Avantages organisationnels des dispositions d’esprit alternatives: comment les techniques de méditation améliorent le bien-être et la production créative parmi les employés

Marie Holm

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The organisational benefits of alternate mindsets: How meditative techniques enhance employee well-being and creativity

Avantages organisationnels des dispositions d’esprit alternatives : Comment les techniques de méditation améliorent le bien-être et la production créative parmi les employés

THESE
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“Connect the internet to your inner-net. Friend yourself. Listen to the tweet of your heartbeat. Pay attention to the status update from your body. And respond to that urgent chat request from your brain.” — Gopi Kallayil, Google Inc.

“Look within. Within is the fountain of all good.” — Marcus Aurelius

“We can make our minds so like still water
that beings gather about us to see their own images,
and so live for a moment with a clearer,
perhaps even with a fiercer life
because of our silence.” — William Butler Yeats

“I have no doubt whatever that most people live, whether physically, intellectually, or morally, in a very restricted circle of their potential being. They make use of a very small portion of their possible consciousness, much like a man who, out of his whole bodily organism, should get into the habit of using and moving only his little finger… We all have reservoirs of life to draw upon, of which we do not dream.”

— William James, The Varieties of Religious Experience (1901)
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Abstract

In contrast to the traditional mindset (TMS)—the conscious awareness, controlled mental processes, and analytical-logical manipulation of symbols—an alternative mindset (AMS) is viewed as the pre-conscious mental processes (i.e. associative, imaginative, intuitive) and holistic thinking (Davis-Floyd and Arvidson, 1997; Dane and Pratt, 2007; Hodgkinson et al 2009). Since Plato, the West has considered TMS as the hallmark of intelligence and simply of any cognition. Yet, in recent decades various research explored complementary and/or alternative to analytical-logical cognition mental systems (eg., Damasio, 1994; Nisbett & al., 2001; Wagner & Sternberg, 1985). The alternative mindset—an array of such systems—was primarily explored for its individual benefits, while our research focuses on organisational benefits.

To do this, we used a bi-weekly meditative practice to induce an AMS in organisational actors. We hypothesized that following the shift from TMS to AMS, organisational actors will benefit from enhanced creative production and well-being. Empirical experiments were conducted with 144 self-selected participants within two organisations—a business and a municipal government—in Canada (measuring levels of well-being and creativity) and one in France—a business school administration—(measuring levels of well-being), consisting of eight bi-weekly 20 minute sessions of guided meditation (Fredrickson et al. 2008, Oz et al. 2009, Sears & Kraus 2009; for the control group a “placebo” technique of relaxation was used; Rausch et al., 2006).
For experiments measuring well-being, participants completed the Satisfaction with Life Scale (SWLS; Diener et al., 1985) prior to each session. Next, they were led through a meditation session, and then completed the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) to assess the extent of entering an AMS. At the end of their work day, participants again completed the SWLS. For experiments measuring creativity, prior to the first session, participants outlined several challenges that they were currently encountering at their work, from which one was selected for the experiment. Prior to each experimental session, participants took a creativity test, the Adjective Check List (ACL) Creativity Scale (Domino, 1970). Next, they were administered a meditative technique and then completed the MAAS to assess levels of alternate mindsets. Finally, at the end of their work day, they again completed the ACL, and reported solutions to their selected challenge. These solutions were then assessed by a panel of three judges on two creativity criteria (novelty and usefulness) using the piles method.

Statistical analysis, using the fixed effects model, showed significant increase in well-being and creativity for the experimental groups compared to the control groups for all three locations after six sessions. In addition, mindfulness—not being a dependent variable—also increased significantly after six sessions.

In terms of limitations of this research, in order to implement meditative techniques to elicit AMS, employees must be willing to give of their time and attention to participate in meditation sessions. Because only a portion of employees are self-motivated to attend and participate in meditation sessions on their own time, which introduces a self-selection sample bias, alternative enrollment solutions must be attempted if all employees are to participate.
Future possibilities for research involve replicating the experiments at additional—business and/or not-for-profit—organisations, measuring either: (1) the same individual benefits of AMS, in order to strengthen the ecological validity of results and be able to have sufficient numbers of participants to make demographic comparisons such as we were not able to yet achieve. For instance, this research could explore how cultivation of AMS varies with age, gender, job role (managerial versus front-line, various hierarchical levels) or venue (such as in an educational or health-care institutions or non-profit organisations), or (2) additional AMS benefits, either at the individual (such as level and duration of concentration, level of fulfillment or work engagement), team (such as group cohesiveness, team productivity or extent of synergy) or organisational level (such as corporate citizenship, turnover levels, absenteeism levels or productivity), or a combination of these. Finally, given the debate in the research of whether concentrative techniques such as transcendental meditation or mindfulness meditation are more effective, an array of meditation techniques could be tested, to identify that with greater and more lasting organisational benefits.

To conclude, our study shows that the induction of AMS through meditative techniques has possible applications in counteracting the phenomenon of rising stress levels within organisations. As the organisational benefits of AMS span from enhanced well-being and creative production, as shown in our experiments, to potentially higher employee engagement, improved health and greater relaxation, introducing AMS-inducing techniques into organisations could potentially aid in minimizing stress levels and thus reducing negative impacts of stress. Furthermore, applying AMS-inducing techniques could benefit organisations in other ways beyond stress reduction, such as higher profitability, as a result of AMS benefits including enhanced concentration, lower absenteeism and greater awareness amongst participants.
Résumé


Pour ce faire, nous avons mis en place une pratique bi-hebdomadaire de méditation pour provoquer une transition vers l’AMS chez les acteurs organisationnels. Nous avons fait l’hypothèse générale que suite au passage de TMS à l’AMS, les acteurs organisationnels bénéficieront d’une production créative et d’un bien-être accrus. Les expériences empiriques ont été réalisées avec 144 participants auto-sélectionnés au sein de deux organisations—une entreprise et une autorité municipale—aux Canada, et d’une autre—administration d’une école de commerce—en France. Chacune des trois expériences s’est composée de huit séances bi-hebdomadaires de 20 minutes de méditation guidée pour le groupe expérimental (Fredrickson et al. 2008, Oz et al. 2009, Sears & Kraus 2009); une technique de relaxation a été utilisée pour le groupe témoin (Rausch et al. 2006).
Pour les expériences de mesure du bien-être, les participants ont complété l’échelle de la satisfaction dans la vie (SWLS; Diener et al, 1985) avant chaque session. Ensuite, ils ont participé à une séance de méditation, puis complété l’échelle de sensibilité à l’attention consciente (Mindful Attention Awareness Scale/MAAS, Brown & Ryan, 2003) pour évaluer l'ampleur de l’entrée dans l’AMS. A la fin de leur journée de travail, les participants ont à nouveau saisis les SWLS. Pour les expériences de mesure de la créativité, avant la première séance, les participants ont fait part de plusieurs défis qu’ils rencontraient dans leur travail, l’un des défis a été choisi pour l’expérience. Avant chaque session expérimentale, les participants ont eu un test de créativité, l’échelle de la créativité (Domino, 1970) de la liste de vérification des adjectifs (ACL). Ensuite, ils ont utilisé une technique de méditation puis rempli les MAAS pour évaluer l'ampleur de l’entrée dans l’AMS. A la fin de leur journée de travail, ils ont à nouveau complété l'ACL, et proposé des solutions à leur défi choisi. Ces solutions ont ensuite été évaluées par un panel de trois juges sur deux critères de créativité (nouveauté et utilité) à l’aide de la méthode de piles.

L’analyse statistique à l’aide du modèle à effets fixes a montré un accroissement significatif du bien-être et de la créativité pour les groupes expérimentaux par rapport aux groupes témoins pour les trois sites et ceci après six séances. En outre, la pleine conscience, n’étant pas une variable dépendante, a également augmenté de façon significative après six séances.

Quant aux limites de cette recherche, afin de mettre en œuvre des techniques de méditation pour susciter l’AMS, les employés doivent être disposés à donner de leur temps et attention afin de participer à des séances de méditation. Seulement une partie des employés est motivée.
à assister et à participer à des séances de méditation sur son propre temps, ce qui introduit un biais d'auto-sélection, des solutions alternatives de doivent être tentées si tous les employés ont à participer.

Les possibilités futures pour la recherche comprennent la reprise des expériences dans d'autres organisations, à but non lucratif et/ou des entreprises, pour explorer soit (1) les mêmes avantages individuels de l'AMS, afin de soutenir la validité écologique des résultats et d'être en mesure d'avoir un nombre suffisant de participants pour faire des comparaisons démographiques que nous n'étions pas en mesure de réaliser ; par exemple, cette recherche pourrait explorer comment le développement de l'AMS varie avec l'âge, le sexe, le rôle professionnel (managérial par rapport à la première ligne, différents niveaux hiérarchiques) ou le site (par exemple, des établissement éducatifs ou de santé ou des organismes à but non lucratif) ; soit (2) des bienfaits supplémentaires de l'AMS, que ce soit au niveau individuel (tels que le niveau et la durée de concentration, le niveau de satisfaction d’implication dans le travail), à l’échelle de l’équipe (tels que la cohésion du groupe, la productivité, ou l’étendue des synergies) ou au niveau organisationnel (comme la citoyenneté des entreprises, les niveaux de chiffre d'affaires, le taux d'absentéisme ou la productivité), ou une combinaison de ces éléments. Enfin, compte tenu du débat dans la recherche sur l’efficacité de techniques concentratives comme la méditation transcendante ou la méditation de pleine conscience, une gamme de techniques de méditation pourrait être testée afin de le vérifier, avec des avantages organisationnels plus larges et durables.

En guise de conclusion, notre étude montre que l'induction de l'AMS par le biais des techniques de méditation aurait d’éventuelles applications dans la lutte contre le stress dans
les entreprises. Comme les avantages organisationnels de l'AMS vont de la créativité et du bien-être accrues, comme démontré dans nos expériences, à l'engagement potentiellement plus élevé des collaborateurs, une santé meilleure et une grande détente, l'introduction des techniques de méditations dans les organisations pourrait aider à réduire le mal être ou le désengagement et la manque d'initiative et de créativité. L'éradication radicale de ces phénomènes négatifs demande bien sur la transformation des entreprises, mais en attendant, les employés peuvent souffrir moins et être plus créatifs.
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1. **Introduction**

Growing numbers of workplace wellness programs are being established to aid employees in dealing with the uncertainty and instability which are the norm in modern work environments. By encouraging meditative moments and pauses, employees can benefit from a ‘digital detox’, renewing their focus and energy, and bringing new inspiration. All the while, there is substantial room for the strengthening and widening of implementation of workplace wellness programs, which research in this domain can support by continuing to show beneficial organisational implications.

For thousands of years, a plethora of spiritual and religious traditions have evolved in both Eastern and Western societies. Though the diversity of these traditions is extensive, a common core ties many of them – the notion that through meditation (Eastern focus) or prayer (Western focus) one can return to a calm and relaxed state, reaping a sense of peace and fulfillment. By blending the knowledge and insights of Eastern and Western traditions and applying them within organisations, therein lies great potential for enlightening, balancing, and transcending.

We propose that utilising contemplative practices to induce alternate mindsets, such as mindfulness and awareness, can provide for more optimal functioning of people within organisations, by reducing conscious control over mental processing, allowing for a more integrative and holistic perspective. This, preconscious mental processing, has been previously shown by many others as beneficial to creative problem solving, insights, intuition, and other facets of life.

Alternate mindsets (AMS) are characterized in literature by the pre-conscious (i.e. potentially available to the consciousness) awareness, uncontrolled mental processes (i.e. associative, imaginative, intuitive) and holistic thinking (Davis-Floyd and Arvidson 1997; Dane and Pratt, 2007; Hodgkinson et al 2009). In contrast, the traditional mindset (TMS) is
characterized by the conscious awareness, controlled mental processes, and analytical-logical manipulation of symbols. Since Plato, the West has considered TMS as the hallmark of intelligence and simply of any cognition. Yet, in the last several decades various research showed complementary ways and alternatives to analytical-logical cognition mental systems (eg., Damasio 1994; Nisbett et al., 2001; Wagner and Sternberg 1985). Alternate mindsets represent an array of such systems which were partly explored for its individual benefits. Our focus is on the AMS use and benefits in the organisational context.

Certain conditions could be more conducive to AMS arising and being sustainable, while the contrary could keep TMS dominant. Some of these conditions will be explored here in the context of corporate wellness programs, as AMS induction techniques or as a supplement to formal practice.

It can be advantageous for organisations to implement programs to encourage the development of alternate mindsets amongst their employees, as for instance, well-run comprehensive workplace wellness programs (incorporating on-site meditation sessions and training for self-regulation and mental balance for instance) have been shown to have a return on investment as high as six to one.

A significant contribution of introducing AMS-related activities is lower health care costs, for instance, Berry and colleagues (2010) state that wellness programs saved the firm Johnson & Johnson a total of 250 million in healthcare costs within six years. Another impact is greater productivity, as participants in wellness programs are absent less often and perform better at work than their nonparticipant counterparts - according to Gallup Healthways (2008), employees scoring low in life satisfaction are absent from work an average of 1.25 more days per month than those with high levels.

While treatments and medications provided by the traditional health care system - which is perhaps more consumed with treatment of illness and disease than health promotion
- can be costly and have potential side effects, AMS mechanisms can involve little or no cost and no side effects. Further, AMS activities yield higher morale; employee pride, trust, commitment and engagement increase, contributing to a robust organisation by, amongst other factors, allowing for greater self-regulation and better managing one’s perceptions and behaviours.

Seeing the multitude of organisational benefits, numerous companies have already embarked on workplace wellness programs that encourage the practice of AMS-inducing techniques. AMS training is being embraced by diverse organisations as an antidote to the relentless pressure and information overload common in workplaces.

At the prominent international technology firm, Apple, employees are encouraged to meditate 30 minutes a day, on-site meditation and yoga classes are offered, and a meditation room is provided. At another, Prentice Hall Publishing, a “Quiet Room” is provided where employees can meditate, pray or reflect. At Google, one of the original software engineers, Tan, established “Search Inside Yourself” in 2007, a course teaching employees learn how to breathe mindfully, listen to their coworkers, and improve their emotional intelligence; in support of this, meditation space and courses are offered, to both improve employee mental health and well-being and also the company’s bottom line. Next, recognising the business and humanitarian potential of AMS, Intel employees developed a mindfulness program called Awake Inside. At the athletic apparel firm Nike, employees have access to relaxation rooms to rest, pray or meditate, and on-site meditation and yoga classes. Similarly, AOL Time Warner, HBO, Yahoo! and Deutsche Bank offer on-site meditation classes and quiet rooms for contemplative practices.

More and more, leaders and managers are embracing what may have at first been considered a trend, by making workplace wellness integral to the notion of their firm’s success. To give several current examples, at Procter & Gamble various on-site health and
fitness programs are provided, including meditation, supported by CEO Lafley who holds that, “You cannot out-work a problem, you have to out-meditation it.” At General Mills, an initiative called “Mindful Leadership” blends meditation, yoga and mindfulness practices to settle and focus the minds of employees. Further, McKinsey & Co. management and consulting firm provides meditation and self-analysis programs for employees, and according to a McKinsey partner, “What’s good for the spirit is good for the bottom line,” and has developed meditation programs for other firms, such as for an Australian client, which saved the business more than $20 million. Finally, another prominent firm, Aetna, found from analyses that an hour a week of AMS practice decreased employee stress levels by a third, cutting healthcare costs by around $2000 annually per employee.

Given the global economic crisis and workplace stress, which continue to endure, the principles of meditation can uniquely and effectively address both the challenges and the opportunities that the world now faces. In parallel with the Chinese notion of ‘wei ji’, in which crisis signifies not only danger but also opportunity, Western and Eastern business alike can take an approach of opening themselves to the possibilities through adapting age-old spiritual and religious practices for modern day organisational settings. Through meditation and similar practices that cultivate a particular mindset, organisational actors could benefit from the same sense of calm, equanimity, compassion, connection and perception as have a multitude of practitioners through time.

