.001	.193	.000	.001
OWB <--- M	.034	.001	.203	.000	.001
OWB <--- SU	.043	.001	.455	-.001	.001

Covariances: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M <--> SU	.027	.001	.120	.001	.001

Correlations: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M <--> SU	.045	.001	.217	.001	.001

Variances: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
M	.032	.001	.541	-.001	.001
SU	.040	.001	.567	.001	.001
E1	.021	.000	.266	-.001	.001
E2	.102	.002	1.454	-.007	.003

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	SE	SE-SE	Mean	Bias	SE-Bias
SE	.038	.001	.402	.001	.001
OWB	.038	.001	.451	.002	.001

Matrices (Group number 1 - Default model)

Total Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.036	.000	.000
OWB	.076	.072	.108

Standardized Total Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.030	.000	.000
OWB	.032	.034	.044

Direct Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.036	.000	.000
OWB	.092	.072	.108

Standardized Direct Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.030	.000	.000
OWB	.043	.034	.044

Indirect Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.065	.000	.000

Standardized Indirect Effects - Standard Errors (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.029	.000	.000

Bootstrap Confidence (Group number 1 - Default model)

Percentile method (Group number 1 - Default model)

95% confidence intervals (percentile method)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	SU	.561	.489	.631	.002
OWB	<---	SE	.469	.264	.677	.002
OWB	<---	M	.448	.303	.580	.002
OWB	<---	SU	.987	.797	1.168	.002

Standardized Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	SU	.633	.571	.694	.002
OWB	<---	SE	.192	.109	.277	.002
OWB	<---	M	.203	.135	.268	.002
OWB	<---	SU	.456	.369	.536	.002

Covariances: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.120	.070	.173	.002

Correlations: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.216	.126	.302	.002

Variances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M	.542	.476	.605	.002
SU	.566	.489	.646	.002
E1	.267	.227	.308	.002
E2	1.461	1.259	1.653	.002

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
SE	.400	.326	.481	.002
OWB	.448	.377	.527	.002

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

Total Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.489	.000	.000
OWB	1.102	.303	.264

Total Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.631	.000	.000
OWB	1.402	.580	.677

Total Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	...	...
OWB	.002	.002	.002

Standardized Total Effects (Group number 1 - Default model)

Standardized Total Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.571	.000	.000
OWB	.516	.135	.109

Standardized Total Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.694	.000	.000
OWB	.635	.268	.277

Standardized Total Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	...	...
OWB	.002	.002	.002

Direct Effects (Group number 1 - Default model)

Direct Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.489	.000	.000
OWB	.797	.303	.264

Direct Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.631	.000	.000
OWB	1.168	.580	.677

Direct Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	...	...
OWB	.002	.002	.002

Standardized Direct Effects (Group number 1 - Default model)

Standardized Direct Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.571	.000	.000
OWB	.369	.135	.109

Standardized Direct Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.694	.000	.000
OWB	.536	.268	.277

Standardized Direct Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	...	...
OWB	.002	.002	.002

Indirect Effects (Group number 1 - Default model)

Indirect Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.147	.000	.000

Indirect Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.397	.000	.000

Indirect Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	...	...

Standardized Indirect Effects (Group number 1 - Default model)

Standardized Indirect Effects - Lower Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.069	.000	.000

Standardized Indirect Effects - Upper Bounds (PC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.181	.000	.000

Standardized Indirect Effects - Two Tailed Significance (PC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...

	SU	M	SE
OWB	.002	...	...

Bias-corrected percentile method (Group number 1 - Default model)

95% confidence intervals (bias-corrected percentile method)

Scalar Estimates (Group number 1 - Default model)

Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	SU	.561	.489	.631	.002
OWB	<---	SE	.469	.263	.675	.002
OWB	<---	M	.448	.298	.580	.002
OWB	<---	SU	.987	.809	1.179	.001

Standardized Regression Weights: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
SE	<---	SU	.633	.569	.693	.003
OWB	<---	SE	.192	.109	.277	.002
OWB	<---	M	.203	.134	.268	.002
OWB	<---	SU	.456	.374	.540	.001

Covariances: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.120	.065	.171	.003

Correlations: (Group number 1 - Default model)

Parameter			Estimate	Lower	Upper	P
M	<-->	SU	.216	.119	.296	.003

Variances: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
M	.542	.478	.608	.002
SU	.566	.491	.647	.002
E1	.267	.231	.312	.001
E2	1.461	1.273	1.684	.001

