An Extensive Mixed-Methods Analysis: Mindfulness Meditation, Attentional Abilities, Perceived Stress and Emotional Acceptance

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“Restore your attention or bring it to a new level by dramatically slowing down whatever you're doing”. --Sharon Salzberg, Real Happiness: The Power of Meditation

“Whatever you eye falls on - for it will fall on what you love - will lead you to the questions of your life, the questions that are incumbent upon you to answer, because that is how the mind works in concert with the eye. The things of this world draw us where we need to go.”

--Mary Rose O’Reilley, the Barn at the End of the World: The Apprenticeship of a Quaker, Buddhist Shepherd
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Education is not filling a pail, but the lighting of a fire.

--William Butler Yeats

None of us got where we are solely by pulling ourselves up by our bootstraps. We got here because somebody - a parent, a teacher, an Ivy League crony or a few nuns - bent down and helped us pick up our boots.

--Thurgood Marshall

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Abstract

A quantitative investigation was conducted testing the effects of mindfulness meditation on attentional abilities, perceived stress and emotional acceptance. Additionally, a qualitative component at post-test was also incorporated. Participants (n = 25) reported an increase in attentional abilities and perceived stress following a three week mindfulness program, however mixed results were obtained on the differences in self-control and emotional acceptance and the mediation of executive control by emotional acceptance. Four major themes emerged: increased self-regulation, individual variations, necessity of; an open attitude, and practice. Results support previous literature postulating the potential of mindfulness to provide succinct suggestions on how its training is a mediator of its effects on mental health. Further implications are deliberated upon in the discussion section.
Chapter I: Introduction and Literature Review

Introduction

Mindfulness interventions are a growing means of providing considerable psychosocial benefits to a range of populations, including providing assistance in coping to clinical patients suffering from cancer, chronic pain and somatic issues such as fibromyalgia (Schreiner & Malcolm, 2008), mood disturbances, and sleep problems (Shigaki, Glass, & Schopp, 2006), epilepsy (Deepak, Manchanda & Maheshwari, 1994), individuals with various psychological disorders including bipolar disorder (Williams et al., 2008), depression and anxiety (Hofmann, Sawyer, Witt, & Oh, 2010) and in non-clinical samples and healthcare professionals expressing stress (Baer, Carmody & Hunsinger, 2012), in the form of mindfulness based stress reduction (MBSR) after its breakthrough introduction by Kabat-Zinn (1982) at the University of Massachusetts Medical Centre in 1979.

Furthermore, along with this promptness in its clinical uptake, there has been a huge augmentation in research on these interventions, its components and dynamic mechanisms, for instance relaxation and attention that impressively achieve their radical, revolutionary results. A mounting body of evidence also investigates the potential of associating mindfulness with other different types of therapies such as cognitive-behavioural therapy which have in turn sparked developments of new therapies – quite popularly referred to as the ‘third-wave therapies’, adapted from CBT, but mainly endeavour to nurture acceptance in patients through mindfulness i.e. acceptance and commitment therapy. Withal, despite the enthusiasm generated by these advancements, authors have critiqued this integration of two entirely distinct modalities into one interdisciplinary intervention as mindfulness still stands
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as a comparatively new avenue for research and practice, with a substantial number of questions remaining to be answered (Watson, 2008). Thence, the penultimate goal of this study was to incorporate a mixed-methods i.e. quantitative and qualitative inquiry into individuals’ experiences of mindfulness-based exercises, so that further understanding can be acquired on the mechanisms behind this psychosocial phenomenon, its experience and its benefits.

**Literature Review**

**Digressions on the definition of Mindfulness:**

Due to its complexity as a phenomenon, numerous definitions have been proposed for mindfulness, with authors delving deeper into its origins to comprehend what it sets out to achieve and how it is applied in therapeutic settings. It is principally defined as purposefully guiding attention to internal and external experiences; cognitive states, emotions, urges and bodily sensations, occurring from moment-to-moment and accepting them with an open attitude, non-judgementally (Schreiner & Malcolm, 2008). Howbeit, it’s essential to denote that the concept of ‘guiding attention’ here is usually considered within an expansive spectrum of the mind and consciousness i.e. an individual engaged in mindfulness is identified as undergoing the “process of focusing conscious awareness, providing heightened sensitivity to a limited range of experience” which is flashing light upon particular things in awareness (Brown and Ryan, 2003).

Focusing further, because present day mindfulness meditation finds its roots in a religious concept i.e. Zen and Vipassana meditation traditions which are components of Theravada and Mahayana Buddhism (Mikulas, 2007; as cited by Watson, 2008), Kabat-Zinn (2003) postulates that mindfulness encapsulates an attitude of compassion along with
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attention because in Asian languages, the words for heart and mind are the same. Additionally, mindfulness exists within the context of a broader philosophical system which entails guidelines for ethical behaviour, including how to train the heart-mind with meditation practices in order to reduce one's suffering. So, it can be deduced that the primary aim of mindfulness exercises is to gauge insight, wisdom, and patience in the individual, which arises from the cultivation of a mental state involving a "non-verbal present-mindedness" (Stoyva, 2000; as cited by Watson, 2008).

Another analysis provided by Gunaratna (2002) suggests that mindfulness is merely "the application of bare attention….purely noticing what comes up without getting involved" (p. 143). Everyone naturally has these moments of pure awareness before identification or conceptualization of the objects of awareness occurs, hence developing the ability of mindfulness is then only a case of prolonging this initial time of pure awareness before the occurrence of conceptualization. These mindfulness techniques serve that function of developing the skills to stay in pure awareness (Watson, 2008). Bishop (2002) provides a classic illustration of this analysis by describing a mindfulness meditation exercise, in which an individual sits or lies down and learns to keep their attention entirely on their breath. Attention will beyond any doubt wander away from the breath, but the meditator is advised to simply notice it, accept it, let it go, and return their attention to their breathing. Nevertheless, the focus of attention should not be on the content of thoughts, feelings, or sensations, but instead on pure observation of the present moment; a variety of internal or external stimuli.

**Mindfulness-based Interventions tailored for stress reduction:**

One of the most prominent treatment modality related to mindfulness training is for stress reduction, which as a concept can refer to a range of physiological and cognitive states, including irritability, excessive worry, or over-arousal. Chronic stress can be associated with
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stressful occupations (Shapiro, Astin, Bishop, & Cordova, 2005), terminal illness (Speca, Carlson, Goodey, & Angen, 2000), or psychological disorders (Bishop, 2002).

Delivery of the MBSR program is group-based, usually consisting about 20-30 people and conducted as an 8-10 week course, integrating discussions, instructions on the exercises and active mindfulness training. Clients are made aware of the necessity of commitment, and recommended to diligently participate both in intensive meditation practices inside and outside sessions prior to joining the group in order to gain the maximum benefit out of the program.

Other than the long-established mindfulness exercises, such as guided imagery (use of body senses and visualization to allow the body to respond to what is being imagined as if it is real; clients are asked to imagine a safe and comfortable place to achieve a state of relaxation) and progressive muscle relaxation (paying attention to breathing to induce self-awareness and then to guide attention to different muscle groups in the body, thereby facilitating the screening and counteracting of the first signs of muscular tension accompanying stress), MBSR also employs a ‘body scan’, where individuals are trained to direct their attention to body parts and observe the naturally occurring sensation in each area. Attending to physiological symptoms of high stress levels e.g. muscular tension with a non-judgemental attitude will alleviate these physical responses by increasing awareness of all emotional and cognitive states of the present moment. The individual then develops the ability to recognize the warning signals of tension rising up and can thus, manage stress and control distressful cognitions (Kabat-Zinn, 2003).