More and more, companies are realising the importance of the psychological well-being and state of mind of their employees. Namely, Schumpeter (2010) outlined the mounting attention that is being given to employees’ mental well-being within organisations. Mental health programs have been implemented in many companies, from British Telecom (BT), to Rolls-Royce and Grant Thornton. BT has benefited from a 30% reduction in sickness absence due to mental-health problems as a result. As well, consultancies, including
Corporate Psychology and Mental Fitness offer services targeting the mental health within organisations. This area deserves merit, given that more than a third of physical problems which doctors attend to have psychological causes.

Much attention has been given to how intuition and insight can bring benefits to managers and organisations, but often the processes in order to obtain such insights and wisdom have been overlooked in research. We delve into the processes which bring about alternate mindsets, first explaining what we term traditional and alternate mindsets, then looking at the characteristics of the mechanisms that are involved to transition from traditional to alternate mindsets, how specifically these mindsets bring about an enhanced state, and what potential benefits and applications could be implemented within organisations.

The purpose of this research is to define the psychological mechanism that specifies the path from cultivation of alternate mindsets in organisational actors all the way to the positive benefits for organisations. First, a model is built to specify this path, describing the links that have already been validated in previous research and then, two relevant links that haven’t yet been tested – well-being and creative production. Next, experimental procedure is outlined, and the main results are presented and discussed in regards to validation of the hypotheses. Further, organisational implications of alternate mindsets benefits are explored in regards to the two dependent variables, well-being and creative production, as well as of extent of alternate mindsets that participants attained during the research studies. Finally, suggestions for future research in this domain are presented, along with limitations.
2. **Literature review**

To situate our research topic, we begin by looking at theory underlying the exploration of various levels of consciousness.

**2.1 Exploration of states of consciousness**

To start with, a leading theorist, Wilbur, paved a way for alternate mindsets to be explored, by drawing together different paradigms from Western and Eastern cultures in his ‘Integral Theory’, as well as relating consciousness levels with their theoretical bases in ontology, epistemology, and methodology (Wilbur et al 2011). His theories have been applied to executive leadership and organisational development, by Young (2002) and others, on how the development of higher levels of consciousness along a ‘Spectrum of Consciousness’, which is a parallel notion to our research exploration of the development of alternate mindsets, can enhance effectiveness, problem solving capabilities and bring greater self-fulfillment within organisational settings.

The concept of a continuum of mindsets, of states of consciousness, existing has been extensively researched through time, along with the emotional states and characteristics associated with them. It is particularly research that transcends paradigms that we draw upon for this research, as the exploration of alternate mindsets, themselves different states of consciousness, represent a marriage of Western and non-Western traditions and philosophies. Bringing ancient contemplative practices into modern organisational settings requires at least some knowledge of the philosophical foundation that is being built upon, such as Wilbur and others provide. One key dimension of this foundation that is prominent in the literature is spirituality in the workplace, which introduces the notion of developing desired states of consciousness, altering one’s mindset.
2.2 Spirituality in the workplace

While many of the techniques that workplaces are using to facilitate the cultivation of alternate mindsets are secular, as described in the introduction in regards to corporate wellness programs, many of these techniques are imbedded in religious philosophy and traditions. Therefore, literature linking spirituality and religion to management and organisational behaviour position this topic compared to related streams of research.

In discussing the incorporation of spirituality in the workplace, it is important to note the debate between purists, who argue that this contemplative techniques including meditation are inseparable from their origins, making AMS techniques and spirituality a blasphemy of traditional beliefs and sacred rituals, and on the other side, those who see framing contemplative practices as secular practices that are spiritual but not religious (Kingston 2013).

Framing AMS practices within spirituality could allow to increased acceptance of them within organisations by avoiding extensive debate that risks them being viewed as something that must be kept out of the workplace. Though, arguably, it remains to be seen whether AMS techniques will voluntarily be fully embraced within organisations, and if so, whether they will bring the same benefits as their ancient religious counterparts and will the concerns of the purists be satiated?

To begin, Cash and Gray (2000) outlined a holistic and inclusive framework for the inclusion of spirituality in modern workplaces, noting the needs of employees to seek support and meaning in their lives, including during time spent at work. While religious practices in workplaces have been controversial and largely regulated, with a traditional mentality of religion needing to be kept separate from work, spirituality has been welcomed to a greater extent and recognised as a way for employees to meet their needs of seeking support and a sense of purpose. They emphasise the growing prevalence of meditation, visualisation
practice and spiritual contemplation within organisations, and suggest a shift is occurring towards an alternative business mentality that sees spirituality and its various contemplative practices as part of life at work, not only outside of work. However, does divorcing spirituality from its religious roots negate its underlying philosophy? Perhaps further exploration is needed to merge workplace spirituality with contemplative traditions and practices, such that it upholds the main tenets of its philosophy.

Development of spirituality in the workplace has continued to grow and widen, within workplace wellness programs in the form of meditation and yoga classes, as well as other ways. Mitroff and colleagues (2009) conducted a ten year follow-up study, what they term a ‘spiritual audit’ of corporate America, by issuing questionnaires to analyse with Attachment Theory. From this, they found a strong link between workplace spirituality and a secure attachment style, concluding that spiritual organisations are more secure.

Other research literature from this domain connects workplace spirituality and meditation with productivity, encouraging the utilisation of AMS practices. On this point, Petchsawang and Duchon (2010) reported on two studies of how encouraging the expression of spirituality at work facilitates more productive work practices. The first study’s findings showed higher workplace spirituality amongst people who regularly practice meditation than those who do not. This underlines the connection between workplace spirituality and AMS practices, and validates the need for this stream of literature to be considered for this topic. The second study was less methodologically sound, yet found that the practice of meditation partially mediates the relationship between workplace spirituality and work performance, again drawing a parallel between research on AMS techniques and spirituality.

AMS techniques can emerge from within the framework of spirituality and related disciplines to have increasing organisational applications, and become a source of competitive advantage for firms, and a source of human flourishing within organisations.
Management research on AMS and spirituality alike are challenging traditional models of doing business, bringing a focus on care and compassion in place of self-interest, according to Rynes-Weller (2013).

But is spirituality being brought into the workplace solely for competitive advantage? Ample research has shown increased productivity, profitability and other benefits of spirituality, including developing AMS; however, will the advantages be lasting if the motivating intention is higher profits and not higher purpose? Perhaps a shift from competition to collaboration and co-opetition between firms could align corporate values with spiritual practices. In order for that to happen, it is likely that the gap between academic research and organisational practices may need to narrow for the applications of research findings to be practically applied, for instance through additional field studies of implementing spirituality in the workplace.

In summary, literature on workplace spirituality has been growing at a rapid pace, and its applications and implications are increasing. Various reflections and contemplations arise in this process, as, for instance, there is an unclear division between religious and secular practices. Now we proceed to literature related to exploring alternate mindsets.

### 2.3 Research sources for the exploration of alternate mindsets

A number of existing fields of established research provide a basis for the exploration of alternate mindsets (AMS) and the potential organisational benefits that AMS can bring. These include domains within psychology, organisational science and cognitive neuroscience, which each have literature sources which provide the context for understanding and evaluating organisational applications of these mindsets.

To provide a framework for developing our conceptual model, we outline key research in this rapidly evolving field. To begin with, Sedlmeier and his colleagues (2012) in
a comprehensive meta-analysis of 163 empirical studies (those selected out of 595 studies on this topic which had acceptable methodology) on psychological effects of mindfulness meditation and other forms of meditation, found a medium average effect size of meditative techniques. Their meta-analysis summarised both Western and Easter theoretical approaches on AMS techniques, thus is consistent with Wilbur’s integral approach to the exploration of states of consciousness, and, in our case, mindsets.

Further, Sedlmeier and colleagues conclude from evaluation of these studies that the effects of meditation are different from relaxation and cognitive restructuring, and that the effects vary across different forms of meditation. Only partial covariance was found between meditation and long-term impact on examined variables, contrary to the expectation of solid evidence for long-term impacts. Several weaknesses of this field of research were noted – that the dependent variables that have been studied do not fully cover the terrain of possible predictions from existing theory, and a lack of precision in predictions from these theories. They call for a deeper understanding of how and why meditation is effective, and for theories and measurement tools to become more precise in further research.

2.3.1 Positive psychological and organisational science

Mental states compatible with AMS have been explored within the domains of positive psychology and positive organisational science, as a way of enhancing individual and organisational performance. We posit that the demonstrated benefits of the former are indications of the benefits of AMS.

Positive psychology and positive organisational science literature convey individual benefits of AMS to result from shifting to focus on strengths and potential rather than dwelling on weaknesses and problems. These fields relay that enhanced performance and a sense of fulfillment result from positive and growth mindsets, mental states compatible to
AMS. For example, Rogers (1961) explored how people can adapt, and develop, mental states towards openness, awareness and self-acceptance—important individual benefits.

Next, Quinn (1990) showed how being in a mindset that is results-centered, internally directed, focused on others and externally open—a state compatible with AMS—yield leadership excellence. Similarly, Csíkszentmihályi (1990) showed that the state of flow, compatible to AMS, provides enjoyable and valuable experiences through complete absorption in an activity. Further, Taylor and Gollwitzer (1995) discussed the effects of mindset on positive illusions, describing how manipulating one’s mindset (e.g., from TMS to AMS) corresponds to improvements in how one makes decisions and implements them. In a similar vein, Gardner (2004) offered a framework for changing one’s mindset, and its impact for enhancing intelligence, creativity and leadership.

In addition, Dutton and associates (2005) showed how people are at their best and most highly motivated when utilising intrapsychic and interpersonal resources, such as in AMS. Also, Seligman and associates (2009) looked at how approaching life with an optimistic mindset of anticipation, energy and excitement brought greater satisfaction in work and life. Finally, Dweck (2006) discussed a growth mindset—in which there is a focus on the process of learning, as opposed to a fixed mindset—and how it enhances performance and achievements. A comparison between a fixed mindset, which is static and deterministic and a growth mindset, which emphasises free will and self-development, is displayed below in figure 1, which looks at various facets of each type of mindset in regards to cognition and behaviour.
Overall, mindsets compatible with positive mindsets and other AMS offer diverse benefits of increased effectiveness and sense of well-being.

**Figure 1**: Comparison of fixed and growth mindsets
To summarize, diverse lines of positive psychology and positive organisational science research which explored mindsets compatible with AMS—showed several areas of potential benefits: a mindset which embraces positivity and possibility provides (1) greater benefits and sense of personal fulfillment; and (2) enhances performance and self-actualisation compared to a negative, fixed or other TMS mindset.

After now having explored the psychological and organisational science sources of AMS, we turn to the neurophysiological ones.

2.3.2. Neurophysiology

In terms of neurophysiological research, two areas are particularly relevant to AMS: (1) brain structure has plasticity and changes throughout one’s lifetime; this supports the possibility of move from TMS to AMS, and (2) there are reliable techniques to train the brain to access alternate mindsets.

In terms of brain plasticity, Davidson and associates (2007) looked at the changeable structure of the brain (neuroplasticity), and discovered experience-dependent alterations in brain function. Specifically, these researchers showed how neurogenesis (generation of neurons) is modulated by experience, and that both negative and positive experiences have powerful and demonstrable opposite effects on brain processes and, as a result, on one’s mindset. Further on, Luders (2009) used magnetic resonance imaging (MRI) and found that the brain continues to change during one’s lifetime thus indicating that it is potentially possible to move from TMS to AMS. In a similar vein, Plowman and Kleim (2010) found that the brain is capable of profound structural and functional change throughout one’s lifespan, allowing for the development of AMS. Overall, these lines of research indicate that the brain’s structure and function are changeable, allowing for the possibility to shift from TMS to AMS.
In terms of training the brain to access and develop AMS, Brefczynski-Lewis and associates (2007) showed how meditative techniques (using focused attention) enhanced concentrative abilities, increased awareness and widened scope of perception, which are characteristic of AMS. Further, Lagopoulos and associates (2009) outlined several electroencephalogram (EEG) studies which have evidenced changes in spectral band frequencies during meditation. Similarly, Halsband and associates (2009) showed that plasticity changes in the brain result from meditative practices, which indicates that the brain can enter AMS through meditative techniques. Next, Luders and associates (2009) showed how meditation changes the physical structure of the brain. Specifically, these researchers found that meditators have more gray matter (indicating more efficient or powerful information processing) in regions of the brain that are important for attention, emotion regulation, and mental flexibility.

Further, Raffone and Srinivasan (2010) investigated meditative states and traits in relation to bringing benefits of AMS and found that meditation has implications on the attention, consciousness, self-awareness, and empathic development of the mind. Also, Williams (2010) outlined how meditation can lead to differences in brain structure, allowing subjects to separate their directly experienced self from the “narrative” self, as is possible with AMS. Support for this is provided by Zeidan and colleagues’ (2011) brain imaging study findings that as few as four 20-minute sessions of mindfulness meditation, a prominent AMS technique, was effective in relieving pain by reducing the brain’s emotional response to painful stimuli. Finally, Also, Siegel and colleagues (2013) proposed that, with practice, mindful awareness allows for positive changes -- those that AMS provide -- through an “internal attunement.” Overall, this diverse research indicates that brain can be trained—namely, using meditative techniques—to enter AMS.
To summarize, diverse neurophysiological research has shown that brain structure and function develops throughout one’s lifespan, allowing, thus, the possibility to train one’s brain to access and deepen AMS using, for instance, meditative practices.

After now having discussed the neurophysiological research showing a possibility of accessing AMS, we now review the concrete techniques used in research for it. We begin by providing sources from the research literature how AMS can be accessed.

The above research allows us to propose within our model that various mechanisms can induce in individual into AMS. We will specify this proposal in a moment but before that we will discuss the research on organisationally feasible techniques for inducing AMS.

2.4 Accessing mindfulness

AMS have been explored within psychology and other domains in the context of mindfulness, and comparisons can be drawn between entering a mindfulness mindset with accessing alternate mindsets. In terms of existing definitions, Langer (1989) defines mindfulness as having developed an ever-ready state of mind which is alert, open to new perspectives and information. While she states that effort may be necessary to shift to a mindful mode, the state itself seems effortless, as in cultivating AMS. Langer gives the analogy of a mindful state as living in a transparent house, in that one is aware of the presence of all that is there, without having to extend effort to locate a particular object or room.

Similarly, Baer and colleagues (2006) define a state of mindfulness as non-judging of inner experience, observing but not evaluating sensations and emotions, as well as non-reactivity to inner experience, allowing thoughts and feelings to be noticed and let go of, such as in AMS. Along a similar vein, Dhiman (2009) describe entering a mindful state as when the mind becomes serene, stable and strong, traits which are present also when AMS are
accessed. Further, Shao and Skarlicki (2009) discuss mindfulness as a state entered into in which one maintains sustained attention on present activities and is focused and relaxed, such as in AMS (in contrast to a state of being mindless, where one’s attention is limited and easily distracted and one’s mind and preoccupied by rumination about the past or other anxieties).

Next, Davidson (2010) emphasizes the influence of the contemplative traditions in the notion of mindfulness, and specifically points to the cognitive changes and transformation that are possible when a mindful state is achieved, such as with transition to AMS.

Onwards, Jha and associates (2010) present mindfulness as accessing a mental mode which gives full attention to each passing experience, without judging, elaborating upon or reacting. This mirrors Kabat-Zinn’s definition of mindfulness as consciously learning to ‘pay attention, on purpose, in the present moment, non-judgmentally’ (2002). Overall, the literature available of entering a mindfulness mindset, a state in which one is fully concentrated or absorbed with each passing thought or experience, is parallel to that of entering AMS.

Next we explore how another prominent form of AMS, flow, can be accessed, by first defining and characterising it, and then looking at ways of bringing about a state of flow.

2.5 Accessing flow

AMS have been explored within psychology in the context of entering flow states, as a way of enhancing individual and organisational performance, through accessing the optimal states and intrinsic motivation that full immersion in flow provides.

The researcher who created the notion of flow, Csíkszentmihályi (1975) defined it as a holistic sensation that is felt when one is fully involved in what they are doing, which is similar to the overall perceptiveness and awareness of AMS. Csíkszentmihályi and Csíkszentmihályi (1988) describe flow states as involving developing focused attention in a
balanced and enjoyable way that enhances one’s self-esteem and personal complexity, such as in AMS. Next, Csikzentmihályi and LeFevre (1989) discussed how subjects accessing a flow state feel relaxed and motivated and in a positive frame of mind, such as in AMS. In a similar vein, Fullagar and Mills (2008) discussed entering flow as transitioning into an intrinsically motivating state in which one is engaged in the task at hand and has a clear sense of what has to be done, such as in moving into AMS. Onwards, Fullagar and Kelloway (2009) showed how in cultivating a state of flow one has a positive mood and while working at full capacity, action seems effortless, such as in the development of AMS.