Squared Multiple Correlations: (Group number 1 - Default model)

Parameter	Estimate	Lower	Upper	P
SE	.400	.323	.480	.003
OWB	.448	.376	.520	.003

Matrices (Group number 1 - Default model)

Total Effects (Group number 1 - Default model)

Total Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.489	.000	.000
OWB	1.102	.298	.263

Total Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.631	.000	.000
OWB	1.402	.580	.675

Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	...	...
OWB	.002	.002	.002

Standardized Total Effects (Group number 1 - Default model)

Standardized Total Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.569	.000	.000
OWB	.512	.134	.109

Standardized Total Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.693	.000	.000
OWB	.634	.268	.277

Standardized Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.003	...	...
OWB	.002	.002	.002

Direct Effects (Group number 1 - Default model)

Direct Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.489	.000	.000
OWB	.809	.298	.263

Direct Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.631	.000	.000
OWB	1.179	.580	.675

Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.002	...	...
OWB	.001	.002	.002

Standardized Direct Effects (Group number 1 - Default model)

Standardized Direct Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.569	.000	.000
OWB	.374	.134	.109

Standardized Direct Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.693	.000	.000
OWB	.540	.268	.277

Standardized Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.003	...	...
OWB	.001	.002	.002

Indirect Effects (Group number 1 - Default model)

Indirect Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.147	.000	.000

Indirect Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.396	.000	.000

Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	...	...

Standardized Indirect Effects (Group number 1 - Default model)

Standardized Indirect Effects - Lower Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.068	.000	.000

Standardized Indirect Effects - Upper Bounds (BC) (Group number 1 - Default model)

	SU	M	SE
SE	.000	.000	.000
OWB	.180	.000	.000

Standardized Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)

	SU	M	SE
SE	...	...	...
OWB	.002	...	...

Minimization History (Default model)

Iteration		Negative eigenvalues	Condition #	Smallest eigenvalue	Diameter	F	NTries	Ratio
0	e	0	46.271		9999.000	432.914	0	9999.000
1	e	0	10.456		.532	197.179	5	.000
2	e	0	6.150		.503	38.641	2	.000
3	e	0	7.247		.149	7.241	1	1.109
4	e	0	7.563		.048	5.101	1	1.080
5	e	0	7.471		.007	5.062	1	1.015
6	e	0	7.314		.000	5.062	1	1.000

Bootstrap (Default model)

Summary of Bootstrap Iterations (Default model)

(Default model)

Iterations	Method 0	Method 1	Method 2
1	0	0	0
2	0	0	0
3	0	20	0
4	0	370	0
5	0	541	0
6	0	68	0
7	0	1	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
Total	0	1000	0

0 bootstrap samples were unused because of a singular covariance matrix.

0 bootstrap samples were unused because a solution was not found.

1000 usable bootstrap samples were obtained.

Bootstrap Distributions (Default model)

ML discrepancy (implied vs sample) (Default model)

```
     |--------------------
.000 |*****************
```

```
                2.536 |*******************
                5.071 |*****************
                7.607 |***************
               10.142 |**********
               12.678 |*******
               15.213 |****
N = 1000       17.749 |***
Mean = 6.351   20.284 |**
S. e. = .172   22.820 |**
               25.355 |*
               27.891 |*
               30.426 |
               32.962 |
               35.497 |*
                      |--------------------
```

ML discrepancy (implied vs pop) (Default model)

```
                      |--------------------
                7.770 |**
               11.020 |*******
               14.270 |***************
               17.519 |*******************
               20.769 |**************
               24.019 |************
               27.269 |********
N = 1000       30.519 |****
Mean = 20.330  33.768 |***
S. e. = .212   37.018 |**
```

```
 40.268 |*
 43.518 |*
 46.768 |
 50.017 |*
 53.267 |*
        |--------------------
```

K-L overoptimism (unstabilized) (Default model)

```
                          |--------------------
                -240.368 |*
                -201.184 |*
                -162.000 |**
                -122.816 |*****
                 -83.632 |**********
                 -44.448 |****************
                  -5.264 |********************
N = 1000          33.920 |*******************
Mean = 27.798     73.104 |******************
S. e. = 2.674    112.288 |*************
                 151.472 |*******
                 190.656 |****
                 229.840 |**
                 269.024 |*
                 308.208 |*
                          |--------------------
```