Overview of Quantitative Research on Fundamental Mechanisms of Mindfulness

Mindfulness Meditation and Attentional Abilities. Since attention is one of the cardinal components of mindfulness, accordingly then, it’s also noteworthy that attentional
training and enhancement are fundamental to meditation practices as they involve a repeated practice of self-regulation of attention (Jensen, Vangkilde, Frojaer & Hasselbalch, 2012). Nevertheless, in spite of the few, experimental studies that have supported the concept of mindfulness meditation related improvements in attention, their mixed results have been ample. For instance, in an extensive review by Ivanovski and Malhi (2007), it was reported that mindfulness meditation increases an ability to both inhibit stimuli that might otherwise distract attention away from the intended target and to sustain attention. Furthermore, with increases in meditative skill, people were more likely to achieve states of "total attention", which was related to decreases in trait anxiety. This resulted in the authors concluding that mindfulness meditation improves a wide range of aspects of attention e.g. visual-perceptual sensitivity, concentration, the ability to switch attention, to inhibit distracting information, as well as decreased tendency to have an expectancy response when met with unexpected stimuli. Strikingly, however they did not distinguish between the types of meditative skill that allowed the increase in attention in their study.

Another study propounding the impact of mindfulness meditation directly on specific attentional function was by Jha, Krompinger and Baime (2007). They reported the improvement of top-down attentional system, which facilitates a voluntary direction of attention towards a set of available stimuli and also the bottom-up system which consists of a readiness to attend to any arising stimuli. A stimulus can be perceived as pleasant, unpleasant or neutral, and they found that performance was higher for meditators on both emotionally significant and neutral tasks.

Contrastingly though, Ortner et al. (2007; as cited by Lykins, Baer and Gottlob (2012) asked meditators and non-meditators to classify amongst high or low pitch tones while also viewing emotionally salient or neutral pictures, they found that meditators reported through
shorter response times and fewer errors i.e. they were able to better control their attention only when faced with emotionally salient distracters.

Moreover, Jha et al. (2007; as cited by Lykins, Baer & Gottlob (2012)) had compared meditators and non-meditators on an Attention Network Test assessing three distinct forms of attention i.e. alerting (maintenance of vigilance to detect stimulus), orienting (voluntary guidance of attention to stimuli) and conflict monitoring (prioritizing between competing tasks and overcoming habitual responses). And, meditators showed higher scores in conflict monitoring but not in alerting or orienting. Chan & Woollacott (2007; as cited by Lykins, Baer & Gottlob, 2012) expressed no significant difference between both meditators and non-meditators on orienting tasks that required letter identification, despite meditators having higher scores on a Stroop Colour Word Test too. Additionally, when other researchers investigated self–regulation of attention (vigilance) on immediate experience, they failed to replicate the aforementioned results on tests of sustained attention, attention switching, stroop interference and detection of objects in consistent or inconsistent scenes (a chicken in a barnyard or classroom) and associated mindfulness with awareness and not attentional ability (Anderson, Lau, Segal & Bishop, 2007). Peculiarly, these insignificant results couldn’t be attributed to age, baseline levels of wellbeing of participants, task order, variability in home practice time or lack of statistical power.

In light of the issues described, it’s deducible that strong foundations are compulsory for the investigation of this dominant mechanism behind mindfulness before more specialised attentional processes can be examined, therefore the current study aimed to utilize a measure that focused on basic attentional abilities affected by mindfulness first, to formulate a strong foundation for looking into the specific aspects of attentional functioning influenced later.
Mindfulness Meditation, Executive Control and Emotional Acceptance.

Meditation also comprises of a mindful acceptance of feelings and emotional states thus, as crucial as it is to acknowledge the thoughts entering mind (attention), it is also important to prevent getting caught up in the emotions associated with them (acceptance); (Teper & Inzlicht, 2012).

Prior research has recognized the positive effects of mindfulness on executive control. Amongst the various cognitive processes of executive control, its most critical one is overcoming impulses and superseding automatic behaviour i.e. ‘self-control’, which is essential for processes like emotion regulation (Compton et al., 2008). In addition, considering the striking results of previous studies on improved conflict monitoring following mindfulness meditation and increased performance in Stroop tasks (a widely recognized measure of the inhibition facet of executive control), cognitive neuroscientists have characterized this as another prominent function of executive control and have extended further into acclaiming that conflict monitoring associates directly with meditation due to the concept that meditation in itself is a type of performance monitoring, where there is an intensive need to monitor the mind and return focus back to the present, on a moment-to-moment basis (Marlatt & Kristeller, 1999; as cited by Teper & Inzlicht, 2012). In illustration, when a meditator automatically begins to wander away from focusing on the present and starts to ruminate during practice, executive control is needed to interrupt the contemplation in the individual and bring focus back to the present moment. Thence, it’s deducible that meditation propagates executive control. Undoubtedly, a mounting body of evidence suggests this association between mindfulness meditation practice and enhanced executive control. For instance, Wenk-Sormaz (2005) demonstrated this relationship through the enhanced performance of his short-term meditation group on Stroop task.
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Likewise, Moore & Malinowski (2009) protracted these findings further and exhibited lesser Stroop interference in their meditators as compared to non-meditators. The aforementioned study conducted by Jha et al. (2007) too found that experienced meditators transcend in conflict monitoring. Tang et al. (2007) provide further evidence for this effect by showing that just five days of mindfulness training improved conflict monitoring during the same test. Also, similar studies examining attentional control demonstrated that a 10-day meditation retreat showed significant improvements in attentional switching (Chambers, Lo, & Allen, 2008), sustained attention on the Continuous performance Test (Rosvold et al., 1956; as cited by Teper & Inzlicht, 2012).

And finally when, Teper & Inzlicht (2012) delved deeper into the mechanisms behind improved executive control through meditation, they detected that it was the augmented acceptance of emotional states that arbitrated meditation experience and executive function. Their results were substantially supported by the previous study of Niemiec et al. (2010) which contended that meditators are hugely tuned with their emotions, acknowledging them instantaneously and meticulously. Nevertheless, an extensive analysis of this interpretation and other studies brings to light one staggering limitation i.e. the authors did not adopt a direct measure of emotional sensitivity to ratify their deductions (Teper & Inzlicht, 2012). Therefore, the present study intended to affirm the results obtained in prior studies by using a direct measure of emotional sensitivity and consequently, attempted to establish its association with a measure of self-control.

A Qualitative Perspective on Mindfulness

In spite of an expansive number of quantitative literature acclaiming the efficacy of mindfulness, the rationale behind the working processes of mindfulness through which subjective changes arise has been immensely overlooked. Only a few qualitative studies have
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been found in the present literature review examining this phenomenon, for example, Mackenzie, Carlson, Munoz and Speca (2007) conducted a qualitative analysis at a psychosocial oncology centre and the themes interpreted were: opening to change; self-control; shared experience; personal growth; and spirituality. Moreover, based on the authors’ analysis of interviews, it was concluded that the MBSR group was merely the beginning of a process of growth and change for the participants. They had learnt that they were not alone with their problems, having experienced group discussions and they had achieved skills to enhance their self-control of behaviours that were related to improved attention and which allowed for more effective responding to stressors.