Similarly, Nielsen and Cleal (2010) wrote of factors leading to flow state, what they describe as a state of consciousness in which subject’s feel a sense of well-being and creativity, such as in AMS. Finally, Burke (2010) stated that flow states in organisational settings are characterized by a sense of satisfaction in which subjects are engaged and feel positive towards their experiences, such as once AMS have been entered.

The consensus amongst researchers is that flow is “a state in which an individual is completely immersed in an activity without reflective self-consciousness but with a deep sense of control” (Engeser & Schiepe-Tiska, 2012:1), as pictured in the upper right portion of the below figure, where both skill level and challenge level are maximised.

Figure 2. The Quadrant Model of Flow (Engeser & Rheinberg, 2008: 160)
Next, we describe how positive mindsets can accessed, which are also types of alternate mindsets.

2.6 Accessing a positive mindset

Accessing AMS has been explored within the domains of positive psychology and organisational science, as a way of enhancing individual and organisational performance. First, Quinn (1990) showed how accessing a state of mind that is results-centered, internally directed, focused on others and externally open—a transition comparable to TMS to AMS—yield leadership excellence. Similarly, Csíkszentmihályi (1990) presented the notion of entering flow as providing enjoyable and valuable experiences through complete absorption in an activity, as occurring when AMS are accessed. Next, Taylor and Gollwitzer (1995) showed the effects of mindset on positive illusions, in how manipulating one’s state of mind (e.g., from TMS to AMS) corresponds to how one makes decisions and implements them. Further, along a similar vein, Gardner (2004) offered a framework for changing one’s mindset, and the impacts of shifting to AMS for enhancing intelligence, creativity and leadership. Also, Dweck (2006) discussed the enhanced performance and achievements possible from a growth mindset (like AMS) where there is a focus on the process of learning, rather than being in a fixed mindset (TMS). Finally, Seligman et al (2009) looked at how approaching life with a mindset of anticipation, energy and excitement, as that of AMS, brought greater satisfaction in work and life overall. Thus, the growing field of positive psychology can add to the understanding and exploration of AMS, as it bridges humanistic with more mainstream psychologies.

To summarize, research identified diverse types of individual benefits of entering AMS, showing enhancement of a variety of individual processes which benefit organisational actors. These identified types of benefits are: (1) improved information processing leading
to greater awareness and a broadened scope and depth of perception; (2) increased focus and concentration (3) heightened intuition and wisdom that result from AMS, bringing a greater sense of knowing than solely from cognitive processes, and (4) improved problem-solving and sense-making, particularly in situations of incomplete information being available to organisational actors. We are now ready to describe our conceptual model.

2.7 Accessing AMS

An array of contemplative practices to evoke AMS exist, ranging from involving movement, such as yoga and walking meditation, to creative activities, such as music and writing, as shown in figure 3 below.

Figure 3. Range of contemplative practices
For the purposes of this research we focus on psychological techniques. Existing research literature has discussed a number of organisationally feasible psychological techniques for accessing AMS. Such techniques may be divided into two types (1) hypnotic induction, and (2) meditation. In the context of organisations, the research literature discusses these techniques not only for their feasibility but also for their benefits, both individual and organisational. We’ll review these benefits for each technique. We will pursue a more general discussion of the individual and organisational benefits of AMS as a whole in a later section of this chapter after first exploring the transition from TMS to AMS, and then will present our hypotheses before moving to our research methodology.

2.7.1 Hypnotic induction

Hypnotic induction is a procedure composed of a long series of preliminary instructions and suggestions which leads to a mental state of hypnosis (American Psychological Association). Diverse studies discussed how the hypnosis mental state is compatible with AMS. For example, Tart (1970) showed how hypnosis brings physical relaxation and an enhanced sense of well-being, as in AMS. Next, Hilgard (1992) indicated that information can be processed, have consequences and be recovered through hypnosis, without being in the focus of consciousness at the time, thus providing a wider scope of awareness during hypnosis, as in AMS. Similarly, Peter (2009) pointed to how hypnosis can be used to experience an alternate reality, as in AMS. Onwards, Lynn and associates (2010) showed how hypnotic induction can be used to alter a subject’s attention, imagination and motivation and facilitating mindfulness, as in AMS. Overall, hypnotic induction has been shown in diverse research to be an effective technique of inducing mental states comparable to AMS.
Research has also shown that hypnotic induction-produced mental states comparable to AMS provide individual and organisational benefits. For example, Johansson and Uneståhl (2006) found that self-hypnosis resulted in reduced stress amongst test subjects. Further, Hammond (2010) discussed various research suggesting that hypnosis reduces stress and increases well-being. For instance, Barker and associates (2010) conducted research with athletes showing how hypnosis enhances and maintains higher levels of their efficiency and performance. In a similar vein, Meyerson (2010) discussed how hypnosis improves memory plasticity (the constructive and transitory nature of memory) and influences human memory to make desired changes. Overall, hypnotic induction of mind into alternate states comparable to AMS yields an array of research documented benefits at both the individual and organisational level.

2.7.2 Meditation

The second type of technique for inducing AMS addressed in the literature is meditation, an ancient Eastern practice. This type is usually divided into three specific techniques: (a) moving meditation, (b) open monitoring—also known as Vipassana insight or mindfulness meditation, and (c) focused—also called concentrative—meditation.

2.7.2.1 Meditative movement

This first meditation technique is meditative movement, which uses some form of movement such as walking or body positioning such as yoga asanas, tai chi and other forms, and a focus on breathing, prānāyāma from the original Sanskrit, to induce AMS. For example, ancient yogic texts refer to how syncing movement with breath brings more heightened focus and concentration combined with a relaxed state of mind, as in AMS (Yoga
Sutra 1.2). More recently, Shelov and associates (2009) showed how the practice of yogic meditative movement, induced significant increases attention given to the present moment without evaluation of arising thoughts, as in AMS. Also, Salmon and associates (2009) showed how hatha yoga meditative movement has been applied to bring about AMS and its related benefits. Further, Zydziak (2010) stated that meditative movement influences changes in the physical body and mental processes in a non-aggressive and beneficial way, as in AMS. Overall, various forms of meditative movement have been shown as effective ways of inducing AMS among subjects.

Research has also shown that meditative-movement-induced AMS provide individual and organisational benefits. For example, Bastille and associates (2004) showed how meditative movement brings enhanced psychological well-being and concentrative ability. Further, Larkey (2009) looked at how Qigong and Tai Chi, forms of meditative movement, bring a clear and calm mindset with an array of physiological and psychological benefits. Similarly, Birdee and associates (2009) discussed how Eastern mind-body techniques, specifically Tai chi and Qi Gong, could be applied in the West to enhance health and wellness. Also, Posner and Tang (2009) described how meditative movement brought about improved attention and self-regulation. Onwards, Chapman (2010) evaluated how yoga meditative movement encourages accurate and objective evaluation of one’s self and brings increased awareness of one’s internal states. Finally, Shelov and associates (2009) showed how yoga meditative movement yields more accepting and open attitudes toward experiences, and more insightful understanding towards oneself and others. Overall, AMS induced by meditative movement bring a variety of individual and organisational level benefits.
2.7.2.2 Open monitoring

The next meditation technique is open monitoring, in which the meditator seeks to reach a deep state of relaxation and to quiet the mind. A prominent form of open monitoring explored in the literature is Vipassana, meaning ‘to see things as they really are’ – to increase focus, awareness and insight. Specifically, it involves becoming aware of the present moment – by paying attention to sounds, one’s breath, sensations in one’s body, or thoughts or feelings – and to observe without judgment and without trying to change what one notices. For example, Kabat-Zinn (2007) defined open monitoring as moment to moment non-judgment that is cultivated by paying attention, bringing an awareness that is non-dual, but is discerning, as in AMS. Further on, Garland (2009) outlined open monitoring as involving the cultivation of non-judgmental, non-reactive, meta-cognitive awareness of present-moment experience, as in AMS. Similarly, Harrer (2009) described open monitoring as a state of open awareness that is characterised by acceptance, non-judgment and equanimity. The characteristic of equanimity that arises in this state is defined as having of no cravings and no aversions, which, in line with Buddhist beliefs and practices, Marques (2010, p. 219 -221) sees as leading to “a greater awareness of the interconnectedness and interdependence of all things, and the purpose to do as much good to all of life as possible.” Overall, open monitoring is a technique which the research literature has shown to induce AMS.

Research has also shown that open-monitoring-induced AMS (such as mindfulness) provide individual and organisational benefits. For example, Zajonc (2006) discussed how the contemplative exercises of open monitoring leads to a state which brings increased insights. As well, Shapiro (2007) accessed how mindfulness brings significant increases in positive affect and reduced stress. In a similar vein, Carmody and Baer (2008) and Langer (2009) showed how mindfulness led to improvements in psychological functioning. Next, Goldin and associates (2009) explored how open-monitoring-induced AMS - by changing the
way the brain responds to thoughts - can lead to an improved sense of well-being. Further, Foley and associates (2010) showed how mindfulness yields an increased quality of life and lower levels of distress and depression. Finally, Bruce and associates (2010) discussed how mindfulness increases one’s ability to attune to others, helps people achieve greater self-attunement and fosters greater well-being and better interpersonal relationships. Overall, AMS induced through open monitoring yields a number of both individual and organisational level benefits.

2.7.2.3 Focused attention

The third of these meditative techniques, focused attention, involves focusing one’s full attention upon an idea or object, which brings one into an AMS. For example, Benson and associates (2000) showed how the conscious practice of meditation brings greater attention to, and control over, the autonomic nervous system, inducing a set of physiological changes which bring greater ease and relaxation among subjects, as in AMS. Further, Lutz and associates (2009) described how the mental training of meditation enhances attentional stability, as in AMS. Overall, focused attention is a meditation technique which has been shown in the literature to induce AMS.

Research has also shown that focused-attention-induced AMS provide individual and organisational benefits. For example, Kabat-Zinn (1998) showed how focusing the mind in concentrative meditation using visualisation can improve physiological processes. In a similar vein, Davidson and associates (2007) examined how concentrative meditation allows the cognitive system to more rapidly process new information. Finally, Baijal and associates (2010) mapped out the increased cognitive processing generated by distinct meditative states.
of consciousness. Overall, AMS induced through focused attention yields a number of both individual and organisational level benefits.

To related these meditative types to yogic theory, Patanjali’s eight limb yogic system, meditative movement is the third limb, open monitoring is the fifth limb, and focused meditation is the sixth, as displayed in the image below, Figure 4.

![Patanjali’s Eight Limbs of Yoga](image)

**Figure 4.** Patanjali’s Eight Limbs of Yoga

Traditionally, each of the previous limbs was done in preparation for the next, which begin with the first two, restraints and observances. The foundation of the practice is *sila* - moral conduct. *Sila* provides a basis for the development of *samadhi* - concentration of mind; and purification of the mind is achieved through *panna* - the wisdom of insight. The whole
system together is seen to become a way of living, not just techniques that are practiced in isolation without the accompanying philosophy. According to Goleman though, it is not necessary for these steps to be followed in order to yield the benefits of the system, and that they are in fact intertwined (1998). Therefore, it is acceptable to, for the purposes of organisational applications, separate a portion, that is, the limb of meditation, and still reap the benefits of AMS.

In sum, existing research literature presents a number of organisationally feasible psychological techniques for inducing AMS.

2.8 Summary

To summarise, we began by presenting the research on well recognized AMS which embody traits such as a focus on the present and a positive, relaxed frame of mind. Next, we discussed the research sources for the exploration of alternate mindsets. Sources from positive psychological and organisational science gave insights as to the intrinsic motivation and “upward spiral” that occur in AMS, and neurophysiological research showed the potential of training the brain to enter, and develop, AMS.

This literature review demonstrates the abundant evidence of the existence and importance of AMS in bringing individual and organisational benefits. Yet, according to Csíkszentmihályi who introduced the flow mindset, despite our knowledge of the AMS benefits there is still limited understanding of ways and mechanisms to access AMS. This is the focus of our research, and we explore this within the context of organisational settings.
3 Elaboration of our conceptual model

Having provided the background for this research topic, we now move to elaborating our conceptual model for accessing AMS and their organisational benefits.

3.1 Purpose of research and conceptual model

Our model proposes that by regularly practicing a technique which has been shown by research literature to induce a psychological transition from a traditional mindset to an alternate mindset. By doing so, organisational actors have the potential to reap the benefits associated with these states, such as heightened awareness, enhanced creativity and reduced stress. As a result, organisational performance can be improved, both as a result of individual and organisational benefits of AMS. Furthermore, over time, AMS has the potential to become a more regular state of mind for organisational actors who practice a technique to induce AMS.

Specifically, we propose that introducing a bi-weekly meditative practice into organisations, a psychological mechanism which has been evidenced in research literature to induce an alternate mindset (AMS). As a result of shifting from a traditional mindset (TMS), which is typified by habitual levels of creative production and well-being, towards an alternate mindset, organisational actors benefit from enhanced levels of these traits. The conceptual model displayed in Figure 5 shows these two mindsets and their connecting psychological mechanism, which is described in detail in the following sections:
Organisational actors have been shown to often be not functioning at their full capacity, both psychologically and physiologically, as a result of chronic stress, and experience lack of focus and motivation, as is typified by TMS. The conceptual model describes the transition from the traditional mindset, a habitual way of being that typifies the mode of consciousness of many people in modern stress-ridden organisational settings, having habitual, non-optimal levels of well-being, creativity and other aspects, to an alternate mindset, with optimal levels of well-being, creativity and other qualities.

A mechanism to bring about this TMS to AMS psychological transition is practiced by each person individually to bring about a shift from a traditional mindset to an alternate mindset.
By formal practice, this means intentionally doing an AMS-inducing technique, often at a regular set time and place, either stationary or moving, like walking mindfully or performing a meditation ritual. By informal practice, this means conscious thoughts or actions which are part of one’s normal day and can be done in an instant, or a few moments, like taking a deep breath and re-setting one’s mind, or longer, such as during a commute to work. A combination of formal and informal practice can complement each other towards inducing and strengthening an alternate mindset. Further, if formal meditation practice remains as a segment of one’s life that doesn’t become integral, the holistic aim of contemplative practices is missed. Ideal, in following with Eastern philosophies, is to do both, as formal practice strengthens mental will, yet real practice is everyday life.

Shifting from a traditional mindset to an alternate mindset may occur without the application of a mechanism, from a momentary decision in the mind to choose to return to an alternate mindset, or from an activity such as being outdoors in nature or experiencing art can bring about. According to the research discussed earlier in this section, routine practice of formal and/or non-formal AMS mechanisms has cumulative and lasting effects. That is, the transition from TMS to AMS can be improved and mastered with practice.

There are two salient simplifications to note in regards to this conceptual model. First, while the traditional mindset and alternate mindsets are presented as being one or the other, a gradient exists for the extent to which a person is towards being fully in a traditional or alternate mindset. Second, the conceptual model describes a transition from traditional mindset towards alternate mindsets; however, the mechanism may only temporarily and not permanently induce an alternate mindset. This means that participants most likely return, at least to some extent, to a traditional mindset over time, unless formal and/or informal practice continued to maintain an alternate mindset.
A primary purpose of using meditation to facilitate for the TMS to AMS transition is to mitigate the maladapted stress response, finding a way to calm the nervous system from reacting to perceived threats even if there is no real threat. This normalises over-activated threat mechanisms, activating dormant neural pathways or form new pathways to restore normal functioning. Further, strengthening inner resources and resilience, via AMS techniques, supports well-being, creativity and flourishing. After specifying the dynamics of our conceptual model we want to deepen several of its key concepts after which we will formulate our research hypotheses. We begin with the concept of mindset.

3.2 Mindset defined

Mindset refers to frame of mind, one’s outlook or perspective, a mental model or mentality, alternatively, an emotional disposition. Mindset is defined as a framework, filter or set of assumptions, generalizations, or even pictures and images we carry with us, that influence our perceptions and understanding of reality and constructs how we take action (Senge 2006, p. 8; Siegel & Hartzell 2003, p. 23; Zander & Zander 2002, p. 1).