K-L overoptimism (stabilized) (Default model)

```
        |--------------------
```

```
               -1.206 |*
                4.802 |*
               10.809 |*****
               16.817 |***********
               22.824 |********************
               28.832 |********************
               34.839 |***************
N = 1000       40.847 |**********
Mean = 30.491  46.854 |******
S. e. = .383   52.862 |****
               58.869 |**
               64.877 |*
               70.884 |*
               76.892 |*
               82.899 |*
                      |-------------------
```

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	9	5.062	1	.024	5.062
Saturated model	10	.000	0		
Independence model	4	627.036	6	.000	104.506

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.014	.995	.953	.100
Saturated model	.000	1.000		
Independence model	.346	.612	.354	.367

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.992	.952	.994	.961	.993
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.167	.165	.166
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	4.062	.339	15.169
Saturated model	.000	.000	.000
Independence model	621.036	542.516	706.954

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.009	.008	.001	.028
Saturated model	.000	.000	.000	.000
Independence model	1.170	1.159	1.012	1.319

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.087	.025	.168	.138
Independence model	.439	.411	.469	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	23.062	23.231	61.636	70.636
Saturated model	20.000	20.188	62.860	72.860
Independence model	635.036	635.111	652.180	656.180

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.043	.036	.064	.043
Saturated model	.037	.037	.037	.038
Independence model	1.185	1.038	1.345	1.185

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	407	703
Independence model	11	15

Execution time summary

Minimization:	.000
Miscellaneous:	.113
Bootstrap:	.121
Total:	.234

APPENDIX 5.1 Baseline ANOVAs for Study 5

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
M	Between Groups	.206	3	.069	.080	.971
	Within Groups	85.370	100	.854		
	Total	85.576	103			

SU	Between Groups	.302	3	.101	.120	.948
	Within Groups	83.697	100	.837		
	Total	84.000	103			
SE	Between Groups	.561	3	.187	.762	.518
	Within Groups	24.545	100	.245		
	Total	25.106	103			
STR	Between Groups	34.353	3	11.451	2.076	.108
	Within Groups	551.606	100	5.516		
	Total	585.959	103			
DEP	Between Groups	3.966	3	1.322	.212	.888
	Within Groups	616.452	99	6.227		
	Total	620.417	102			
ANX	Between Groups	29.510	3	9.837	2.071	.109
	Within Groups	475.019	100	4.750		
	Total	504.529	103			
OWB	Between Groups	3.322	3	1.107	.545	.653
	Within Groups	203.300	100	2.033		
	Total	206.622	103			

APPENDIX 5.2 MANOVAs for mindfulness and strengths use

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	mind	Sphericity Assumed	.934	1	.934	4.305	.041	.049
		Greenhouse-Geisser	.934	1.000	.934	4.305	.041	.049

		Huynh-Feldt	.934	1.000	.934	4.305	.041	.049
		Lower-bound	.934	1.000	.934	4.305	.041	.049
	stre	Sphericity Assumed	3.242	1	3.242	12.814	.001	.132
		Greenhouse-Geisser	3.242	1.000	3.242	12.814	.001	.132
		Huynh-Feldt	3.242	1.000	3.242	12.814	.001	.132
		Lower-bound	3.242	1.000	3.242	12.814	.001	.132
time * Condition	mind	Sphericity Assumed	.546	3	.182	.839	.476	.029
		Greenhouse-Geisser	.546	3.000	.182	.839	.476	.029
		Huynh-Feldt	.546	3.000	.182	.839	.476	.029
		Lower-bound	.546	3.000	.182	.839	.476	.029
	stre	Sphericity Assumed	1.687	3	.562	2.223	.091	.074
		Greenhouse-Geisser	1.687	3.000	.562	2.223	.091	.074
		Huynh-Feldt	1.687	3.000	.562	2.223	.091	.074
		Lower-bound	1.687	3.000	.562	2.223	.091	.074
Error(time)	mind	Sphericity Assumed	18.225	84	.217			
		Greenhouse-Geisser	18.225	84.000	.217			
		Huynh-Feldt	18.225	84.000	.217			
		Lower-bound	18.225	84.000	.217			
	stre	Sphericity Assumed	21.254	84	.253			
		Greenhouse-Geisser	21.254	84.000	.253			
		Huynh-Feldt	21.254	84.000	.253			
		Lower-bound	21.254	84.000	.253			