Another study by Himelstein, Hastings, Shapiro and Heery (2012) considered incarcerated adolescents in their qualitative analysis and the major themes identified were increases in subjective well-being i.e. an increase in a positive subjective physical or psychological experience or a decrease in a negative physical or psychological experience, also increases in self-regulation, self-awareness and acceptance.

Additionally, a considerably disquieting trend now amongst university students is the increase in stress because of the rigorous nature of their academic life (Ross, Niebling & Heckert, 1999). Thus, when Linden, Turner, Young and Bruce (2001) examined nursing students after an MBSR program, they expressed feelings of frustration whilst learning the mindfulness techniques, which briefly heightened their stress experiences. They also reported being more sensitive to their mind-body responses, this increased sensitivity then became a cue for them to choose how to respond to the stressor, allowing them to have greater control over their stress reactions, specifically in response to academic stressors. They learned to cope with stress more effectively, they felt as if they had a greater ability to attain balance in life.
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In spite of the aforementioned positive results, only two studies in the literature review were mixed-method in nature (Linden et al., 2001; Walach et al., 2007), while qualitative accounts are crucial to the examination of this phenomenon, quantitative investigations cannot however be ruled out. Withal, in accordance with Shapiro, Carlson, Astin & Freedman (2006) the investigation of mindfulness ought to be studied astutely, comprehensively and in a diversity of backgrounds. It necessitates a combination of theoretical and methodological perspectives in its analysis to insinuate its intricacy and richness. Therefore the current study incorporated a qualitative aspect along with a quantitative one at post-intervention, to allow for the exploration of both subjective and objective experiences of mindfulness meditation in participants.

The Present Study

A huge amount of research is required still, to speculate over and address important questions, such as whether mindfulness interventions differ from other treatment modalities in terms of significantly improving mental health or physical functioning.

To effectively study the dynamics of mindfulness and build strong foundations for future research, the principle investigator employed a measure of basic attentional abilities, setting out to simply, measure the presence or absence of attention and awareness of what is occurring in the present moment (Mackillop and Anderson, 2007).

Secondly, the current experiment factored in perceived stress to: 1) build a powerful case for the present study by replicating the successful results of previous studies on perceived stress i.e. MBSR’s significant change in perceived stress after the completion of the exercises (Baer, Carmody & Hunsinger, 2012) and 2) employing a measure of perceived stress made stress a subjective concept, thereby preventing the presentation of an operational definition of stress, and also measures that can be potentially diagnostic in nature.
A direct measure of emotional sensitivity was also exploited to confirm the conclusions of Teper & Inzlicht (2012) on the mediation of executive control by the increased emotional acceptance after the sessions. The researcher attempted to establish an association between the responses from the emotional sensitivity measure with responses from a measure of self-control.

Finally, in order to provide a broad portrait of the potential change experienced by individuals undergoing mindfulness meditation, mirror and extend the positive results of prior research containing subjective records of participants’ accounted changes in personal outcome achievements and self-care attitudes (Irving, 2013, para. 1), there was an integration of a supplementary qualitative post-intervention analysis.

In conclusion, there’s a substantial requirement for both quantitative and qualitative research in these areas as it will contribute to the growing body of knowledge about mindfulness-based interventions by further clarifying that mindfulness contributes exceptionally to attentional improvements as well, amongst other areas. Also, propounding emotional acceptance as the underlying mechanism behind increased executive control could potentially identify mindfulness as an effective intervention, having a possibility to be used entirely on its own and not adjunct with any other treatment. In particular a qualitative investigation would shed light upon the exact subjectivity in the lived experiences of each participant, their experiences, what changed for them over the duration of the program and what did they attribute those changes to, which may yield new avenues for further research.
Chapter 2: Methodology and Method

Methodology

The primary investigator, with the aim to gain further knowledge on the eminent mechanisms behind mindfulness, namely attention and emotional acceptance, along with examining the specific subjective and lived experiences of the participants in mindfulness sessions, thus before and after a brief three-week mindfulness meditation program, instructed participants to complete a self-report survey comprising questionnaires on mindfulness attention awareness, perceived stress, self-control and emotional sensitivity.

Furthermore, while the survey constructed included pre-determined and structured questions assessing their concepts accordingly, two qualitative questions were adapted from the study of Mindfulness Meditation with incarcerated adolescents (Himelstein, Hastings, Shapiro & Heery, 2012), due to the appreciation of their generality i.e. they were quite broad in nature, allowing the emergence of numerous themes and questions and leaving space for them to be unexpected too (See Appendix A for the survey presented with both qualitative and quantitative questionnaires). While quantitative questions had their own fixed ways of scoring responses, a utilization of simple, thematic analysis took place for the qualitative component of this examination. It’s a process of encoding information through identifying, and analysing datasets in rich detail by developing and reporting ‘codes’, words or phrases that act as labels for them. Additionally, these codes can be a list of themes (Thematic Analysis, n.d). It is a method separate from all theoretical and epistemological approaches and hence, due to this theoretical freedom, can be applied to a broad range of frameworks with the provision of flexibility in analysis too as different concepts can be addressed using thematic Analysis within a specific theoretical framework (Braun & Clarke, 2006). Based on
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its numerous advantages other than flexibility, par example, ability to highlight similarities and differences and generate unexpected insights, thereby, establishing firm grounds for future research extensions, this method was considered the most adequate means for analysing the subjectivity in mindfulness in this research.

Method

Research Design

A mixed-method quasi-experimental; longitudinal design was employed in this study, with the independent variable identified as the mindfulness interventions and the dependent variables as the concepts each quantitative scale measured i.e. mindfulness attention awareness, perceived stress, self-control and emotional sensitivity and the two open-ended feedback questions enclosed in survey, at post-test level. Moreover, a correlational design was also incorporated as a small segment of the research where self-control scores and emotional sensitivity scores were tested for association at both pre-and post-test time points.

Participants

Pre-intervention surveys were given to participants (n=30), 25 of whom attended the mindfulness program for the duration of the three weeks and participated in the second round of surveys. The five other participants were excluded from the study, as they did not attend the mindfulness meditation sessions, nor did they respond to requests for reorganization of classes in those weeks.

Procedures

Recruitment and Ethical Considerations. Initially, research participation commenced only after receiving ethics approval from the ethics committee at DBS. 30 participants were recruited as part of a convenience sample, where participants were practically selected “based on their ease of availability” (Saumure & Given, 2008) and in-
class announcements were made by the researcher, briefly describing the procedure, true purpose of the study and what complete research participation intakes. They were also informed of their participation being entirely anonymous and confidential. Participation was voluntary and the primary incentive suggested was a final email sent to the participants, enclosing a compilation of more than 20 mindfulness exercises constructed by the pioneers of this phenomenon themselves like Kabat-Zinn (2003), that can be used for future references alongside the skills gained during the sessions that would equip individuals to better cope with stressful situations. All participants were a mix of undergraduate and post-graduate psychology students at the Dublin Business School (DBS). Additionally, they agreed by signing the consent form - that the information they would provide during the pre- and post-interventions stages would be used in the context of a final year research study, presentations at congresses and future publications. Help and support information was also offered at the end of both pre and post stages in case of any discomfort aroused in participants.

All registrants were deemed as meeting the inclusion criteria for participation in the present study. Participants would have been excluded had they exhibited any signs of impairments in daily functioning due to any psychological problems such as suicidality, psychosis or deficits with attention for that matter.