After discussing the concept of mindset, we turn to the discussion of mindset malleability.

3.3 Mindset malleability

Rather than seeing mindset as a fixed mental attitude that predetermines a person's responses to and interpretations of situations, this research views mindset as an inclination or habit that is changeable over time; a state which each individual can consciously choose to maintain or alter. Thus, any given mindset is a mode which is a general tendency, a characteristic state, and not a trait. A mindset could become more persistent and dominant, when pursued long-term.
The ability for mindset to change, and in reference to TMS-AMS transition, to improve, has been explored in philosophical and research literature. Socrates wrote of brain plasticity, that similar to athletes, the mind can be seen like a muscle, in that it is malleable. This notion of the mind as an organ that is changeable was addressed by Rousseau, with his view that human beings are perfectible, that our sense apparatus can be trained, in this case to shift to AMS, to improve how experiences are perceived and handled.

The idea that mindset is malleable brings about various contemplations to consider. For instance, can people be aware of what mindset they are in at any particular moment? Would the mere act of pondering what mindset oneself is in alter one’s mindset? Do people have conscious choice over their mindset or is it influenced somehow by external circumstances?

New disciplines have emerged in response to the increased attention given to the influence of the mind of our experiences, as well as over physiological functioning and our environment. One of these, termed interpersonal neurobiology by Siegel (2013), describes the growth and development of the brain in response to personal relationships. Cognitive, social, and affective neuroscience are additional emerging disciplines that explore the brain’s ability to change in response to what happens in the mind and body. These new disciplines give greater understanding to the nature of TMS and AMS, and the dynamics of the TMS to AMS transition, responding to the increasing attention given to these topics and their implications within academia, organisations, and wider society.

After discussing the concept of mindset, we turn to the discussion of the traditional and alternative mindsets (TMS and AMS in our model).
3.4 Traditional mindsets defined and characterised

Prior to studying the transition from a traditional mindset to an alternate mindset, an understanding of each of these concepts is needed, in what their boundaries are and how they relate to one another. To begin with, we define and characterise traditional mindsets, which, like alternate mindsets exist within a range on a continuum that connects these two groupings of mindsets. Thus, like alternate mindsets, traditional mindsets have nuances and various terms that are included in their span of this continuum.

A traditional mindset is a normal, habitual state of mind, an ordinary waking state of consciousness is severely sub-optimal, and is accompanied by habitual levels of well-being and creativity. Organisational actors are in this state most of the time while at work, having a feeling inside that there’s a lot to be done that one must simply ‘get through’. TMS is an active though slightly anxious mode, although the anxiety can seem temporarily exciting and pleasurable. In this mode, organisational actors are likely impatient, to some extent, with others and themselves. TMS is a rather tense state, lacking in humour and lightheartedness, where one is seeking to be purposeful, and does so typically in rather fixed, indoctrinated ways, having ‘tunnel vision’. In this mindset it is relatively easy to become stressed and even manic. Imagination is suppressed and largely ignored, and emotions are often blocked from being processed. In TMS one can become in a sense addicted to the adrenaline caused by persistent pressure, not realising or striving towards a more peaceful, contemplative state, and unknowingly hampering their productivity and success.

In relation to Buddhist and Eastern philosophical roots underlying traditional mindsets, an analogy is that a veil covers one’s seeing, known as maya, which causes continued disturbance in the mind (Ricard 2010). In this state, the mind is attached to its contents, and functions on auto-pilot, often without consciously processing thoughts before acting. The traditional mindset is characterised by conditioned habits which are repeated
without contemplation, mental stiffness - which plays out as stubbornness, short-sightedness and narrow viewpoints - and ill will. While in a traditional mindset, organisational actors experience greed for sensory objects and hold resentments that cause agitation – such as allowing a grievance with a co-worker to take up undue energy and time. Those in a traditional mindset tend to adhere blindly to rules, act compulsively and selfishly, believe in their view being the one and only truth, a reluctance and/or lack of ability to show empathy and consideration for others. Further, traditional mindsets are a fragmented state where one feels distracted, unsettled and often ill at ease in the mind despite potentially favourable external conditions.

Next, we define and characterise alternate mindsets, represent the other end compared to traditional mindsets on the continuum of mindsets.

3.5 Alternate mindsets defined and characterised

The term alternate mindset is interchangeable with mindfulness, flow and other states for which enhanced well-being (Shapiro et al. 2008, Baer et al. 2008, Goldin et al. 2010), increased creative production (Khatami 1978, Csíkszentmihályi 2008, Horan 2009) and other benefits have been shown to result from. To clarify what is being referred to with alternate mindsets, these mindsets include the mindsets of mindfulness, flow and other states, which themselves are concepts that often overlap in their definitions and characteristics. Although terminology and traits of the various mindsets that AMS encompasses vary, for the purposes of this research they are grouped together to build upon several lines of existing research, rather than exploring its nature in contrast with other methods, such as much research on Transcendental Meditation has done. The choice to include various states as AMS is logical given that the philosophy and applications of these mindsets have similar origins and theories
which are congruent with each other, and practical, as this gives a larger research base to draw from.

While in an alternate mindset, organisational actors see with fresh vision, as if seeing things for the first time every time, without presupposing, in a calm and discerning way. In AMS, one is relaxed yet alert, expansive, contemplative, and open to inspiration for alternative options to consider and choose between rather than being fixed on reaching a target in a certain way. AMS brings an inclination to curiosity, playfulness and humour, which widens one’s perspective and makes one open to possibilities.

In relation to the Buddhist and Eastern philosophical roots underlying alternate mindsets, organisational actors are free from incessant distortions and operate from the wholeness of themselves. Alternate mindsets are states of non-doing and non-striving, however this by no means implies no action; it is more of an alignment with oneself and the surrounding context. AMS allows for insights, as in becoming able to observe and monitor one’s stream of thoughts from AMS mechanism, the mind grows to know itself and access previously inaccessible abilities. In AMS, following Buddhist theory, one has accepted life’s nature of impermanence (Pali anicea) and no longer resists changes that arise. When AMS is maintained, the person enjoys steady energy levels, being neither too lax nor too tense. An analogy is a string on a musical instrument being tuned to a sufficient tautness to sound at a desired frequency.

In AMS, one maintains detached neutrality, has ever more fine discrimination, and lucid perception. AMS, in the Buddhist context, extends to moral conduct, and entering AMS may allow damaging behaviours to cease, meaning not to lie, steal, display poor conduct, harm others, or earn one’s livelihood in a way that harms others. In this wisdom tradition, people who have entered this state experience feelings of wanting and aversion with
diminished intensity, reacting impartially and calmly to stimuli. In AMS one’s behaviour is determined neither by past experiences nor by conditioned habits. AMS is an enjoyable state, described as *ananda* in Buddhist texts, meaning happiness, and similarly, is a graceful state of ease and well-being, *sukka* (Wei 1968), where one is indifferent to hindrances and distractions. Here, the mind is fully absorbed in what one is doing, as Csikszentmihályi characterises the state of flow (1990).

This parallels historical concepts of AMS, from *metanoia* in Greek traditions, *samadhi*, meaning deep meditative absorption and *satori*, from Zen Buddhist philosophy, seeing one’s true nature or essence. Astronomers including Dr. Mitchell, the sixth person on the moon, expand upon this by adding a modern description of AMS as giving an ‘overview effect’ (in his case, experiencing the ‘big picture’ from viewing the Earth, solar system and galaxy from space), a cognitive shift of awareness providing a transcendental experience, more visceral than intellectual. After discussing traditional and alternative mindsets, we turn to the discussion of the transition between them.

3.6 Neuropsychological substrates of traditional and alternate mindsets

For neuropsychology research studies, it is apparent that the brain is modifiable. Further, meditation and AMS techniques have been evidenced to result in brain transformations. Here, we explain the different neuropsychological substrates of traditional and alternate mindsets.

Firstly, the neuropsychology of traditional mindsets has been analysed using brain scans, predominantly during this past decade, and various research has shown that this type of mindset coincides with abnormal activation of the amygdala in people having anxiety, depression and post-traumatic stress disorder (Economist 2013).
Regarding the neurophysiology of alternate mindsets, functional brain changes have been mapped using functional magnetic resonance imaging (fMRI). Towards understanding brain changes that occur with AMS, Davidson et al. (2007) suggests that humans possess an innate potential for directing attention, but that it requires the “maturation of particular neural systems, likely involving the prefrontal cortex”. Davidson and others similarly propose a neurophysiological mechanism underlying how AMS techniques bring cognitive and emotional benefits. Previous research indicates that mindfulness meditation, an AMS mechanism could have a positive effect by reducing the amygdala’s grey matter density compared to TMS, improving one’s ability to manage stress and maintain dynamic equilibrium (Richardson et al 2002). Another study showed integrative body-mind training, and other AMS mechanisms, are linked with increases in the brain's signaling connections (axonal density), as well as protective tissue surrounding the axons in AMS (ibid). Next, Brewer and colleagues (2011) describe how meditation, a technique to induce AMS, quiets brain regions in the default mode network, particularly the Posterior Cingulate Cortex.

Some of the changes in brain structure that occur with AMS from meditation are highlighted in the figure below.
From this, we see that meditation, an AMS technique, leads to comparably reduced activity in the frontal and parietal lobes and the thalamus as well as lower activation in the reticular formation, while in AMS than in TMS.

Overall, alternate mindsets have been evidenced to have distinct neuropsychological substrates than traditional mindsets, we now proceed to describe the transition between these mindsets.
3.7 Transition from TMS to AMS

Shifting one’s mindset from TMS to AMS may happen without an AMS inducing mechanism however it is not necessarily maintained without effort and conscious choice. The cognitive shift from TMS to AMS runs parallel with a core Buddhist tenet, of going beyond the limited mind to enter a wider state of conscious awareness: “Gone from suffering to the liberation of suffering…from forgetfulness to mindfulness…from duality into non-duality.” This transition is described in Patanjali’s Yogic Sutras with the analogy of crossing a river towards a place of deeper wisdom and understanding on the other shore, and the text encourages all to venture across. Within Judaism, this transition can be seen as changing from acting from one’s lower self, to one’s higher self, that is, one’s wise self. While in TMS one no longer notices the familiar and is habituated to the surrounding world, where what is perceived is quickly labeled and judged based on past experiences. In contrast, in AMS, each event is seen with fresh eyes, as if happening for the first time, in a receptive rather than reactive mode. One notices sensations and thoughts that arise from the six senses (the traditional five senses and/or the mind, the sixth sense, from Theravada Buddhism), and then dismissed. Instead of labeling and judging, the subject registers observations, neither following nor repudiating them.

The research literature in this domain, of applying ancient Eastern AMS practices in modern organisational settings, has several prominent streams of ideologies. The mechanics of various approaches vary however the underlying theory is congruent. While the conceptual model of this research compiles various AMS together and signifies a one-step transition, one stream of research, stemming from Theravada Buddhism, takes a stratified approach. The TMS to AMS transition is divided as progressing through nine stages, jhānic states, using meditative techniques to progressively achieve one-pointedness of mind (Suzuki 1958). An analogy of a staircase can be used, with each jhāna being a step up from the previous,
moving from TMS up to AMS. As one climbs the stairway, so to speak, the practitioner moves from having selfish impulses and desires motivated by jealousy, anger and ego to having virtuous motivations and actions arising from equanimity, compassion and kindness for others.

Another aspect is that the transition potentially happens repeatedly rather than just once, as AMS is not necessarily a permanent state. Eastern philosophy suggests that the TMS to AMS transition is eased with repetition; repeat practice of an AMS-inducing mechanism allows the transition to gain momentum. The conceptual model does not directly address this phenomenon; however a possible cumulative effect will be explored in the experimental results.

To evoke a concept from Eastern philosophy, The Noble Truths of Buddhism give a possible explanation. The mind, when left unguided, is seen to have a mind of its own, known as ‘monkey-mind’, which keeps TMS dominant. The first noble truth of Buddhism describes that TMS, termed dukkha, is a habitual state of ceaseless thought that causes persistent restlessness and suffering. When the TMS to AMS transition is mastered one no longer returns to TMS; the nature of the mind is realised, and one no longer attains comfort from the mind’s contents. In this perpetual state of AMS, one’s desire to be released from TMS leads to no further deliberate effort being required to maintain AMS. Then, AMS is seen to pervade one’s being and actions, and to proceed automatically.

Full mastery of the TMS to AMS transition, a rare feat, is seen as a permanent alteration; a state that is maintained without effort. Following from this, the practice of AMS inducing techniques can provide cumulative and lasting changes towards self-maintaining AMS with progressively longer intervals of AMS being held. Until full mastery is reached, AMS is seen to be unstable and even a slight perturbation can return the practitioner to TMS. Full mastery means being able to shift into AMS in a moment, at any time or place, in any
circumstances and for unlimited duration. An analogy for the accruing effect and momentum created by the TMS to AMS transition is to see AMS as heading downstream in a river, propelled by the current, while TMS can be seen as paddling upstream.

Here, we outline how AMS access can be eased by the intrinsic motivation resulting from the satisfaction of fundamental needs, and possible adaptations for reaping AMS benefits.

### 3.8 Conditions conducive to accessing AMS

TMS to AMS transition is internal and subjective; external circumstances do not predetermine mindset, though some factors may be more conducive to one than the other. A primary consideration for accessing AMS is intrinsic motivation, which is provided by the satisfaction of certain fundamental human needs. Being intrinsically motivated can be viewed as being conducive to accessing AMS and its resulting benefits. A first area of related research in this field concerns the nature of how to increase motivation, looking at the advantages of intrinsic (related to state of mind) versus extrinsic sources of motivation. Firstly, Sheldon and Kasser (2001) considered the nature of positive motivation and complementary nature of humanistic theories and quantitative methodologies, showing how authentic, self-concordant states, as that of AMS, which have an orientation toward intrinsic values, bring greater goal attainment and enhanced well-being. Next, Dutton et al (2005) showed how people are at their best, and most highly motivated, when utilising intrapsychic and interpersonal resources, such as with AMS cultivation.

Research within positive psychology and positive organisational science underlines the importance of intrinsic sources of motivation as a basis for accessing one’s full potential, such as AMS develops. For example, Adler (1927), Goldstein (1939), and Maslow (1968)
spoke of the innate need and motivation within people for self-actualization and growth, allowing for AMS to develop. Next, Deci and Ryan (1985, 1991) proposed self-determination theory, viewing intrinsic motivation as leading to behaviour which gives individuals access to their full cognitive and creative resources, such as AMS provides. First, Fromm (1976) and Rogers (1961) spoke of how focus on intrinsic goals results in higher well-being, yielding enhanced growth and actualisation—again, allowing for AMS and its benefits to be accessed. Onwards, Ryan (1995) emphasized how intrinsic motivation serves as a tool for meeting peoples’ need for positive growth, as from AMS mechanisms. Further, Sheldon and Houser-Marko (2001) showed an “upward spiral” to result from focusing on positive rather than negative aspects, leading to an ongoing self-perpetuating process towards growth and self-actualization. Next, Sheldon and Kasser (2001) considered the nature of positive motivation and complementary nature of humanistic theories and quantitative methodologies, showing how authentic, intrinsic values-oriented, self-concordant states bring higher attainment of goals and enhanced well-being.

So that AMS benefits can be best utilised in organisations, it may be necessary for adaptations to be made, so that the intrinsic needs of organisational actors are met. In regards to well-being, Diener (2006) emphasises social relationships, goals, and a sense of connection to something larger than oneself as key determinants of well-being levels. Thus, even if AMS potentially increases organisational well-being, certain conditions must be present within organisations so that this AMS benefit can manifest. In regards to creativity, Deci and Ryan outline the importance of intrinsic motivators, as extrinsic motivators may be ineffective (as discussed in regards to income levels in Section 8.3) and even counterproductive. Finally, Getz (2009) explains how organisational forms can adapt ‘liberating leadership’ to unleash the initiative of employees, giving them freedom to express their full potential and enjoy enhanced well-being and creativity.
Beyond literature on AMS states, numerous research studies show the wide array of potentially valuable benefits of AMS. We proceed to presenting research on the individual, and then, on organisational benefits of AMS.