Post-Hoc Comparisons

Pairwise Comparisons

Measure	Condition	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b] Lower Bound	Upper Bound
mind	M	1	2	.112	.155	.473	-.197	.421
		2	1	-.112	.155	.473	-.421	.197
	CS	1	2	.143	.134	.291	-.125	.410
		2	1	-.143	.134	.291	-.410	.125
	M_CS	1	2	.318*	.140	.026	.039	.597
		2	1	-.318*	.140	.026	-.597	-.039
	Control	1	2	.014	.134	.918	-.254	.281
		2	1	-.014	.134	.918	-.281	.254
stre	M	1	2	-.254	.168	.134	-.587	.079
		2	1	.254	.168	.134	-.079	.587
	CS	1	2	-.542*	.145	.000	-.830	-.253
		2	1	.542*	.145	.000	.253	.830
	M_CS	1	2	-.001	.152	.995	-.303	.301
		2	1	.001	.152	.995	-.301	.303
	Control	1	2	-.297*	.145	.044	-.585	-.008
		2	1	.297*	.145	.044	.008	.585

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 5.3 MANOVAs for self-efficacy and wellbeing

Univariate Tests

Source	Measure	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared

time	selfe	Sphericity Assumed	.518	1	.518	6.837	.011	.075
		Greenhouse-Geisser	.518	1.000	.518	6.837	.011	.075
		Huynh-Feldt	.518	1.000	.518	6.837	.011	.075
		Lower-bound	.518	1.000	.518	6.837	.011	.075
	wellb	Sphericity Assumed	.682	1	.682	1.932	.168	.022
		Greenhouse-Geisser	.682	1.000	.682	1.932	.168	.022
		Huynh-Feldt	.682	1.000	.682	1.932	.168	.022
		Lower-bound	.682	1.000	.682	1.932	.168	.022
time * Condition	selfe	Sphericity Assumed	.190	3	.063	.836	.478	.029
		Greenhouse-Geisser	.190	3.000	.063	.836	.478	.029
		Huynh-Feldt	.190	3.000	.063	.836	.478	.029
		Lower-bound	.190	3.000	.063	.836	.478	.029
	wellb	Sphericity Assumed	.792	3	.264	.747	.527	.026
		Greenhouse-Geisser	.792	3.000	.264	.747	.527	.026
		Huynh-Feldt	.792	3.000	.264	.747	.527	.026
		Lower-bound	.792	3.000	.264	.747	.527	.026
Error(time)	selfe	Sphericity Assumed	6.359	84	.076			
		Greenhouse-Geisser	6.359	84.000	.076			
		Huynh-Feldt	6.359	84.000	.076			
		Lower-bound	6.359	84.000	.076			
	wellb	Sphericity Assumed	29.674	84	.353			
		Greenhouse-Geisser	29.674	84.000	.353			
		Huynh-Feldt	29.674	84.000	.353			
		Lower-bound	29.674	84.000	.353			

Post-Hoc Comparisons

Pairwise Comparisons

Measure	Condition	(I) time	(J) time	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
							Lower Bound	Upper Bound
selfe	M	1	2	-.218*	.092	.020	-.400	-.036
		2	1	.218*	.092	.020	.036	.400
	CS	1	2	-.079	.079	.322	-.237	.079
		2	1	.079	.079	.322	-.079	.237
	M_CS	1	2	-.027	.083	.743	-.192	.138
		2	1	.027	.083	.743	-.138	.192
	Control	1	2	-.113	.079	.160	-.270	.045
		2	1	.113	.079	.160	-.045	.270
wellb	M	1	2	.048	.198	.808	-.346	.442
		2	1	-.048	.198	.808	-.442	.346
	CS	1	2	-.098	.172	.569	-.439	.243
		2	1	.098	.172	.569	-.243	.439
	M_CS	1	2	-.119	.179	.509	-.475	.237
		2	1	.119	.179	.509	-.237	.475
	Control	1	2	-.333	.172	.056	-.674	.008
		2	1	.333	.172	.056	-.008	.674

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Appendix 5.4 MANOVAs for Depression, Anxiety and Stress