The program. The intervention consisted of approximately three group sessions over a period of three weeks. The specific components of the program and their exercises were based on the MBSR program adopted from the methods in the research conducted by Egan, McGuire and Traynor (2013) on chronic pain and headache management in NUI Galway, Ireland. These exercises were only employed after the suggestion of Dr. Jonathan Egan himself under his liaison. However, his exercises were based on the duration of six weeks and were tailored specifically around anxiety, headache management and sleep relaxation; those
three weeks have been removed from the methods of this current study as these concepts aren’t within its scope of analysis or due to the limitations in practical applications of sleep relaxation exercises. Ideally, each session is meant to last for ninety minutes, for a duration of 8-10 weeks, however for this study, each session had to be shortened to 50 minutes to cooperate with participant convenience and institutional time constraints. Therefore, some of their exercises for each week were substituted by their shorter versions (Dartmouth Relaxation Downloads, n.d.). Thus, exercises included: guided progressive muscle relaxation (PMR), guided imagery and mindfulness meditation exercises. The participants were trained in sitting mindfulness meditation. The first session looked at both assessing participants at the pre-intervention stage, then participants underwent PMR exercises along with mindfulness meditation, allowing participants to be guided into a meditative state and their present moment by focusing on surrounding sounds, arising body sensations and deep breathing. The second session conducted intensive guided imagery exercises, incorporating one of the most prominent one i.e. the forest; allowing the individual to be guided on a peaceful walk through a lush, forest near a trickling stream using the power of visualisation and imagery. Following these, all participants undertook mindfulness meditation exercises again. The third session then entirely focused on mindfulness meditation training. Weekly emails were sent enclosing audio and video practice exercises after each session for that particular week. The final session assessed participants at the post-intervention level, followed by debriefing them and lastly, playing a mindfulness meditation exercise in order to make their last visit, chiefly set up for assessment purposes worthwhile.

**Tools**

The mindfulness meditation exercises were delivered in the form of auditory and visual clips and tracks in a standard medium-sized classroom in the university, thus the
exercises were played through a computer and enlarged onto a 6x8 projector, with the sound enhanced through speakers that were already installed as part of the equipment in the classroom.

**Measures**

The battery of test used in the present study encompassed a straightforward demographic scale with age and gender, the Mindfulness Attention Awareness Scale -15 item (MAAS; Brown & Ryan, 2004), Perceived Stress Scale – 10 item (PSS-10; Cohen, Kamarck & Mermelstein, 1983), Brief Self-control Scale – 13 item (BSCS -13; Tangney, Baumeister, & Boone, 2004), Emotional Sensitivity Subscale extracted from the Social Skills Inventory – 15 item, after the approval and instructions on precise extraction of the subscale obtained from the widely acclaimed, Ronald Riggio himself (ES(SSI); Riggio & Carney, 2003), which the researcher of this present study feels hugely honoured about, and lastly the two qualitative questions were adapted from the study of Mindfulness Meditation with incarcerated adolescents (Himelstein, Hastings, Shapiro & Heery, 2012) (See appendix A for a full review of all questions asked in all measures).

**Mindfulness Attention Awareness Scale – 15 item (MAAS).** Although recently developed, The MAAS (Brown & Ryan, 2004) stands as one of the most distinguished mindfulness measures (Schmertz, Anderson & Robin, 2008). It is a 15 item self-report questionnaire assessing basic attention abilities and the absence or presence of attention and self-awareness, on a six-point likert scale, with 1 standing as almost always to 6 as almost never. Internal consistency ranges from .80 to .90. The MAAS also has a high test-retest reliability, and criterion validity (Brown & Ryan, 2004). A higher MAAS mean demonstrates higher levels of mindfulness.
Perceived Stress Scale – 10 items (PSS-10). PSS-10 (Cohen, Kamarck & Mermelstein, 1983) is a 10-item self-report tool constructed to assess the degree to which circumstances are appraised as stressful in one’s life, on a 5 point Likert scale, ranging from never (0) to very often (4). The Cronbach’s alpha coefficient is .81 in total, with a test-retest reliability of .86, and considerably supported construct validity (Cohen, Kamarck & Mermelstein, 1983). A higher score indicates a greater degree of perceived stress. Participation in MBSR has been associated with significant declines in PSS scores (Carmody, Baer, Lykins, & Olendzki, 2009).

Brief Self-Control Scale – 13 items (BSCS-13). BSCS-13 (Tangney, Baumeister, & Boone, 2004) is an instrument designed to assess five domains of self-control: controlling thoughts, emotions, impulses, regulating behaviour/performance and habit-breaking, with each item requiring to get a rating out of 5; 1 being, not at all, to 5 identified as, very much. BSCS has a cronbach’s alpha coefficient of .85 in total, with a good internal consistency and test-retest reliability (Tangney, Baumeister, & Boone, 2004). Higher means report higher levels of self-control.

Emotional Sensitivity Subscale from Social Skills Inventory – 15 item (ES (SSI)). ES (SSI) (Riggio & Carney, 2003) is a 15 item subscale extracted from the Social Skills inventory, setting out to measure the skill in receiving and interpreting non-verbal communications of others, on a 5-point Likert scale, from 1 (not at all like me) to 5 (exactly like me). Test-retest reliability ranges from .81 to .96 for individual scales and a total inventory test-retest reliability of .94. Cronbach’s alpha coefficients range from .64 to .89 and demonstrate both convergent and discriminant validity, making up construct validity. A greater score accordingly demonstrates a greater level of emotional sensitivity.
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Analysis

For the four quantitative measures; MAAS, PSS-10, BSCS-13 and ES (SSI), changes from pre-test to post-test were assessed by the means of paired samples t-test. Additionally, a Pearson’s correlation test was conducted between self-control scores and emotional sensitivity scores from both pre- and post-intervention stages to examine a potential relationship between executive control and emotional sensitivity. A normal distribution two-tailed hypothesis test was conducted on all variables to test for significant differences between them and also for examining the relationship between self-control and emotional sensitivity. The null hypothesis was set at zero, assuming there was no relationship between the two variables, or differences from pre and post stages on all variables. The present research chose to report the 95% confidence internal (95% CI) of the mean difference and relationships, as a precaution for potential borderline significant effects (p<.10) (Hackshaw and Kirkwood 2011). In addition, prior to any analyses, data was inspected for errors, extreme missing cases, and outliers. Outliers, are mainly defined as scores greater or less than three standard deviations from the mean (Field, 2005; as cited by Schmertz, Anderson & Robin, 2009).

For the qualitative component, the data gathered was analysed using thematic analysis, which consists of a “close scrutiny of texts in order to ascertain key ideas or themes” (Bagnall, Smith, Crawford and Ogborn, 2008, p. 93). The responses written were first transcribed, next those transcripts were read a total of six times to completely ‘absorb’ the researcher in the text so she could become familiar with their content fully. Also, whilst reading, theoretical memos and notes were continuously designed and kept alongside the data to bracket the commonalities and the diversities in participant responses. The main impression stirred was that there was a huge amount of identical and complementary
information with respect to how participants talked about their experiences of mindfulness meditation.