3.9 AMS individual level benefits

Research has shown that being in an alternate mindset brings several types of individual level benefits. A first type of benefits concerns improved information processing, heightened awareness and a widened perception of reality. For example, Quinn (1990) showed how the holistic perspective which AMS provide allows managers and leaders to function more effectively with the paradoxes and competing demands they are presented with, all the while remaining calm and focused. Next, Payne and associates (1993) found that being in an alternate mindset enables a more complex data processing – through receiving a wider span of information – and more integrated processes, rather than linear, as with TMS. In a similar vein, Stovovich and West (2000) studied two parallel information processing systems – cognitive (rational analytical) and experiential (similar to intuitive)—and found that AMS balances these two processing systems allowing for a dual, improved information processing, rather than relying solely on the cognitive processing system, as with TMS. Further, Kabat-Zinn and Santorelli (2002) have shown that AMS – through heightened awareness of thoughts, feelings, and bodily sense, such as established by body scan techniques – allow for deeper perception, understanding, and way of making sense of the world. They, and other researchers, displayed how body scan techniques improve functioning of the insular cortex and its related neural functions, including increased self-awareness and empathy, enhanced perception and cognitive functioning, and better regulation of the body’s homeostasis, emotions and consciousness (Craig 2004; Lutz 2008; Singer 2008). Finally, Sadler-Smith and Shefy (2004) show how an alternate mindset slows synthetic and
integrative information processing, rather than linear and fragmented processing, as with TMS. Overall, this diverse research indicates that AMS bring individual benefits in terms of improved information processing, heightened awareness and a widened perception of reality.

A second type concerns the increased ability for managers to focus and concentrate. For example, Kabat-Zinn (2002) showed that mindful states—a form of AMS—allow senior managers to focus better, sustain attention for longer periods of time, and at the same time, bring additional benefits of reduced stress, improved health and heightened creativity. Similarly, Weick and Putman (2006) found that being alert and mindful, as in AMS, fosters better concentration, and greater ability to sustain focus over longer durations than with TMS. Further, van den Hurk and associates (2010) found that mindfulness meditation, leading to AMS, resulted increased efficiency in attentional processing, notably, that the practice led to faster response time and fewer errors made in given tasks. Next, Zeidan and associates (2010) showed that the mindfulness quality, of AMS, significantly improved visuo-spatial processing, working memory (allowing for better recall), and executive functioning. Finally, Langer and associates (2010) discovered that manipulating mindset (changing from TMS to AMS) can overcome physiological limitations, allowing subjects to have better visual abilities, as well as improved health and longevity. Overall, this diverse research indicates that AMS bring individual benefits in terms of increased ability for managers to focus and concentrate.

A third type of AMS individual benefits concerns enhanced intuition and greater wisdom. For example, Barnard (1938) found that an alternative way of knowing that AMS provides allows for non-logical processes, known through judgment, decision, and action, and consisting of “good sense,” intuition, inspiration, or even ‘genius’. Next, Showers and Chakrin (1981) showed how being in an alternate mindset and allows one to appraise a situation holistically and pull patterns together, thus allowing for greater insight and
enhanced sense-making abilities. Further on, Davis-Floyd and Arvidson (1997) found that AMS provide an inductive way of knowing which allows for more insights than TMS. Also, Kabat-Zinn (2002) studied mindfulness (the mind as a sense organ allowing for extended sensory perception) and found that in a mindful state people exhibit enhanced creativity, sense-making capabilities, decision-making ability and show more engagement and experience a greater sense of fulfillment. In a similar vein, Sinclair and Ashkanasy (2005) have shown that alternate mindsets enable non-sequential, holistic thinking, comprising of both cognitive and affective elements, and resulting in direct knowing (i.e., without formal reasoning) which characterizes enhanced intuition and wisdom. Similarly, Rowley (2006) found that AMS provide for greater wisdom, allowing for better knowledge management and strategic leadership. Finally, Weick and Putnam (2006) have shown that AMS improves mental alertness and organisational abilities, thus leading to enhanced innovation and agility among people. Overall, this diverse research indicates that AMS bring individual benefits in terms of increased intuition and wisdom by providing a more holistic, logical and objective way of thinking.

Lastly, a fourth type of individual benefits concerns better judgment in problem-solving, and sense-making. For example, Simon (1947) found that while in an AMS, people have an increased willingness to make decisions when all the facts are not currently available, which is beneficial for decision-making in organisational situations where only incomplete information (which is often the case) is available. Next, Blattberg and Hoch (1990) pointed out that AMS allows one to judge when normative analyses break down. Further on, Dane and Pratt (2007) have shown that AMS allow for affectively charged judgments that arise through rapid, non-conscious, and holistic associations, allowing for better decision making than TMS provide because the decisions reflect a wider scope of perception, reflecting a more holistic perspective. Finally, Ericson (2010) showed how AMS allows organisational
actors to conceptualize a broader view of strategic decision making, leading to enhanced sense-making amongst managers. Overall, this diverse research indicates that AMS bring individual benefits in terms of better judgment and sense-making as a result of a widened scope of perception.

To summarize, research identified diverse types of individual benefits of AMS, showing enhancement of a variety of individual processes which benefit organisational actors. These identified types of benefits are: (1) improved information processing leading to greater awareness and a broadened scope and depth of perception; (2) increased focus and concentration (3) heightened intuition and wisdom that result from AMS, bringing a greater sense of knowing than solely from cognitive processes, and (4) improved problem-solving and sense-making, particularly in situations of incomplete information being available to organisational actors. We turn now to organisational benefits.

3.10 AMS organisational level benefits

Research has shown that being in AMS brings several types of organisational level benefits. A first area of benefits concerns how teamwork is enhanced through a greater sense of connectedness amongst organisational actors. For example, Sheldon and McGregor (2000), and Sheldon and Osbaldiston (2000) pointed to how the intrinsic focus of AMS leads to more cooperation and pro-social behaviour in organisational groups, as well as better ability to solve social problems benefiting the group. Further on, Imel and associates (2008) showed that mindfulness-based stress reduction (MBSR) – a process inducing AMS – provides the group benefits. Next, Yeganeh and Kolb (2009) showed how mindfulness – which organisational actors experience while being in AMS – cultivates experiential learning, reduces automaticity and enhances quality of life within organisations. Similarly, using the example of musicians, Langer and associates (2009) showed how being mindful enhances the
creative process, allowing orchestras, in this case, to make music that is more enjoyable to perform and to hear, through the nuanced and novel approach that AMS allows. Also, Langer and associates (2010) conducted research showing how mindfulness results in reduced negative consequences of social comparisons, which could allow for better group relatedness and cohesiveness. Finally, Shapiro and associates (2010) looked at how mindfulness, as that of AMS, can bring interpersonal attunement, fostering better interpersonal relationships. In sum, AMS leads groups to better inter-relations, and better organisational performance.

A second type of organisational level benefits concerns improved organisational competitiveness and international business strategy resulting from the global, holistic perspective provided by AMS. For example, Kedia and Mukherji (1999) have shown that a global outlook, as in AMS, moves an organisation’s structure, process, people, and culture from a set of highly autonomous business units to one that becomes an integrated and effective global network. In a similar vein, Lahiri and associates (2008) found that a global mindset, as in AMS, allows viewing the world with a broad perspective, allows thinking beyond geographic boundaries and hence, viewing globalization threats as growth opportunities, valuing integration across borders, and appreciating regional and cultural diversity. Further, Solomen and Schell (2009) explored how a global mindset’s, spanning cultural and geographic divides, as in AMS, is crucial for building business relationships. Onwards, Cohen (2010) points to how a global mindset, as in AMS, is a key for creating a global business strategy and developing effective global leadership. Overall, AMS, though their holistic perspectives, enable organisations to strengthen their global competitiveness.

In sum, research explored diverse types of organisational benefits of AMS showing enhancement of a variety of organisational processes benefiting organisations. These types of benefits are: (1) better connection and performance within organisational groups; and (2) increased organisational competitiveness and growth opportunities.
After discussing more in depth several key concepts related to our model we turn now to presenting our hypotheses.

3.11 Hypotheses

Each of these variables’ interaction with sessions for the experimental group compared to the control group:

3.11.1 Levels of employee well-being

Given that AMS techniques have been show in the literature to enhance well-being, we are interested to explore whether this benefit will be evidenced in organisational settings, and how levels of well-being will evolve with repeat practice of AMS mechanisms over a series of sessions. Thus, our first three hypotheses evaluate levels of the first dependent variable, well-being, amongst participants, assessing its levels and evolution in various ways. The first hypothesis looks at well-being levels at the beginning of the work day just following each session, whereas the second looks at well-being levels at the end of the work day, to evaluate to what extent AMS may be depleted through the work day.

This comparison could give insights as to whether formal AMS techniques need to be supplemented with informal techniques at moments throughout the day, for instance, in order to maintain AMS, as some research has suggested. Or, potentially participants who are engaged at work could build AMS in other ways than the experimental sessions provide. The first hypothesis reflects the expectation that after some number of sessions, participants’ days will start at higher well-being levels as a result of benefits from cultivating AMS.
**Hypothesis 1:** Start of day well-being will increase over the duration of the sessions

Similarly, though some within decreases are thought to appear in the data due to workplace stress and other factors, we anticipate that with repeat practice of AMS mechanisms, participants will benefit from higher well-being even as measured at the end of their workdays.

**Hypothesis 2:** End-of-day well-being will increase over the duration of the sessions

The third hypothesis builds upon the first two, by looking at the difference between measurements taken at the start of the work day compared to the end of the day. Given that each subsequent session builds upon the previous one, we expect that over time the cumulative effect will be positive overall. By looking at the difference between start and end values, we eliminate baseline differences, allowing us to look at relative rather than absolute changes in well-being.

**Hypothesis 3:** Difference in well-being (End-of-day minus start-of-day) will increase over the duration of the sessions

Our next three hypotheses relate to the second dependent variable, creativity, and are parallel in structure to those for well-being.
3.11.2 Levels of creativity

As research literature has shown enhanced creativity to result from AMS, we wish to explore whether this benefit will be evidenced with organisational settings. The next three hypotheses explore levels of our second dependent variable, creativity, amongst participants. The first of these looks at creativity levels at the beginning of participants’ work days, measured just following each session intended to induce AMS, and we posit that this starting value will increase with repeat practice of AMS techniques.

**Hypothesis 4:** Start-of-day creativity will increase over the duration of the sessions

Next, having seen from research literature that creativity is a benefit that can result from AMS, we are interested to look at to what extent enhanced creativity from AMS techniques can be maintained through the span of work days, and to what extent creativity levels build over time with repeat practice of AMS techniques. To do this, we will measure creativity at the end of each day that participants’ take part in an experimental session and look at the evolution of these values over the span of sessions for potentially significant increases.

**Hypothesis 5:** End-of-day creativity will increase over the duration of the sessions

Then, in parallel with the hypotheses for well-being, we are interested in within-day increases in creativity for participants in experimental groups compared to control groups, and how these levels diverge over the span of sessions.
Hypothesis 6: Difference in creativity (End-of-day minus start-of-day) will increase over the duration of the sessions

Further, to be sure that increases in our dependent variables are predominantly due to cultivation of AMS rather than other factors, we include a hypothesis regarding our expectation that, similar to substantial research evidence, the practice of meditation techniques will develop AMS amongst participants in the experimental condition to a greater extent than for those in the control condition.

3.11.3 Cultivation of alternate mindsets

Our final hypothesis, then, predicts that levels of mindfulness, meaning, extent of AMS, will rise from session to session, as other research in this field has evidenced. We wish to explore whether this impact of AMS techniques will hold in organisational settings, knowing that participants in workplaces could be exposed to different circumstances and pressures compared to other settings that have been previously tested.

Hypothesis 7: Level of mindfulness will increase over the duration of the sessions

While many other variables and factors could also provide valuable evidence to add to this research domain, we selected these hypotheses as the most promising to explore. We
choose to focus on these few selected issues that have much support from research literature, broad potential benefits yet have not been fully explored and tested within organisational settings.

Having presented our hypotheses and justification of each area that we seek to explore in relation to research literature and existing gaps that our research could potentially contribute to filling, we proceed to our research methodology.
4 Research methodology

4.1 Participants

A letter offering the research study to be conducted on-site was sent out to various organisations, comprising different industries and sizes, of 19 organisations in Canada (as shown in Annex A) and 17 organisations in France (as shown in Annex B). Follow-up took place by phone, email and/or in person, and three of these organisations accepted hosting the research study and having their staff participate.

Employees from Vancouver City Hall, an investment and real estate development private company in Vancouver, Canada (which we shall call Aleph for confidentiality reasons), and ESCP Europe School of Business in Paris, France were recruited, via newsletter for City Hall (as shown in Annex C), and by email at Aleph and ESCP (as shown in Annex D), sent out individually to each employee, describing the purpose of the research experiment, location and times.

Willing—self-selected—employees were invited to contact the researcher directly. Each participant was signed up for eight bi-weekly sessions. Sessions landing on public holidays were replaced by dates in a fifth week. Sessions were undertaken during non-working hours, thus participants were not rewarded for taking part neither through pay, nor by experimenters. All sessions were conducted in the local language—English in Vancouver and French in Paris.

The mean age of the participants was 38.73 (S.D. = 10.33), and the final sample was composed of 144 participants (83 women and 61 men). Of the total, 93 participated in experiments measuring well-being across all three locations in Canada and France, 51 participated in experiments measuring creativity at the first two locations in Canada and all 144 were measured for levels of mindfulness at each session.
### 4.1.1 First experimental location: City Hall

For City Hall, 56 of the 1800 employees chose to participate, thus 3.11% of the total population of the organisation. The sessions took place in a multipurpose room, from 8:00-8:20am, Mondays and Wednesdays for the experimental groups and Tuesday and Thursday for the control groups.

For measuring well-being, two experimental groups ran on Mondays and Wednesdays (seven participants in each group) and two control groups ran on Tuesdays and Thursdays (seven participants in the first group and six in the second). The mean age of the participants for the experiments measuring well-being was 37.96 (S.D. = 9.99), and the final sample was composed of twenty-seven participants (eighteen women and nine men).

For measuring creativity, two experimental groups ran on Mondays and Wednesdays (eight participants in the first and six in the second group) and two control groups ran on Tuesdays and Thursdays (eight participants in the first group and seven in the second). The mean age of the participants for the experiments measuring creativity was 40.10 (S.D. = 8.51), and the final sample was composed of twenty-nine participants (twenty women and nine men).

### 4.1.2 Second experimental location: Aleph

For Aleph, 45 of the 89 staff chose to participate, thus 50.56% of the total population of the organisation. The sessions took place in a display showroom across the street from their downtown Vancouver headquarters on the same weekdays and times as in City Hall.

For measuring well-being, two experimental groups ran on Mondays and Wednesdays (six participants in the first group and five in the second) and two control groups ran on Tuesdays and Thursdays (six participants in each group). The mean age of the participants for
the experiments measuring well-being was 32.23 (S.D. = 6.96), and the final sample was composed of twenty-three participants (eleven women and twelve men).

For measuring creativity, two experimental groups ran on Mondays and Wednesdays (six participants in the first group and five in the second group) and two control groups ran on Tuesdays and Thursdays (six participants in the first group and five in the second). The mean age of the participants for the experiments measuring creativity was 32.18 (S.D. = 8.60), and the final sample was composed of twenty-two participants (eleven each of both women and men).

4.1.3 Third experimental location: ESCP Europe

For ESCP Europe School of Business, Paris campus, 43 of the 440 staff chose to participate, thus 9.77% of the total population of the organisation. Eight bi-weekly sessions took place in an Executive Education classroom on Tuesdays through Fridays from 8:30-8:50am, and subsequently eight bi-weekly sessions of meditation at 12:00-12:20pm on the same weekdays the following month. These sessions’ materials were translated into French and verified through back translation in advance (documents provided in Annex). Sessions were conducted in French by ESCP Europe Master of Management students who are native French speakers.

For measuring well-being with morning sessions, two experimental groups ran on Mondays and Wednesdays (nine participants in the first group and six in the second) and two control groups ran on Tuesdays and Thursdays (eight participants in the first group and six in the second group).

For measuring well-being with mid-day sessions, one experimental group ran on Wednesdays and Fridays and one control group ran on Tuesdays and Thursdays, each having seven participants.
In contrast to the Vancouver locations, days of sessions where changed to Tuesdays through Fridays, as analysis revealed that Monday morning Vancouver participants started with lower well-being than other days -- although not significantly lower--perhaps because of being “down” from resuming work after the weekend or other reasons.