Univariate Tests

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
time	depr	Sphericity Assumed	.048	1	.048	.039	.844	.000
		Greenhouse-Geisser	.048	1.000	.048	.039	.844	.000
		Huynh-Feldt	.048	1.000	.048	.039	.844	.000
		Lower-bound	.048	1.000	.048	.039	.844	.000
	anxi	Sphericity Assumed	1.007	1	1.007	.863	.356	.010
		Greenhouse-Geisser	1.007	1.000	1.007	.863	.356	.010
		Huynh-Feldt	1.007	1.000	1.007	.863	.356	.010
		Lower-bound	1.007	1.000	1.007	.863	.356	.010
	stres	Sphericity Assumed	2.048	1	2.048	1.329	.252	.016
		Greenhouse-Geisser	2.048	1.000	2.048	1.329	.252	.016
		Huynh-Feldt	2.048	1.000	2.048	1.329	.252	.016
		Lower-bound	2.048	1.000	2.048	1.329	.252	.016
time * Condition	depr	Sphericity Assumed	.439	3	.146	.119	.949	.004
		Greenhouse-Geisser	.439	3.000	.146	.119	.949	.004
		Huynh-Feldt	.439	3.000	.146	.119	.949	.004
		Lower-bound	.439	3.000	.146	.119	.949	.004
	anxi	Sphericity Assumed	7.057	3	2.352	2.014	.118	.069
		Greenhouse-Geisser	7.057	3.000	2.352	2.014	.118	.069
		Huynh-Feldt	7.057	3.000	2.352	2.014	.118	.069

		Lower-bound	7.057	3.000	2.352	2.014	.118	.069
	stres	Sphericity Assumed	2.076	3	.692	.449	.719	.016
		Greenhouse-Geisser	2.076	3.000	.692	.449	.719	.016
		Huynh-Feldt	2.076	3.000	.692	.449	.719	.016
		Lower-bound	2.076	3.000	.692	.449	.719	.016
Error(time)	depr	Sphericity Assumed	100.758	82	1.229			
		Greenhouse-Geisser	100.758	82.000	1.229			
		Huynh-Feldt	100.758	82.000	1.229			
		Lower-bound	100.758	82.000	1.229			
	anxi	Sphericity Assumed	95.758	82	1.168			
		Greenhouse-Geisser	95.758	82.000	1.168			
		Huynh-Feldt	95.758	82.000	1.168			
		Lower-bound	95.758	82.000	1.168			
	stres	Sphericity Assumed	126.325	82	1.541			
		Greenhouse-Geisser	126.325	82.000	1.541			
		Huynh-Feldt	126.325	82.000	1.541			
		Lower-bound	126.325	82.000	1.541			

Post-Hoc Comparisons

Pairwise Comparisons

Measure	Condition	(I) time	(J) time	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]

				Mean Difference (I-J)			Lower Bound	Upper Bound
depr	M	1	2	.028	.369	.940	-.707	.763
		2	1	-.028	.369	.940	-.763	.707
	CS	1	2	-.043	.327	.895	-.694	.607
		2	1	.043	.327	.895	-.607	.694
	M_CS	1	2	-.045	.334	.892	-.710	.619
		2	1	.045	.334	.892	-.619	.710
	Control	1	2	.196	.327	.551	-.455	.846
		2	1	-.196	.327	.551	-.846	.455
anxi	M	1	2	.194	.360	.591	-.522	.911
		2	1	-.194	.360	.591	-.911	.522
	CS	1	2	.761*	.319	.019	.127	1.395
		2	1	-.761*	.319	.019	-1.395	-.127
	M_CS	1	2	-.318	.326	.332	-.966	.330
		2	1	.318	.326	.332	-.330	.966
	Control	1	2	-.022	.319	.946	-.656	.612
		2	1	.022	.319	.946	-.612	.656
stres	M	1	2	.222	.414	.593	-.601	1.045
		2	1	-.222	.414	.593	-1.045	.601
	CS	1	2	.565	.366	.126	-.163	1.293
		2	1	-.565	.366	.126	-1.293	.163
	M_CS	1	2	.068	.374	.856	-.676	.813
		2	1	-.068	.374	.856	-.813	.676
	Control	1	2	.022	.366	.953	-.706	.750
		2	1	-.022	.366	.953	-.750	.706

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.