Each segment of the transcript that seemed to be relevant to the research question was coded as data was being analysed and the written responses were being read over and over. All codes generated were compared and modified before other transcripts were looked at. Also, as transcripts were being coded, open coding was used where new codes were being generated and sometimes old ones were being modified. Once the coding process was finished with, the researcher began to investigate themes, collating similar codes into a specific theme initially. Also, as new themes and categories were being established, the researcher constantly referred back to already analysed text to decide if it was relevant to the new category. Afterwards, all data gathered which was relevant to each theme was colour-coded through the use of highlighters. The data associated with each theme was carefully considered to assure that the theme was indeed supported by the data. The next step was to speculate whether the themes actually worked in the context of the entire dataset. Furthermore, the preliminary themes that did not work on their own were eliminated. Finally, themes were refined and the aim was to identify “the essence of what each theme is about” (Braun & Clarke, 2006, p. 92). The researcher made sure that the themes related to each other across the dataset but also were coherent and distinct individually, on their own. Also keywords and phrases were highlighted and written along with phrases alongside the participants’ data, these summarized the text and linked it with its relevant category. The purpose of these keywords was to remind the researcher of the content of its related meaning unit, thereby allowing accurate recall of the complete written response.
Chapter 3: Results

The means and standard deviations of the instruments applied at both pre- and post-test moments are presented in Table 1, along with the results from paired-samples t tests for all self-report measures.

**Pre-Post Changes in MAAS (Mindfulness Attention Awareness Scale)**

Based on past research, the author had predicted that mindfulness attention awareness would differ significantly at the post-test stage. As shown, participants reported lower levels of mindfulness attention awareness before the mindfulness meditation exercises whilst reporting higher levels at post-test (See table 1 for means scores and standard deviations). Moreover, the 95% confidence limits showed that the population mean difference of the variable ranged from -.659 and -.225. While, the mean scores differed substantially, a paired samples t test too demonstrated the significant difference between MAAS 1 and MAAS 2 (t (24) = -4.20, p <.001).

**Pre-Post Changes in PSS-10 (Perceived Stress Scale-10 item)**

Considering the successful results of the previous research studies, the investigator had hypothesized that there will be substantial differences in levels of perceived stress, following the mindfulness exercises. Indeed, the results exhibited higher mean scores at pre-stage, and lower at post-test stage (See table 1). The 95% confidence limits showed that the population mean difference of the variable lied somewhere between .391 and 5.129. Withal, these scores differed hugely and a paired samples t test too reported a significant difference between PSS 1 and PSS 2 (t (24) = 2.40, p = .024).
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Table 1
Means and SDs for all measures at pre-mindfulness meditation and post-meditation, Paired samples t Tests, and Pre-Post effect sizes (N=25)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-MM M (SD)</th>
<th>Post-MM M (SD)</th>
<th>t</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAS(^a)</td>
<td>3.44 (.52)</td>
<td>3.89 (.78)</td>
<td>-4.20(^c)</td>
<td>-.84</td>
</tr>
<tr>
<td>PSS-10</td>
<td>19.76 (6.93)</td>
<td>17.00 (7.39)</td>
<td>2.40(^c)</td>
<td>.48</td>
</tr>
<tr>
<td>BSCS-13</td>
<td>3.05 (.80)</td>
<td>3.21 (.74)</td>
<td>-1.60(^c)</td>
<td>.58</td>
</tr>
<tr>
<td>ES (SSI)(^b)</td>
<td>51.40 (9.31)</td>
<td>51.68 (9.66)</td>
<td>-.32(^c)</td>
<td>.06</td>
</tr>
</tbody>
</table>

Note. MM = Mindfulness Meditation; SD = Standard Deviation
\(^a\) Measured with 15-item Questionnaire
\(^b\) Measured with a 15-item subscale
\(^c\) p < .05

Effect sizes of change (Cohen’s d) were calculated for all variables using the formula proposed by Cohen (1988); dividing the mean of the difference by the standard deviation (SD) of these differences. Effect sizes of <.4 are considered small, .4–.8 medium and >.8 large (See table 1 for pre and post effect sizes of all variables).

Contrarily though, when additional pre- and post-test differences were conducted for Self-Control. In spite their mean scores differing slightly (see table 1), a paired samples t test showed insignificant differences (t (24) = -1.60, p = .123). Though, it can be proposed that if one were to, however, study this analysis from an avant-garde and confident approach, applying a one-tailed test of significance to the results, having considered the mounting body of evidence advocating the concept of improved executive control after mindfulness training, then this result is nearly approaching significance.
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Similarly, participants for the emotional sensitivity subscale extracted from the Social Skills Inventory (ES (SSI) had differing mean scores at the two time-points (see table 1) but a paired samples t test showed insignificant differences (t (24) = -.28, p = .782).

Self-Control x Emotional Sensitivity

Granting the insignificant pre- and post-test results for self-control and emotional sensitivity, the investigator still went forward to explore a potential relationship between self-control scores and emotional sensitivity scores in view of previous studies that expressed the enhancement of executive control uniquely mediated by the increased acceptance of emotional states following mindfulness sessions (Teper & Inzlicht, 2013). Self-control scores were tested for associations with emotional sensitivity scores at pre-test level and then at post-test level. Kendall’s tau correlation was run for both time points due to primary assumptions for its parametric version, not met (absence of a linear relationship). However, contrary to the bi-directional hypothesis predicted, the results indicated no significant association between self-control scores and emotional sensitivity scores at both pre-test level (tau b (25) = 0.08, p = .542) and post-test level (tau b (25) = 0.02, p = .907).

Qualitative Results

After thematically analysing the written transcripts, four major themes relevant to the current research were identified. These were interpreted for this study by having convergence among data for more than six participants and their relevance to the research. The themes included: Necessity of an open attitude for insightful relaxation, Enhanced Self-regulation, Practice leads to greater mindfulness, Individual variations in experiences and relaxation.

Necessity of an Open attitude for Insightful Relaxation. Participants frequently mentioned that it was only by approaching the mindfulness sessions from an open attitude, that they could find the exercises interesting, educational, and relaxing. Changes occurred
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both in their thoughts on stress and the range of coping methods they could use. For the majority of participants, the sole act of being introduced to the programme coincided with a time when they were actively searching for information to help them with the stressors in their life.

Wasn’t expecting to get as much out of these sessions as did, but when I approached with an open attitude, it helped me understand that relaxing, along with breathing techniques such as mindfulness can have a long-term effect on the body

One of the participants described her experience as something that opened her:

“Eyes to the brilliance of mindfulness, it was very informative. I realized the extent to which life can get so busy, making us lose sight of important things

At the end of the three-week course, many participants felt they had benefitted from the program by being distracted from the problems of everyday life. One participant attributed the cause of her relaxation solely to the mindfulness sessions:

It was very helpful in terms of forgetting everyday problems, these sessions take away tension from your body and the only reason why I had the ability to calm down was these exercises.

Nonetheless, for some participants, there was no change, however they related this to rather substantial, ingrained issues. One participant stated:

I find it trivial and it doesn’t suit my personality
Enhanced Self-Regulation. Participants frequently reported their increases in self-regulation and higher levels of control. They used examples of emotional and cognitive regulation while discussing their experiences related to this theme. One participant described his experience as allowing him to gain control over his emotions through these meditations, thereby easing the process of coping for him.