The mean age of the participants was 42.53 (S.D. = 10.38), and the final sample was composed of forty-three participants (thirty-one women and twelve men).

Next, we provide an overview of the timeline of the experiments conducted at these three locations.

### 4.1.4 Timeline of experiments

The research experiments took place between February 2011 and May 2012, with the specific time ranges as outlined in the chart below, Table 1.

<table>
<thead>
<tr>
<th>Experimental location</th>
<th>Dependent variable</th>
<th>Date range</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Hall</td>
<td>Well-being</td>
<td>March 2011 – May 2011</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>May 2011 – July 2011</td>
</tr>
<tr>
<td>Aleph</td>
<td>Well-being</td>
<td>April 2011 – June 2011</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>June 2011 – August 2011</td>
</tr>
<tr>
<td>ESCP Europe</td>
<td>Well-being</td>
<td>February 2012 – May 2012</td>
</tr>
</tbody>
</table>

**Table 1.** Timeline of research experiment dates for each location
In addition, preliminary trial sessions took place prior to the start of the experiments at City Hall (in January 2011) and ESCP Europe (in January 2012), with colleagues who volunteered to participate and give feedback. These sessions allowed for necessary revisions and improvements to be made to the experimental protocol in advance of commencing the actual experiments. Notably, it was apparent from the first trial session in January 2011 that testing both experimental variables during the same experiments would be too onerous on participants as the time commitment completing questionnaires and providing feedback exceeded the time of the session. This was particularly the case for measuring creativity, as the protocol consumed more time than that for measuring well-being. Thus, we deemed it to be more feasible to separate the testing the two variables in order to minimise additional time required by participants.

4.1.5 Demographics

Participant demographics of the three experimental locations are reported in Table 2.

<table>
<thead>
<tr>
<th>Experimental location</th>
<th>Dependent variable</th>
<th>Number of participants</th>
<th>Average age</th>
<th>Female/male ratio</th>
<th>Percent female</th>
</tr>
</thead>
<tbody>
<tr>
<td>All three locations combined</td>
<td>Well-being &amp; creativity</td>
<td>144</td>
<td>38.73 (S.D. 10.33)</td>
<td>83 : 61</td>
<td>58%</td>
</tr>
<tr>
<td>City Hall</td>
<td>Well-being</td>
<td>27</td>
<td>37.96 (S.D. 9.99)</td>
<td>18 : 9</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>29</td>
<td>40.10 (S.D. 8.51)</td>
<td>20 : 9</td>
<td>69%</td>
</tr>
<tr>
<td>Aleph</td>
<td>Well-being</td>
<td>23</td>
<td>32.23 (S.D. 6.96)</td>
<td>11 : 12</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>22</td>
<td>32.18 (S.D. 8.60)</td>
<td>11 : 11</td>
<td>50%</td>
</tr>
<tr>
<td>ESCP Europe</td>
<td>Well-being</td>
<td>43</td>
<td>42.53 (S.D. 10.38)</td>
<td>31 : 12</td>
<td>72%</td>
</tr>
</tbody>
</table>

Table 2. Demographics of participants of the three experimental locations
4.2 Experimental procedure overview

The experimental procedure for measuring well-being and creative production are summarised below in Table 3.

<table>
<thead>
<tr>
<th></th>
<th>Well-being</th>
<th>Creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparatory Session</td>
<td>N/A</td>
<td>List several current challenges faced in the workplace</td>
</tr>
<tr>
<td>Pre-test</td>
<td>Satisfaction with Life Scale</td>
<td>Adjective Checklist</td>
</tr>
<tr>
<td>Technique</td>
<td>Guided meditation (Experimental groups) / Relaxation (Control groups)</td>
<td></td>
</tr>
<tr>
<td>After technique</td>
<td>Mindful Awareness Attention Scale</td>
<td></td>
</tr>
<tr>
<td>End of workday</td>
<td>Satisfaction with Life Scale</td>
<td>Solutions to selected challenge, and Adjective Checklist</td>
</tr>
</tbody>
</table>

Table 3. Interventions for measuring well-being and creative production

Two dependent variables—well-being and creativity—were measured at the first two locations. Experiments at ESCP Europe focused solely on well-being levels because based on preliminary analysis of the Vancouver results we decided to test several new dimensions of the key hypothesis: Will benefits still result when the intervention takes place at mid-day and if they do will there be a different impact level between morning and midday interventions? As testing this dimension would require doubling the size of groups, and testing well-being consumed all willing participants, this experiment was conducted for measuring impacts on
well-being, there was no practical possibility to test the same dimensions for creative production, which could be explored in future research.

At the first two locations, in Canada, a consent form (as shown in Annex E) was distributed and signed by each participant prior to the start of each experiment, at the request of the Human Resources departments. This was not requested by the third organisation, in France.

The experiments at the first two experimental locations were single-blind: participants were not aware of whether they were allocated to an experimental or control group, yet the researcher was aware of this division. The experiments at the third experimental location were double-blind: both participants and session presenter were not aware of whether they were allocated to an experimental or control group. The double-blind was maintained during the third experiment as the sessions were led by French-speaking research assistants rather than by the research author, and the research assistants were divided according to days of the week, with two of them leading the sessions with experimental groups and two of them leading the sessions with control groups. They were provided with instructions and scripts for either the experimental or control group sessions, and were not aware of the division, and did not attend sessions other than the ones that they led.

The independent variable of study is the type of meditation technique: for the experimental groups, guided meditation in which the participant’s attention is drawn to a fixed point of internal focus through visualization and focused, concentrated thought which has been previously shown to elicit AMS; for the control groups, participants used relaxation activities in which their attention is simply allowed to wander, and which has been previously shown to not evoke AMS.
Various factors were controlled for amongst participants, including age, gender, race, profession as well as previous experience with yoga, meditation, tai chi and similar AMS-relevant activities.

4.3 Intervention for well-being analysis

Here we describe the procedure of the research experiments, starting with preparation for the sessions, continuing on to detail the techniques used and following that, the post-intervention procedures before moving finally to what was carried out at the end of the work day of each day that participants took part in a session.

4.3.1 Beginning of day/mid-day prior to technique

The intervention each morning (or mid-day, for one set at ESCP Europe) lasted 25-30 minutes. Participants set personal belongings aside and switched off mobile phones. The first session commenced with brief introductions and a consent form to be signed, giving permission for the results to be used for research purposes, also granting anonymity to participants and the right to withdraw. Upon arrival to each session, participant completed in 1-3 minutes a pre-test to measure well-being, the Satisfaction with Life Scale by Diener (1985, as shown in Annex F, the English version and as shown in Annex H, the French version), comprising of 5 statements ranked on a scale from one to seven.

The Satisfaction with Life Scale was selected as it has been validated in various settings has the advantage of being a multi-item scale, and moreover that it provides an overall, broad judgment of people's lives, which could give an accurate measure of participant well-being (Pavot & Diener 1993). In contrast to other assessment tools that were considered, for instance Ryff's Psychological Well-Being Scales, the medium and long forms of the scale have been shown to have validity however would have been too time-consuming,
and the short form of the this measure has not been shown to be fully reliable, thus another reason for choosing Diener’s scale is that in contrast to others such as this, it can be completed in just a few minutes (Ryff & Singer 1998). A potential limitation of utilising the Satisfaction with Life Scale is that many of the studies validating it were done with college students rather than in organisational settings, however this was also largely the case for other questionnaires that could have been selected, and the scale is considered to have validity across different ages. Another potential limitation is that this research equates satisfaction with life with well-being, yet Diener calls for a more in depth look at the relationship between affect and life satisfaction, as well as between life satisfaction and domain satisfactions, thus perhaps there are distinctions between satisfaction with life and well-being that are not captured or properly measured by this tool. On the whole, Diener’s scale was the best choice to give the most accurate and reliable measure possible within the constraints of participant’s time and feasibility.

4.3.2 AMS induction/control technique

Various mechanisms exist in the research literature, and the one selected for these experiments is a twenty minute formal guided meditation, as it is organisationally feasible and has robust results from previous research experiments (Fredrickson et al 2008, Oz et al 2009, Sears and Kraus 2009). For the experiments of this research, a formal practice, or consciousness discipline such as those outlined by Walsh (2008) and Carmody & Baer (2009) was applied to induce AMS, with sessions at pre-determined days and times.

For this, participants were asked to wear comfortable and non-restrictive clothing, so as to avoid unnecessary distractions. To prepare to begin the session, participants were asked by the person leading the session to place both feet parallel on the ground while seated in a chair, keep their back as straight as possible while along for the natural curvature of the spine,
relax their shoulders, holding them up and back, tuck in their chin slightly, rest hands on their knees with palms facing upwards or downwards according to preference, close their eyes and remain as physically still and as silent as possible, with their tongue held against the upper palate, lips slightly apart and teeth not clenched. An adapted version of a typical Buddhist seated meditation posture for organisational settings was used, being seated in chairs rather than on the ground in lotus position, as pictured below in figure 7.

![Seated position for experimental sessions](image)

**Figure 7.** Seated position for experimental sessions

The techniques then commenced: 20 minute guided meditation for experimental groups and 20 minute relaxation techniques for control groups. Participants were notified when the technique was completed, asked to open their eyes when they were ready, and to proceed with the evaluation process described below.

The selection for relaxation techniques to be used for participants in control groups was made because it is similar in form to meditation techniques, in that the participants remain seated for the same time duration doing similar practices, yet techniques that have been shown by other researchers, including Rausch and colleagues (2006) to not induce an alternate mindset.
Other forms of control group activities such as a participant waitlist were considered yet if we had chosen to use a waitlist from control group participants this would not have permitted us to make as robust conclusions that the differences between the two conditions were due to the technique, as other factors would have been different between the two groups. It was necessary to isolate the impacts on the dependent variables as having resulted from the type of psychological techniques used during that timespan.

4.3.3 Directly after induction/control technique

To test whether participants entered an Alternate Mindset (AMS), they completed the Mindful Attention Awareness Scale (MAAS, Brown & Ryan, 2003) consisting of 15 statements with responses on a scale of 1 to 6, taking two to five minutes in all (as shown in Annex J, the English version and as shown in Annex K, the French version). This self-administered questionnaire validates the change of mindset, by evaluating the extent of mindfulness in participants, which is a type of alternate mindset.

The MAAS questionnaire was selected as numerous researchers in this domain have applied this measure in similar research, and it is a multi-item scale that is considered a broad and robust measure of mindfulness, which is one of the most explored alternate mindsets in academic literature (MacKillop et al 2007, Shapiro et al 2008, Evans et al 2011). As well, the MAAS questionnaire takes only a couple minutes to complete. Other measures could have been selected in place of the MAAS or in addition, however, other questionnaires that were considered have not been validated in relevant literature to the extent of the MAAS, and in order to minimise time usage by participants, it was desirable for only one questionnaire to be used instead of two or more measures of alternate mindsets. Another suitable questionnaire could have been the Toronto Mindfulness Scale, that Lau and colleagues describe the development and validation of this scale in similar applications (2006) yet it’s focus on
measuring curious and de-centered awareness was considered too narrow for assessing alternate mindsets.

Then, after the completion of the MAAS questionnaire, the session was drawn to a close and participants left to start their work day. Occasionally one or more participants would remain afterwards to ask regarding scheduling or intervention techniques or whether they could obtain the research study results after its completion.

4.3.4 End of work day

Finally, half an hour prior to end of their work day, each participant was sent email to complete the well-being level post-test, Satisfaction with Life Scale, before they left the office. Question order was changed from the morning version to avoid the scale habituation effect (as shown in Annex G, the English version and as shown in Annex I, the French version),

4.4 Intervention for creativity analysis

Here we describe the procedural steps involved for testing the second variable of interest, creativity, which took place at the first two of the three experimental locations. We start by outlining the preparatory session, continuing next with the experimental session and finally, the steps that took place at the end of work days on which participants took part in a session.

4.4.1 Evening prior to each experimental session

On the evening prior to each session, a preparatory session was conducted via phone or email. Each participant was asked to list three or four major issues or struggles they were
currently encountering at work. These problems varied among participants, but one was selected by the experimenter for each participant to focus on during the day that was part of the same area of concern (as shown in Annex L). For City Hall this area was interpersonal relationships and dynamics with co-workers and customers and for Aleph the theme was dissatisfaction with job roles – feeling unfulfilled and frustration with conflicting sales objectives.

4.4.2 Beginning of day prior to technique

Each experimental session began by participants completing a creativity test (5 minutes), indicating all adjectives which applied to them at that moment from the 300 on the Adjective Check List (ACL, as shown in Annex N, Gough & Heilbrun, 1980). ACL’s were scored afterwards by George Domino’s ACL Creativity Scale of 59 adjectives (as shown in Annex O). Onwards, procedure and AMS evaluation tools were the same as well-being interventions.

While ACL is a debatable choice for measuring creativity, as it can be considered a measure of creative ability, as a descriptor of one’s personality which is generally stable over time, there are several possible theoretical explanations as to why levels of creativity changed during the duration of experiments. One possible explanation is that there is a habituation effect, that repeated completion of the questionnaire familiarised the participants with it, and they become better at finding and selecting the adjectives that applied to them, including adjectives that they had previously excluded because of being unfamiliar with the measurement tool at first. Another possible explanation could be that ACL relies more on being in AMS than on TMS and as sessions proceed and extent of AMS increased, participants became better at the test. This means that even if a participant was a creative person, they needed to acquire a way to get themselves into a particular mindset, mood, or
way of operating, to allow their natural creativity to function and flourish. Perhaps cultivating AMS allowed participants to find a way to explore and be creative in their work by finding more enjoyment and fulfillment in what they are doing, ‘playing’ and being imaginative in the present moment for the sake of pleasure rather than aimed at reaching practical planned outcomes that were expected of them. An additional explanation is that perhaps creativity has intangible and abstract facets. While in some ways creativity could be seen as an innate talent, it arguably is by nature spontaneous and inexplicable, and that it is shown in its expression, a way of acting that continually unfolds and develops with use, not simply a static ability that one has. A final explanation could many modern workplace environments inhibit creativity because of for instance a bureaucratic organisational structure that curtains creative expression, increasing pressures and constraints (Getz & Carney 2009). That is, creativity likely needs to have suitable conditions in order to be fully expressed, and that undertaking the sessions allowed participants to progressively free themselves of constraints that were holding back the expression of their creativity.

4.4.3 End of work day

Finally, about half an hour prior to end of work day of session days, email was sent requesting to re-take the same Adjective Checklist creativity test (with different ordering to avoid the scale habituation effect) when they finished work. In addition, participants were asked to provide solutions to address the selected situation and what steps were/could be taken to resolve it, via email or phone in 5-10 minutes, and indicated when solutions arose: in the morning, during the session or through their day (as shown in Annex M).

Responses were scored by a panel of three naïve judges, who do not have any acquaintance with the participants or the organisations (colleagues of the experimenter who volunteered, and evaluated the responses independently from one another) on a 6 point scale.
on two criteria, novelty and usefulness, to evaluate creative production using the piles method, as applied by Amabile and colleagues in coding creativity results on a valence dimension for the same two criteria and then evaluating intercoder reliability (2005 & 1996). Each daily narrative response given from each participant in point or paragraph form was evaluated as a whole on two creative production criteria: novelty (how original the solution is with regard to those practiced in the organisation) and usefulness (how applicable and appropriate the solution is for the organisation, that is, does it solve the problem and thus lead to organisational benefits). Responses include changes in ways of thinking and/or actions that had been taken during the day by the participant, ideas of potential changes and actions they could make, and other related details that described how they addressed the selected issue. The scores for these two criteria were then averaged, resulting in an overall score for each of the three judges, and then assessed for reliability. The Cronbach Alpha for inter-judge agreement on the averages of the two criteria for the three judges’ scores is 0.96, which is a high level of internal reliability, reflecting that the judges had similar assessments of participant responses.

The two separate measures described in this section, the ACL and participant’s reports regarding their selected issue, were used for measuring creative production instead of one, following from the recommendation of Davis and Rimm (1998) of basing assessments on several different tests as they view creativity as having a multifaceted nature that could be more fully captured and more accurately assessed by using two or more assessment tools.

4.5 Follow-up to experiments

Following the completion of each experiment, a letter was sent out to each participant to thank them for their participation, the purpose of the experiment in greater detail, and offer
access to the findings following the completion of the analysis (as shown in Annex P, English and French versions).

Having described the interventions, we now proceed to present the main findings of our research.
5. **Results**

We first specify treatment of collected data in section 5.1 before proceeding to presenting descriptive statistics in section 5.2 and then analysis of the data. The data analysis is divided into two parts, section 5.3, where we analyse the data for each location separately for each dependent variable with repeated-measures ANOVA analysis, and then section 5.4, where we analyse the data with all locations together for each of the dependent variables as well as mindfulness using the fixed effects model.

We begin by explaining treatment of our data.

**5.1 Data treatment**

All data that was collected is included in the statistical analysis. No outliers were removed as all data was within an acceptable range. For participants who attended less than the full eight sessions of an experiment, the data for all attended sessions was included. This means that when for instance, that when a participant missed the first session of an experiment, in cases when a starting value was needed, their responses from the second session, of whichever was their first session of the series, was used in place of the first session.

The very first experiment, which took place at City Hall and measured well-being, had four sessions instead of eight. This was because although the researcher had conducted preliminary sessions with colleagues prior to the start of the first experiment, it was not yet known whether any further methodological changes that would need to be made to adapt to the organisational setting.
For that reason, a shorter time span was selected in case the following experiments were conducted differently, in which case the data from the four session set would have been discarded. Four sessions was determined to be adequate as a trial run to be sure that the research protocol would be effective and appropriate, yet not too much time, effort and data to discard in the case that the data sets could not be combined. As the methodology for the proceeding experiments matched that of the first trial set, this set was merged with the remaining data.

Participants often gave notice to the researcher in advance if they needed to miss an upcoming session due to holidays, training or another reason. Even though some sessions were missed by a number of participants, there were no dropouts from the research experiments, thus, no test can be done to compare attendance rates with participants who did not complete the experiment as this distinction did not exist.

5.2 Descriptive statistics

To begin the presentation of our results, the next three tables present the descriptive statistics of our data for the three locations.

Firstly, descriptive statistics of the data collected for measuring first dependent variable, well-being, as measured at both start-of-day and end-of-day, for each session and condition for each of the three locations are reported in Table 4 in the format: Mean (Standard Deviation).
<table>
<thead>
<tr>
<th>Session</th>
<th>Condition</th>
<th>City Hall</th>
<th></th>
<th>Aleph</th>
<th></th>
<th>ESCP Europe</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Start-of-day Well-Being</td>
<td>End-of-day Well-Being</td>
<td>Start-of-day Well-Being</td>
<td>End-of-day Well-Being</td>
<td>Start-of-day Well-Being</td>
<td>End-of-day Well-Being</td>
</tr>
<tr>
<td>1</td>
<td>Exp.</td>
<td>3.90 (0.90)</td>
<td>3.71 (0.89)</td>
<td>3.62 (1.03)</td>
<td>3.34 (0.91)</td>
<td>4.2 (1.18)</td>
<td>4.1 (1.23)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.53 (0.99)</td>
<td>4.08 (0.98)</td>
<td>4.00 (0.98)</td>
<td>3.56 (0.90)</td>
<td>4.29 (1.11)</td>
<td>3.58 (1.08)</td>
</tr>
<tr>
<td>2</td>
<td>Exp.</td>
<td>4.10 (0.79)</td>
<td>4.11 (0.83)</td>
<td>3.73 (0.96)</td>
<td>3.55 (1.13)</td>
<td>4.35 (1.14)</td>
<td>4.35 (1.28)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.47 (1.14)</td>
<td>4.05 (1.02)</td>
<td>3.91 (0.96)</td>
<td>3.60 (0.84)</td>
<td>4.24 (1.18)</td>
<td>3.57 (0.99)</td>
</tr>
<tr>
<td>3</td>
<td>Exp.</td>
<td>4.02 (0.75)</td>
<td>4.25 (0.93)</td>
<td>4.18 (0.63)</td>
<td>3.84 (0.69)</td>
<td>4.50 (1.17)</td>
<td>4.26 (1.28)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.65 (0.95)</td>
<td>4.13 (0.92)</td>
<td>3.89 (0.95)</td>
<td>3.40 (0.79)</td>
<td>4.04 (1.18)</td>
<td>3.38 (1.06)</td>
</tr>
<tr>
<td>4</td>
<td>Exp.</td>
<td>4.34 (0.82)</td>
<td>4.70 (0.89)</td>
<td>4.00 (1.07)</td>
<td>3.71 (1.02)</td>
<td>4.44 (1.25)</td>
<td>4.51 (1.29)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.55 (0.90)</td>
<td>4.18 (0.92)</td>
<td>4.13 (0.78)</td>
<td>3.75 (0.75)</td>
<td>4.21 (1.13)</td>
<td>3.61 (1.02)</td>
</tr>
<tr>
<td>5</td>
<td>Exp.</td>
<td>4.35 (0.89)</td>
<td>4.53 (0.94)</td>
<td>3.85 (1.19)</td>
<td>3.70 (1.10)</td>
<td>4.72 (1.20)</td>
<td>4.63 (1.17)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.78 (1.04)</td>
<td>4.35 (1.02)</td>
<td>4.40 (0.86)</td>
<td>3.96 (0.80)</td>
<td>4.20 (1.13)</td>
<td>3.59 (1.08)</td>
</tr>
<tr>
<td>6</td>
<td>Exp.</td>
<td>4.71 (0.58)</td>
<td>4.93 (0.79)</td>
<td>3.84 (0.91)</td>
<td>3.67 (0.94)</td>
<td>4.92 (1.08)</td>
<td>5.03 (1.02)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.69 (1.25)</td>
<td>4.54 (1.06)</td>
<td>4.17 (0.88)</td>
<td>3.75 (0.82)</td>
<td>4.02 (1.12)</td>
<td>3.46 (0.97)</td>
</tr>
<tr>
<td>7</td>
<td>Exp.</td>
<td>4.69 (1.06)</td>
<td>4.87 (1.24)</td>
<td>4.24 (1.11)</td>
<td>4.11 (1.14)</td>
<td>4.75 (1.16)</td>
<td>4.81 (1.18)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.56 (1.10)</td>
<td>4.22 (1.08)</td>
<td>4.15 (0.93)</td>
<td>3.80 (0.91)</td>
<td>3.88 (1.23)</td>
<td>3.40 (1.13)</td>
</tr>
<tr>
<td>8</td>
<td>Exp.</td>
<td>4.89 (0.99)</td>
<td>5.24 (1.17)</td>
<td>4.42 (1.08)</td>
<td>4.26 (1.10)</td>
<td>5.11 (1.06)</td>
<td>5.09 (1.22)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.28 (1.04)</td>
<td>3.90 (0.97)</td>
<td>4.40 (1.07)</td>
<td>4.15 (1.04)</td>
<td>3.68 (1.25)</td>
<td>3.23 (1.16)</td>
</tr>
</tbody>
</table>

**Table 4.** Descriptive statistics of well-being for each session, condition and location

Secondly, descriptive statistics of the data collected for measuring the second dependent variable, creative production, as measured at start and end of day using the ACL and end of day as the average of the three judges’ scores of participant responses, for each session and condition for the two locations where it was tested are reported in Table 5.
<table>
<thead>
<tr>
<th>Session</th>
<th>Condition</th>
<th>City Hall</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Start-of-day Creativity</td>
<td>End-of-day Creativity</td>
<td>Average Creativity</td>
<td>Start-of-day Creativity</td>
<td>End-of-day Creativity</td>
<td>Average Creativity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Exp.</td>
<td>18.21 (5.79)</td>
<td>16.64 (5.90)</td>
<td>3.26 (0.93)</td>
<td>21.30 (4.37)</td>
<td>20.40 (4.67)</td>
<td>3.53 (0.91)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>18.86 (5.30)</td>
<td>17.07 (5.61)</td>
<td>3.17 (0.95)</td>
<td>21.38 (7.63)</td>
<td>16.63 (6.63)</td>
<td>3.52 (1.27)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Exp.</td>
<td>19.50 (6.48)</td>
<td>18.64 (5.68)</td>
<td>3.33 (1.02)</td>
<td>20.82 (4.53)</td>
<td>21.00 (4.43)</td>
<td>3.62 (0.89)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>18.00 (5.40)</td>
<td>15.53 (5.05)</td>
<td>3.09 (0.83)</td>
<td>20.70 (7.85)</td>
<td>16.10 (6.35)</td>
<td>3.47 (1.20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Exp.</td>
<td>20.86 (6.49)</td>
<td>19.43 (5.47)</td>
<td>3.55 (1.00)</td>
<td>22.11 (4.17)</td>
<td>21.33 (5.68)</td>
<td>3.75 (0.85)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>18.23 (4.88)</td>
<td>16.38 (4.87)</td>
<td>3.28 (0.86)</td>
<td>18.67 (5.15)</td>
<td>13.89 (4.81)</td>
<td>3.31 (0.97)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Exp.</td>
<td>21.92 (6.01)</td>
<td>21.08 (5.05)</td>
<td>3.75 (0.93)</td>
<td>23.55 (4.63)</td>
<td>22.18 (4.83)</td>
<td>3.92 (0.87)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>17.93 (5.62)</td>
<td>15.93 (5.86)</td>
<td>3.27 (0.86)</td>
<td>19.82 (5.96)</td>
<td>16.36 (6.52)</td>
<td>3.44 (1.10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Exp.</td>
<td>24.10 (5.82)</td>
<td>24.40 (4.43)</td>
<td>4.07 (0.98)</td>
<td>23.75 (5.82)</td>
<td>23.00 (6.52)</td>
<td>4.00 (1.06)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>19.15 (4.88)</td>
<td>16.38 (5.64)</td>
<td>3.32 (0.85)</td>
<td>20.00 (6.63)</td>
<td>17.33 (6.10)</td>
<td>3.50 (1.08)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exp.</td>
<td>23.69 (5.98)</td>
<td>24.00 (6.03)</td>
<td>4.03 (1.13)</td>
<td>24.56 (5.32)</td>
<td>23.22 (5.54)</td>
<td>4.09 (1.10)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
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<td>3.24 (1.01)</td>
<td>19.45 (6.39)</td>
<td>15.64 (5.99)</td>
<td>3.29 (1.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Exp.</td>
<td>25.33 (5.48)</td>
<td>26.67 (5.90)</td>
<td>4.33 (0.97)</td>
<td>24.44 (4.50)</td>
<td>23.55 (3.97)</td>
<td>4.22 (0.85)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>19.23 (4.95)</td>
<td>16.72 (4.41)</td>
<td>3.46 (0.85)</td>
<td>20.27 (6.17)</td>
<td>16.45 (6.44)</td>
<td>3.38 (1.04)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Exp.</td>
<td>26.50 (6.28)</td>
<td>27.21 (6.22)</td>
<td>4.33 (1.00)</td>
<td>27.30 (3.27)</td>
<td>26.60 (2.17)</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Cont.</td>
<td>17.21 (4.95)</td>
<td>14.86 (5.39)</td>
<td>3.08 (0.89)</td>
<td>22.00 (7.55)</td>
<td>18.43 (7.63)</td>
<td>3.60 (1.23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5. Descriptive statistics of creative production for each session, condition and location

Thirdly, descriptive statistics of the data collected on levels of mindfulness, as measured using the MAAS self-administered questionnaire, for each session, condition and location are reported in Table 6.
<table>
<thead>
<tr>
<th>Session</th>
<th>Condition</th>
<th>City Hall</th>
<th>Aleph</th>
<th>ESCP Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mindfulness</td>
<td>Mindfulness</td>
<td>Mindfulness</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Experimental</td>
<td>3.39 (0.82)</td>
<td>3.60 (0.92)</td>
<td>3.72 (0.70)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.43 (0.85)</td>
<td>3.78 (1.13)</td>
<td>3.40 (0.68)</td>
</tr>
<tr>
<td>2</td>
<td>Experimental</td>
<td>3.53 (0.90)</td>
<td>3.67 (0.97)</td>
<td>3.99 (0.62)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.42 (0.97)</td>
<td>3.72 (1.08)</td>
<td>3.33 (0.74)</td>
</tr>
<tr>
<td>3</td>
<td>Experimental</td>
<td>3.61 (0.91)</td>
<td>3.87 (0.75)</td>
<td>4.07 (0.63)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.46 (0.90)</td>
<td>3.51 (0.95)</td>
<td>3.22 (0.70)</td>
</tr>
<tr>
<td>4</td>
<td>Experimental</td>
<td>3.82 (0.81)</td>
<td>3.96 (0.90)</td>
<td>4.15 (0.67)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.41 (0.93)</td>
<td>3.73 (0.99)</td>
<td>3.29 (0.63)</td>
</tr>
<tr>
<td>5</td>
<td>Experimental</td>
<td>3.93 (0.97)</td>
<td>3.99 (1.08)</td>
<td>4.30 (0.75)</td>
</tr>
<tr>
<td></td>
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<td>3.21 (0.74)</td>
</tr>
<tr>
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<td>Experimental</td>
<td>4.12 (0.94)</td>
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<td>4.75 (0.95)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.42 (1.06)</td>
<td>3.69 (1.04)</td>
<td>3.19 (0.76)</td>
</tr>
<tr>
<td>7</td>
<td>Experimental</td>
<td>4.21 (0.98)</td>
<td>4.10 (0.93)</td>
<td>4.61 (0.79)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.50 (0.91)</td>
<td>3.72 (1.06)</td>
<td>3.22 (0.79)</td>
</tr>
<tr>
<td>8</td>
<td>Experimental</td>
<td>4.37 (0.95)</td>
<td>4.30 (0.83)</td>
<td>4.65 (0.77)</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.26 (0.99)</td>
<td>3.93 (1.24)</td>
<td>3.20 (0.71)</td>
</tr>
</tbody>
</table>

**Table 6.** Descriptive statistics of mindfulness for each session, condition and location

Next, we compiled the data from the three locations to provide the univariate descriptive statistics of the dependent variables, as reported below in Table 7.
<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start-of-day Well-Being</td>
<td>4.30</td>
<td>1.07</td>
</tr>
<tr>
<td>End-of-day Well-Being</td>
<td>4.05</td>
<td>1.13</td>
</tr>
<tr>
<td>Start-of-day Creativity</td>
<td>20.95</td>
<td>6.09</td>
</tr>
<tr>
<td>End-of-day Creativity</td>
<td>19.20</td>
<td>6.54</td>
</tr>
<tr>
<td>Average Creativity</td>
<td>3.58</td>
<td>1.00</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>3.82</td>
<td>0.92</td>
</tr>
</tbody>
</table>

**Table 7.** Univariate descriptive statistics of the dependent variables

Having presented descriptive statistics of the collected data, we proceed to analysing the data, beginning with the analysis for locations separately.

### 5.3 Analysis of data by location for each dependent variable

We begin our data analysis by evaluating the data for each location separately for each dependent variable, first for well-being and then for creativity.

#### 5.3.1 Analysis of data by location for well-being

ANOVA were conducted to compare the results from the first two locations, those in Canada, and their results confirm that these data sets do not have the same means for the well-being variables, thus these samples are analysed separately below rather than combined. Then, well-being data for the third location, in France, is analysed. We use the start-of-day measure of well-being for these analyses.
The model for this analysis includes sessions as a repeated measure. As this model recognises both differences across subjects and the repeated measurements over the duration of sessions, this model achieves a substantial reduction in variance and has more statistical power to avoid making the Type II error of accepting the null hypothesis of no difference between the treatment and control group means when there is a difference in these means. We include an interaction term between session and condition (i.e., experimental and control). The interaction term will be significantly different than zero if the group that has larger mean changes over the sessions, and permits examination of any possible training or learning effects that occur over time in either group.

First, for the first location, City Hall, repeated measures ANOVA with interaction between session and condition resulted in an F value of 8.66 at a significance level of \( p < 0.0001 \). Next, for the second location, Aleph, repeated measures ANOVA with interaction between session and condition resulted in an F value of 3.63 at a significance level of \( p = 0.0014 \). Finally, for the third location, ESCP Europe, repeated measures ANOVA with interaction between session and condition resulted in an F value of 16.74 at a significance level of \( p < 0.0001 \).