*I had a higher control over my emotions and could fairly easily manage them with mindfulness when confronting challenges or everyday tasks.*

Practice leads to greater mindfulness. Notably, this was one major theme that often came across as relating significantly to the theme of ‘enhanced self-regulation’. Participants continuously acknowledged the requirement of practice to enhance mindfulness skills. After the completion of the program, one participant appreciated the ability of these exercises to be used for future reference and expressed her interest in practicing the exercises daily:

*I’d be very interested to continue practicing these exercises everyday*

Another participant described being better able to control his emotions with practice, through the use of deep breathing, which uplifted him:

*I felt more energized cognitively hence potential problems could be perceived easily too with clarity and calmer demeanour. I learnt to notice unwanted emotions whilst taking deep breaths in and out*

Conversely, one participant reported these exercises to only benefit the individual temporarily, however, she too considered further practice to better learn meditation skills for the effect to last for a longer duration.
I feel that these exercises were only temporarily helpful in terms of calming and relaxing me. I still found myself to be rushing when walking or feeling irritated, there were times when I didn’t know why I felt a certain way or why I couldn’t control my emotions, perhaps it needs to be practiced more often for higher effectiveness.

Interestingly though, other participants who did practice outside of the sessions reported a higher efficacy of mindfulness, one participant said:

I found that with practicing outside of the sessions, it can become something hugely enjoyable, I did the exercises whilst studying to give myself a break and found my body and my mind to be really relaxed by breathing in and out.

Individual variations in experiences and relaxation. Throughout the analysis though, participants also frequently reported that their experiences were mostly dependent on the type of meditation exercise as well, their experiences differed with each exercise. One participant expressed her preference of exercises:

I prefer guiding meditation exercises to the ones that contain long silences.

Another participant mentioned that:

PMR was great as it made me aware of my physical tensions and sensations that I usually ignore.

Strikingly, there were also individual differences i.e. generally relaxed participants found these exercises to be less helpful, one participant reported:

I occasionally meditate and I am usually relaxed so didn’t find these exercises helpful.

While another participant differentiated between these meditations and yoga, she said:

I regularly engage in Yoga and so these exercises were very mild for me so they weren’t that helpful.
Chapter 4: Discussion

Quantitative Component

The present study sought to unravel the influence of mindfulness meditation in the training of attentional skills, in the alleviation of perceived stress in individuals and in the probable enhancement of emotional acceptance (measured through emotional sensitivity in participants), and subsequently executive control.

The findings were consistent with the author’s first hypothesis and previous research; self-reported levels of mindfulness attention awareness significantly increased in the students following meditation sessions. Furthermore, encountering the largest effect sizes for this research question and the robustness in results indicates real changes in attentional abilities after mindfulness training. This present research is in line with the tentative support for meditation-related improvements in attention, provided by prior studies. In particular, Jha et al. (2007) where meditators in research developed receptive attentional skills, and other studies that have in turn delved deeper to investigate the specific mechanisms enhanced by meditation, considering the penultimate goal of mindfulness; to direct attention to present moment. These have suggested that meditation practice leads to improved performance on tasks of sustained attention and performance monitoring such as the Wilkins’ counting test (Linden, 1973; Rani and Rao, 1996; Valentine and Sweet, 1999; Bishop et al., 2004; as cited by Schmertz, Anderson & Robin, 2009), and Stroop colour word tests, even after brief periods of mindfulness training as compared to controls (Lykins, Baer & Gottlob, 2012). This result has established a firm foundation to in turn study the specific mechanisms of attention that mindfulness arbitrates and consequently trains.
The second hypothesis of the study was that there would be significant decreases in perceived stress following mindfulness meditation sessions. The results, therefore, provide additional, supportive data for past research which too highlighted the importance of mindfulness as a coping strategy to reduce stress, prevent chronic illnesses (Oman et al., 2008; Pritchard, Elison-Bowers, & Birdsall, 2010; as cited by Montes, Clay, Carlson & Moore, 2013).

The third part of this research hypothesized whether mindfulness exercises would lead to an enhancement in emotional acceptance which in its entirety, mediates and improves executive control too. However, contrary to the predictions made, granting prior research (Teasdale et al., 2002; Perlman et al., 2010; Niemiec et al., 2010; Teper & Inzlicht, 2013), the results exhibited no significant relationship between emotional sensitivity measures and self-control at pre- and post-test levels. Interestingly however, when using a directional hypothesis and approaching the construct of self-control confidently, the pre-and post-test differences in self-control do approach significance. Thus, several interpretation of the findings must be speculated. The insignificant results do not appear attributable to probable failures of instrumentation. The questionnaires given were well-documented measures of self-control and emotional sensitivity. All measures were administered based on their instructions and procedures provided in their manuals that are well-described in the literature. Procedural aspects of this study may have however, influenced the findings i.e. as compared to the aforementioned studies that incorporated a standard MBSR program, which lasts for a maximum of 8-10 weeks, this study condensed the course into a shorter version of three weeks due to institutional time-constraints and the convenience of undergraduate students participating voluntarily. Moreover, According to Rausch, Gramling & Auerbach (2006), meditation for a brief period of time does not have an effect. Thence it’s deducible that the
emergence of greater self-control requires further practice or participation in a longer course. Strikingly, this presumption by the principle author is advocated by the qualitative analysis through its emergence as a prominent theme (discussed below).

**Qualitative Component**

The mixed-methods component of this current study ultimately aimed to maximize the quantitative data obtained by contributing the subjective voices of participants. As aimed, their voices indeed contributed to a systematic review of their experiences, the mindfulness program and the research paradigm in this study. Through the process of thematic analysis, a couple of themes emerged.

The first theme, ‘necessity of an open attitude’ was identified as the participants finding the exercises interesting whilst also relaxing only after taking an open attitude towards these exercises, which is consistent with prior studies conducted basically to digress upon the definition of mindfulness and eventually describing it as an open and non-judgemental awareness (Watson, 2008). Moreover, a recent model of mindfulness mechanisms introduced by Shapiro et al. (2006) describes this primary shift that occurs, allowing to see things from a completely different perspective. The participants described their newly learnt ability to comprehend their experiences from a different perspective.

In view of the insignificant quantitative results, the second theme was ‘Increased self-regulation’, participants continuously reported an ability to control their emotions. This idea is also consistent with the aforementioned Shapiro et al. (2006) model, proclaiming self-regulation as a mechanism emerging from the engagement in the process of re-perceiving. The participant experiences the ability to see options and reactions and then choose to respond in more beneficial ways (Mackenzie, Carlson, Munoz & Speca, 2007).
The third theme was ‘practice leads to greater mindfulness’, whereby participants reported increases in meditative skills and emotional regulation through practice, which rationalizes why participants were not able to demonstrate increased emotional sensitivity and subsequently increased executive control (self-control) quantitatively. Other works have proclaimed emotion regulation as a mechanism of change in acceptance and mindfulness-based treatments (Baer, 2010). The exercises in these programs encourage students to observe their emotions as they occur in the moment and label them objectively, which allows them to increase their contact with the emotions and focus attention on the different components of their emotional responses, this is usually expected to increase their emotional awareness. To boot, the emphasis of ‘letting go’ and encouragement of a non-judgemental perspective towards emotions facilitates emotional acceptance in participants and increases their willingness to experience these emotions (Baer, 2010). Another pertinent and complementary construct here is participants’ motivation and engagement levels i.e. very few participants in the present study actually practiced mindfulness exercises outside of the sessions and so this could be one reason why the difference in self-control and emotional sensitivity was noted in qualitative analysis only, from the practicing students, and not through the quantitative component. Moreover, these were factors that were not explicitly inquired in the study through measures but were only reported out of the sheer will of participants. With the numerous affairs of daily life, and especially in the lives of university students, trying to retain balance in both their academic and personal lives, it is understandable that it can be difficult to follow through with practicing these exercises. Not to mention, the current researcher before organizing a face-to-face intervention in the current study, experienced numerous challenges whilst attempting to run an online-intervention. The biggest problem seen was lack of motivation and participation from students, especially with the study being
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Longitudinal in nature, requiring participants to constantly work on the research suite by themselves despite all instructions being provided on it and weekly email check ins. Notably these results were also contradicting previous successful studies of online-mindfulness interventions (Moreledge et al., 2013). Thus, further research could use both online and in-person interventions on different participants to see their effect after 6-8 weeks and reconceptualise this avenue in mindfulness research or compare an in-person mindfulness intervention to a slightly distinct version that either involves exercises studying and inciting motivation or perhaps encompasses checking-in with participants individually so feedback can be acquired and correspondingly assistance could be provided if there is resistance in participants or difficulties in the early stages of meditation practice, as few studies have done previously, for example, with smaller groups (Watson, 2008).

The final theme emerged, was ‘Individual variations in experiences and relaxation’, throughout the analysis participants reported their experiences to be dependent on the type of meditation they underwent, their normal routines and also personality types, which is consistent with previous researchers’ arguments that mindfulness could also be considered a naturally occurring characteristic with both inter- and intra-personal differences e.g. the time-frame when one is undergoing exercises or personality traits can easily effect levels of mindfulness (Brown & Ryan, 2003).

Limitations and Future Directions

The present study has several other limitations. There was a lack of a control group due to ethical considerations of not providing the stressful group with a stress-reduction intervention when one was present. This made it impossible to conduct analyses where there are two groups; one participating in meditation versus a comparison group serving as independent variable. Participants were not asked whether they were engaged in other
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interventions, so the present study failed to shed light upon whether other interventions had similar outcomes that teach relaxation and may also cause increases in mindfulness or decreases in perceived stress or changes in subjective experiences of individuals. Also, if these were involved, the present study could not examine if they can be held susceptible for the lack of difference in emotional acceptance after the meditation exercises, and also if social factors such as family support had a confounding effect. Moreover, an additional limitation is that all participants who had agreed to participate in an intervention were relatively well-educated, from affluent backgrounds and in intensive university settings, so the findings were not generalizable to individuals with relatively less education, lower socioeconomic statuses, or people outside of university.

The results on enhanced attention could be viewed in light of one other limitation i.e. participants may have experienced performance pressure during post-test due to their perceived expectations from the experimenter or motivation, because of the culturally sponsored expectations of meditation. Further research is required to study whether it is really attentional training in meditation or simply the effort of the participant whilst post-testing.

The patterns of weekly changes in mindfulness and its related concepts, over the course of the program have barely been studied and it is still not known whether change in one precedes change in the other or if they change together (Baer, Carmody & Hunsinger, 2002). Comparatively, since there is a multitude of literature on pre- and post-test differences now, studies into mechanisms of change should start to become more credible as time progresses, where the influence of a proposed mediator is studied to cause a change in the outcome variable by establishing a sequence of weekly assessments throughout the treatment. Therefore, future research directions could also investigate weekly changes in perceived stress, mindfulness, emotional acceptance and self-control.
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It could be considered a limitation that because self-report measures were used, there is a possibility that participants’ responses were influenced by an inaccuracy due to limited self-awareness or participants difficulties in conveying their experiences too. Also, open-ended feedback questions in the survey were only posed at the post-test level, therefore the investigator doesn’t possess subjective accounts of participants’ experiences of stressors or everyday life before the intervention.

Conclusion

In spite of its limitations, the present study makes important contributions to the literature on mindfulness by taking its stand as one of the very few comprehensive, mixed-method studies. While it supports the notion that mindfulness trains attentional abilities entirely, it extends further to develop strong foundations for further research into the specific mechanisms and attentional processes affected by mindfulness. It also provides supplementary data on stress reduction by mindfulness in university students constructing a powerful case for the presentation of this research and in turn contributing to the growing literature suggesting that increases in mindfulness skills are fundamental arbitrators of its successful mental health outcomes. Its mixed results however, on the emergence of self-control and emotional acceptance, revealed only through the qualitative part of this research, and the lack of a potential association between them exhibited in the quantitative part are areas in need of further study. Replication of these findings with standard mindfulness programs and a greater focus on encouragement of participant practice outside of mindfulness sessions are first steps to examining this construct of heightened emotional acceptance exhaustively. This study also extended to encompass the subjective state of participants, a research avenue the investigator hopes will be studied more. Future research should strongly consider use of another mixed-method design, with quantitative and qualitative measures
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assessed at all times, alongside randomized controlled trials to thoroughly obtain diverse, subjective experiences of participants.
References


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ACCEPTANCE


DOI: 10.1007/s10880-006-9033-8

controlled clinical trial: the effect of a mindfulness meditation-based stress reduction
program on mood and symptoms of stress in cancer outpatients. *Psychosomatic
Medicine, 62*(5), 613 – 622.

meditation training improves attention and self-regulation. *Proceedings of the National
Academy of Sciences, 104* (43), 17152-17156

Adjustment, Less Pathology, Better Grades, and Interpersonal Success. *Journal of
Personality, 271*-324.

Teasdale, J. D., Moore, R. G., Hayhurst, H. H., Pope, M., Williams, S., & Segal, Z. V.
(2002). Metacognitive awareness and prevention of relapse in depression: empirical

Teper, R., & Inzlicht, M. (2012). Meditation, mindfulness and executive control: the
importance of emotional acceptance and brain-based performance monitoring. *Social
Cognitive and Affective Neuroscience 2013, 8*, 85-92.

http://isites.harvard.edu/icb/icb.do?keyword=qualitative&pageid=icb.page340897
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Appendix A

Informed Consent, Demographic Questionnaire, Pre/Post Intervention Survey, Open-Ended Feedback Qualitative Questionnaires presented at post-test level & Debriefing Statement presented at post-test
Principal Researcher: Hudaisa Fatima, working towards Bachelors in Psychology degree by writing a thesis and investigating this topic

E-Mail:
Supervisor. John Hyland, Experimental Psychologist,
Psychology Professor at the Dublin Business School

**Purpose:** To test the effectiveness of a four week Mindfulness-based Stress reduction programme on Perceived Stress, Attentional Abilities and Executive Control

**Procedure:** Upon completion of this pre-intervention questionnaire, I'll be putting the exercises on for all participants. These will be in auditory and visual form and so will be played through a computer, projector and speakers. All materials are tailored for those wishing to learn effective ways of managing stress. Your participation and access to programme is designed to last four weeks. You'll be performing a set of exercises for the first three weeks and will be given instructions on how to progress through it. The exercises are a combination of short and long ones, however they won't last longer than 15-30 minutes while still being very beneficial to you.

After your participation, you're asked to complete another post-intervention questionnaire for me to note any significant changes in the fourth week.

**Inconvenience/discomfort**
This research is considered low risk and you will not experience a great deal of inconvenience or distress. However should responding to the questionnaire items cause you discomfort or elevated stress, you should withdraw from participation. Should the feeling of discomfort become overwhelming and intense, and you wish to talk about it you may call Samaritans on 1850 60 90 90 or their email support service: jo@samaritans.org, or alternatively, www.turn2me.org
Benefits: Access to a free mindfulness based stress reduction programme, informational benefits relating to stress, support materials for management of ongoing stress, also a greater understanding of the individual's role in stress and mindfulness techniques.

Confidentiality: All data obtained from participants will be kept confidential and will only be reported and disseminated in an aggregate format (by reporting only combined results and never reporting individual ones). The data will be kept anonymous by immediately separating your email addresses from responses. All questionnaires will be concealed, and no one other than then primary investigators will have access to them. The data collected will be stored in a secure place with access available to only the primary investigator.

Data Storage: All data is being encrypted with a password code and will be kept for a year in case of any appeals. Data will then be cautiously deleted.

Thank you for taking out time to read this statement.

______________________________________________________________________________
I have read and understood the above consent form and agree to take part in the study.

- Yes
- No
Pre-Post Intervention Survey

Demographic Questionnaire
Circle the appropriate answer.

Gender: Male or Female

Date of Birth: ______________________
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Day-to-Day Experiences

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
</table>

I could be experiencing some emotion and not be conscious of it until some time later. 1 2 3 4 5 6
I break or spill things because of carelessness, not paying attention, or thinking of something else. 1 2 3 4 5 6
I find it difficult to stay focused on what’s happening in the present. 1 2 3 4 5 6
I tend to walk quickly to get where I’m going without paying attention to what I experience along the way. 1 2 3 4 5 6
I tend not to notice feelings of physical tension or discomfort until they really grab my attention. 1 2 3 4 5 6
I forget a person’s name almost as soon as I’ve been told it for the first time. 1 2 3 4 5 6
It seems I am “running on automatic,” without much awareness of what I’m doing. 1 2 3 4 5 6
I rush through activities without being really attentive to them. 1 2 3 4 5 6
I get so focused on the goal I want to achieve that I lose touch with what I’m doing right now to get there. 1 2 3 4 5 6
I do jobs or tasks automatically, without being aware of what I’m doing. 1 2 3 4 5 6
AN EXTENSIVE MIXED-METHODS ANALYSIS: MINDFULNESS MEDITATION, ATTENTIONAL ABILITIES, PERCEIVED STRESS, AND EMOTIONAL ACCEPTANCE

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I find myself listening to someone with one ear, doing something else at the same time.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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</tbody>
</table>

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<thead>
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<th></th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I drive places on 'automatic pilot' and then wonder why I went there.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I find myself preoccupied with the future or the past.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I find myself doing things without paying attention.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>I snack without being aware that I’m eating.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
Perceived Stress Scale - 10 Item

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

1. In the last month, how often have you been upset because of something that happened unexpectedly?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

3. In the last month, how often have you felt nervous and "stressed"?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

5. In the last month, how often have you felt that things were going your way?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

6. In the last month, how often have you found that you could not cope with all the things that you had to do?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

7. In the last month, how often have you been able to control irritations in your life?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

8. In the last month, how often have you felt that you were on top of things?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

9. In the last month, how often have you been angered because of things that were outside of your control?
   - 0 = never
   - 1 = almost never
   - 2 = sometimes
   - 3 = fairly often
   - 4 = very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
    - 0 = never
    - 1 = almost never
    - 2 = sometimes
    - 3 = fairly often
    - 4 = very often
**Brief self-control scale**

*Using the 1 to 5 scale below, please indicate how much each of the following statements reflect how you typically are:*

<table>
<thead>
<tr>
<th>Not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Very much</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>type of activity</td>
<td>frequency</td>
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<td>--------------------------------------------------------------------------------</td>
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<tr>
<td>1. I am good at resisting temptation</td>
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<td>2. I have a hard time breaking bad habits</td>
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<td>3. I am lazy</td>
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<td>4. I say inappropriate things</td>
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<td>5. I do certain things that are bad for me, if they are fun</td>
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<td>6. I refuse things that are bad for me</td>
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<td>7. I wish I had more self-discipline</td>
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<td>8. people would say that I have iron self-discipline</td>
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<td>9. pleasure and fun sometimes keep me from getting work done</td>
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<td>10. I have trouble concentrating</td>
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<td>11. I am able to work effectively toward long-term goals</td>
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<td>12. sometimes I can’t stop myself from doing something, even if I know it is wrong</td>
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<td>13. I often act without thinking through all the alternatives</td>
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</tbody>
</table>

**Emotional Sensitivity Subscale (Social Skills Inventory)**

Following are statements that indicate an attitude or behaviour that may or may not be characteristic or descriptive of you. Read each statement carefully. Then using the scale beside it, decide which most accurately reflects your answer and circle the appropriate number.
AN EXTENSIVE MIXED-METHODS ANALYSIS: MINDFULNESS MEDITATION, ATTENTIONAL ABILITIES, PERCEIVED STRESS, AND EMOTIONAL ACCEPTANCE

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all like me</th>
<th>A little like me</th>
<th>Like me</th>
<th>Very much like me</th>
<th>Exactly like me</th>
</tr>
</thead>
<tbody>
<tr>
<td>When people are speaking, I spend as much time watching their movements as I do listening to them.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Few people are as sensitive and understanding as I am.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>At parties, I can immediately tell when someone is interested in me.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>I am interested in knowing what makes people tick.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>I can easily tell what a person’s character is by watching his or her interaction with others.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>I always seem to know what people’s true feelings are no matter how hard they try to conceal them.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>I can accurately tell what a person’s character is upon first meeting him or her.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>One of my greatest pleasures in life is being with other people.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>I can instantly spot a ‘phony’ the minute I meet him or her.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>I dislike it when other people tell me their problems.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>I sometimes cry at sad movies</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I am easily able to give a comforting hug or touch someone who is distressed.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can spend hours just watching other people.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am often told that I am a sensitive, understanding person.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>When my friends are angry or upset, they seek me out to help calm them down.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tbody>
</table>

Qualitative Post-Intervention Questions assessed at Post-Test Level

What was your overall experience with the meditation classes?
What was your experience learning and practicing the mindfulness meditation sessions?

a) Was it helpful or not helpful? Why

End of Survey Message

Thank you for all your cooperation and taking out time to complete our study and retaking this survey. I'd love to hear your feedback on any issue around the study.
AN EXTENSIVE MIXED-METHODS ANALYSIS: MINDFULNESS MEDITATION, ATTENTIONAL ABILITIES, PERCEIVED STRESS, AND EMOTIONAL ACCEPTANCE

This research was based on testing the efficacy of mindfulness based stress reduction exercises on perceived stress, Attentional abilities & Emotional Acceptance.

Mindfulness exercises improve quality of life by guiding attention to internal and external experiences, occurring from moment-to-moment. This research used question items that focused on basic attentional abilities affected by mindfulness. If significant results are found, further research will be conducted to look into the specific attentional abilities affected by mindfulness.

This project also looked at perceived stress to make stress rather objective than subjective, thereby preventing the presentation of an operational definition of stress, and also measures that can be potentially diagnostic in nature.

Meditation also encompasses a mindful acceptance of feelings and emotional states thus, with attention it's also important to accept the emotions associated with your thoughts. This study aimed to investigate if meditation exercises executive control and improves emotional acceptance to enhance control.

Therefore, if you're looking to get an update or a summary of the results. I'd be happy to provide you with one, please do let me know on.

This research was considered low risk. However, if responding to the questionnaire items again have caused you discomfort or elevated stress, and if this feeling of discomfort has become overwhelming and intense, and you wish to talk about it you may call Samaritans on 1850 60 90 90 or their email support service: jo@samaritans.org, or alternatively, www.turn2me.org

Best Wishes,

Hudaisa Fatima.