The above analyses show a significant effect at each of the three locations, of increased well-being for experimental groups compared to control groups, and that the effects diverge over the duration of the sessions, such that experimental group participants experience increasingly more well-being with additional sessions compared to control group participants.

The figure below shows the evolution of well-being for the experimental and control groups over the 8 experimental sessions for the first location, City Hall. The data for experimental participants is marked in green and for control participants is marked in blue.
The trend overall at this location for well-being data is that the experimental groups started at a lower level than the control groups and finished at a higher level.

Next, the figure below shows the evolution of well-being for the experimental and control groups over the 8 experimental sessions for the second location, Aleph.

Figure 8. Mean of well-being at start of day by session, City Hall

Figure 9. Mean of well-being at start of day by session, Aleph
The trend overall at this location for well-being data is that the experimental groups started at a lower level than the control groups and finished at a similar level.

And finally, the figure below shows the evolution of well-being for the experimental and control groups over the eight sessions for the third location, ESCP Europe.

![Figure 10](image-url)

**Figure 10.** Mean of well-being at start of day by session, ESCP Europe

The trend overall at this location for well-being data is that the experimental groups started at a similar level as the control groups and finished at a higher level.

5.3.2 *Analysis of data by location for creativity*

Here we present results of one factor ANOVAs with location as the single factor and creativity as measured by the averages of judges’ scores from participant responses from each session as the dependent variable. The data sets from the two Canadian locations have no evidence of any significant differences between them in regards to creativity, so we analyse the pooled sample from these two locations.
For these two locations in Canada combined, City Hall and Aleph, repeated measures ANOVA with interaction between session and condition resulted in an F value of 14.26 at a significance level of p < 0.0001. The analyses show a significant effect of increased creativity for the two Canadian locations, and that the effects diverge over the duration of the sessions, such that experimental group participants experience increasingly more creativity with additional sessions compared to control group participants.

The figure below shows the divergence of creativity for the experimental and control groups for City Hall and Aleph data combined.

![Figure 11. Average creativity by session, City Hall and Aleph](image)

The trend overall for these two locations combined for creativity data is that the experimental and control groups started at similar levels and the experimental groups finished at a higher level.

Next, we combine the data sets from each location for each of the dependent variables, as well as for mindfulness, to analyse the data overall.
5.4 Statistical model selection for all data combined

All the models included the following predictors: the sessions (from 1 to 8), the condition (experimental versus control) and the interaction between the sessions and the condition. Since the study was conducted in different contexts, with regard to time of day and location, these contexts’ two characteristics were included as a variable in a model with random effects.

Models including random effects were compared with models including only fixed effects using Akaike Information Criterion (AIC), in order to discover whether the context had an effect on the experiment or not.

Models comparisons are reported in Table 8.

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Fixed effect Model AIC</th>
<th>Random effect Model AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start-of-day Well-Being</td>
<td>1805.64</td>
<td>1826.83</td>
</tr>
<tr>
<td>End-of-day Well-Being</td>
<td>1821.46</td>
<td>1819</td>
</tr>
<tr>
<td>Start-of-day Creativity</td>
<td>2295.85</td>
<td>2315.26</td>
</tr>
<tr>
<td>End-of-day Creativity</td>
<td>2277.19</td>
<td>2298.12</td>
</tr>
<tr>
<td>Average Creativity</td>
<td>994.44</td>
<td>1632.75</td>
</tr>
<tr>
<td>Mindfulness (extent of AMS)</td>
<td>1569.34</td>
<td>1573.85</td>
</tr>
</tbody>
</table>

Note: The AIC is an indicator used to compare the suitability of the fixed effects model with the random effects model for the data sets.

Table 8. Fixed and random effects models comparisons using AIC
Except for end-of-day well-being, the results suggest that the effect of the experiment was the same in the different contexts, either versus location or experiment’s time. Given the statistical insignificance of variability across contexts for start-of-day well-being, mindfulness, start-of-day creativity, end-of-day creativity and the average creativity evaluation, further analyses are based on the fixed effect models, as it was determined to be more appropriate for our data sets. For the end-of-day well-being, corrected estimates of the random effect model are reported and analysed.

5.5 Predicting well-being, creativity and mindfulness

The estimates of the models are reported in Table 9.

<table>
<thead>
<tr>
<th></th>
<th>Start-of-day well-being</th>
<th>End-of-day well-being</th>
<th>Start-of-day creativity</th>
<th>End-of-day creativity</th>
<th>Average creative production evaluation</th>
<th>Mindfulness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session</td>
<td>-0.02</td>
<td>.01</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Condition (Exp.)</td>
<td>-0.42*</td>
<td>-.32</td>
<td>-0.82</td>
<td>0.82</td>
<td>0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Session: Condition (Exp.)</td>
<td>0.13***</td>
<td>0.10***</td>
<td>1.03***</td>
<td>1.20***</td>
<td>0.14***</td>
<td>0.12***</td>
</tr>
</tbody>
</table>

*p < .05 ; *** p < .001; Intercepts are not reported but are all significantly superior to zero.

Table 9. Estimates of the GLMs predicting morning well-being, afternoon well-being, morning and afternoon creativity, average creative production evaluation and mindfulness.
This analysis used the fixed effects model to look at impacts per session and overall of experimental groups compared to control groups for each of the well-being measures for the three locations combined, as well as each of the creativity measures for the two locations where it was tested, and finally, for mindfulness levels for the three locations, as an indicator of extent of AMS. The table above reports the estimated values from the generalised linear model used, of what predicted levels of well-being, creativity and mindfulness would be expected for a participant to experience from experimental sessions, based on the average values across all participants in each data set.

For all the variables, no simple effect of sessions was observed. The score of start of day well-being was found to be significantly lower in the experimental condition: B=-42; p<.05. Except for this variable, no simple effect of the condition was observed. The interaction between the session variable and the condition is positive and significant for all the variables: the level of start-of-day well-being (B=.13; p<.001), the level of end-of-day well-being (B=.10; p<.001), the level of mindfulness (B=.12; p<.001), the level of start-of-day creativity (B=1.03; p<.001), the level of end-of-day creativity (B=1.20; p<.001), and the average creativity evaluation (B=.14; p<.01) all indicate that the cumulative positive effect of sessions on the levels of well-being, mindfulness and creativity is significantly stronger in the experimental condition.

5.6 **Identifying the necessary number of sessions to observe an effect**

To identify how many sessions were necessary to obtain an effect, a series of GLM were computed, increasing progressively the number of sessions taken into account. When the interaction became significant, it was considered that this number of sessions was the threshold from which the experimental condition started to be efficient. That is, we tested for differences across session 1 data, then with the first two sessions, first three sessions and
onwards until we found a significant effect start to occur, and it was considered significant if the significant differences between experimental and control groups remained for the following remaining sessions.

Concerning start-of-day well-being, end-of-day well-being, mindfulness and the average creativity evaluation, the interaction started to be significant at the sixth session. Concerning start-of-day and end-of-day creativity, the interaction started to be significant at the fifth session. In conclusion, the effect of the experimental condition on start-of-day well-being, end-of-day well-being, mindfulness and the average creativity evaluation started to be significantly observed at the sixth session. The effect of the experimental condition on start-of-day and end-of-day creativity started to be significantly observed at the fifth session. Those results are summarised in Table 10.

<table>
<thead>
<tr>
<th></th>
<th>Required number of sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM well-being</td>
<td>6</td>
</tr>
<tr>
<td>PM well-being</td>
<td>6</td>
</tr>
<tr>
<td>Average creative production</td>
<td>6</td>
</tr>
<tr>
<td>AM creative production</td>
<td>5</td>
</tr>
<tr>
<td>PM creative production</td>
<td>5</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>6</td>
</tr>
</tbody>
</table>

**Table 10.** Required number of sessions to observe a significant effect from meditation technique
5.7 Predicting the increase of well-being between start-of-day and end-of-day

The increasing of well-being (end-of-day well-being minus start-of-day well-being) and the increasing of creativity (end-of-day creativity minus start-of-day creativity) were introduced as dependent variables in two GLM. The predictor variables were the same as in the first models: the condition (Experimental versus Control), the session (session 1 through session 8) and the interaction between the two previous variables. Estimates of these GLM are reported in Table 11.

<table>
<thead>
<tr>
<th></th>
<th>Well-being increases</th>
<th>Creativity increases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>Condition (Experimental)</td>
<td>0.46***</td>
<td>1.65**</td>
</tr>
<tr>
<td>Session: Condition (Experimental)</td>
<td>0.00</td>
<td>0.18</td>
</tr>
</tbody>
</table>

** p<.01 ; *** p<.001; Intercepts are not reported but are all significantly superior to zero.

Table 11. Estimates of the GLMs predicting the increasing of well-being and the increasing of creativity between start-of-day and end-of-day

The results suggest that both the increasing of well-being between start-of-day and end-of-day and the increasing of creativity between start-of-day and end-of-day are significantly higher in the experimental condition than in the control condition. It means that the experimental condition has also a within-a-day, before/after effect on both well-being and creativity.

5.8 Satisfaction with life scale interpretation

The Satisfaction with Life Scale designed by Diener (1985), which is used in these experiments to access well-being levels, can be interpreted using his summaries for aggregate scores. While certain individuals reported values ranging from very low to very high scores,
corresponding to very poor quality of life to being as good as possible, interpretation here is
given for the averages for each location.

For the first experimental location, City Hall, on average, participants in experimental
groups moved up from having a slightly below average life satisfaction score to an average
score, while participants in control groups remained with an average score (according to
Diener’s 2006 interpretation). Thus, the overall satisfaction with life for the experimental
groups went up from them being rather dissatisfied with their lives to being the average level
for economically developed nations such as Canada, where they are generally satisfied yet
seeking large improvements in one or more areas of their lives. The overall satisfaction with
life for the control groups stayed within the same category, thus they continued to experience
being mostly satisfied yet typically wanting to make some life changes.

For the second experimental location, Aleph, on average, participants in both
experimental groups and control groups moved up from having a slightly below average life
satisfaction score to having an average score. This could be interpreted as an increase from
being dissatisfied to being on par with economically developed nations. Though on average
both groups moved up one category, they are at different ends of the ranges of the divisions.

For the third experimental location, ESCP Europe, on average, participants in
experimental groups moved up from having an average life satisfaction score to a high score,
while participants in control groups remained with an average score (according to Diener’s
2006 interpretation). Thus, the experimental groups moved up from the average level which
is considered normal for countries at the development level of countries such as France to a
range where the major domains of their lives are sources of contentment; they feel their lives
are going well though not perfectly, and are satisfied while simultaneously seeking further
improvement by not settling into complacency. The control groups continuing at average
scores overall puts them in line with average, normal levels from which they typically would
want to make life changes to improve. The categories for each experimental group average are reported in Table 12.

<table>
<thead>
<tr>
<th>Experimental Location</th>
<th>Experimental Condition</th>
<th>Beginning avg well-being</th>
<th>Ending avg well-being</th>
<th>Change in Life Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Hall</td>
<td>Experimental</td>
<td>3.90</td>
<td>4.76</td>
<td>Slightly below avg- &gt; avg</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.58</td>
<td>4.49</td>
<td>Remained at average</td>
</tr>
<tr>
<td>Aleph</td>
<td>Experimental</td>
<td>3.58</td>
<td>4.42</td>
<td>Slightly below avg- &gt; avg</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3.97</td>
<td>4.33</td>
<td>Slightly below avg- &gt; avg</td>
</tr>
<tr>
<td>ESCP Europe</td>
<td>Experimental</td>
<td>4.20</td>
<td>5.10</td>
<td>Average score -&gt; high score</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.30</td>
<td>4.20</td>
<td>Remained at average</td>
</tr>
</tbody>
</table>

**Table 12.** Interpretation of Satisfaction with Life Scale beginning and end average values for each experimental location: Comparison between experimental and control groups

5.9 **Comparison between groups, locations and times**

Although there were some increases in well-being, creativity and mindfulness for control group participants for all three experimental locations over the duration of sessions, there were no significant increases, and thus, no significant ‘placebo effect’ caused by the relaxation techniques.

As the fixed effect model is a better fit for the data than the random effect model, there are therefore no significant differences in the well-being, creativity and mindfulness results between the experimental locations. Thus there are no significant differences between the experiments based on location, whether they took place in Canada and France, nor between institution type (public versus private), for instance.
No significant differences exist in the results between experimental sessions which took place in the morning prior to the start of each participant's work day at all three experimental locations and those which took place during lunch break, for the location which these experiments took place, at ESCP Europe School of Business (third experimental location), thus well-being, creativity and mindfulness increased regardless of the time of day at which the AMS-induction technique took place. The analysis groups together these two timings of the sessions, referring to those preceding the start of the work day and those conducted during lunch break collectively as start-of-day (which more precisely, is the timeslot at which the session took place) as for the majority of participants the sessions took place just prior to the start of their work days.

Differences were found in regards to attendance, from comparison made for the final session of each experiment. The average attendance for the last session for each experimental group is reported in Table 13.

<table>
<thead>
<tr>
<th>Experimental location</th>
<th>Dependent variable</th>
<th>Last session attendance by experimental groups (%)</th>
<th>Last session attendance by control groups (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Hall</td>
<td>Well-being</td>
<td>93%</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>100%</td>
<td>93%</td>
</tr>
<tr>
<td>Aleph</td>
<td>Well-being</td>
<td>91%</td>
<td>67%</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
<td>91%</td>
<td>64%</td>
</tr>
<tr>
<td>ESCP Europe</td>
<td>Well-being</td>
<td>64%</td>
<td>48%</td>
</tr>
</tbody>
</table>

Table 13. Participant Attendance at Last Session: Comparison between Experimental and Control Groups
At the first experimental location, City Hall, attendance for experimental and control groups remained high through the duration of the sessions, for both sets of experiments. At the second experimental location, Aleph, attendance was higher for experimental groups than for control groups, for both sets of experiments. At the third experimental location, ESCP Europe, attendance declined for both experimental and control groups by the last session.

5.10 Additional components determining well-being, creativity and AMS attainment

At each experimental location qualitative data was collected voluntarily from participants and staff in addition to the survey data, to clarify and expand upon the quantitative results.

5.10.1 Additional information collected at City Hall

At the first location, City Hall, main feedback included being overwhelmed with an excess of responsibilities, and a tiring, growing expectation of being always available, particularly with the rise of electronic communication, resulting in increased multi-tasking, distraction and short attention spans, albeit the upsides of increased connectivity and greater idea sharing. Many participants expressed wanting to enjoy their job more and benefit others - public perception of municipal administration as being slow, complicated and corrupt hindered employees from feeling trusted, appreciated and fully engaged. On the contrary, many participants reported an open and supportive organisational culture that allowed input to be heard, as well as secure employment, good training, flexibility and advancement opportunities.

Overall, the trend was that experimental participants had more positive feedback by the end of the sessions, such as offering to lead sessions for other employees following the
end of the research study, expressing appreciation to their colleagues and making changes
towards a healthier lifestyle such as biking instead of driving to work, while the control group
mentioned more problems and difficulties throughout the sessions such as feeling mildly
depressed, uninspired and fatigued.

5.10.2 Additional information collected at Aleph

At the second location, Aleph, salient issues included high competition, low
flexibility, limited freedom in scheduling, tasks and procedures, and conflicting incentives,
yet they enjoyed high monetary rewards for selling properties and the interactions with
colleagues and customers. Some wanted more organisational cohesiveness and
communication amongst employees, and some were disturbed by racial issues related to
discrimination and also controversial business practices regarding differential pricing and
dubious business practices. Finally, a number of participants were consumed in work to such
an extent that their personal life suffered and they experienced a sense of sacrifice. Further,
none of the participants expressed true passion for their work, rather, it was a temporary
means to earn income which did not seem to contribute towards obtaining a fulfilling career.

Overall, experimental participants’ feedback by the end of the sessions tended to be
about solutions to overcome the problems they were encountering, including planning to take
a sales course to improve their skills, organising post-work activities with colleagues and
expressing their feedback to their managers, whereas control participants tended to focus on
lacking sufficient income, worsening personal problems and feelings of hopelessness. Two
participants gave notice of termination of employment during the sets of sessions, noting that
the sessions make them more sensitive and aware of their work environment, noticing aspects
they had previously ignored, and were not willing to continue to accept a working situation that was not in line with their values.

5.10.3 Additional information collected at ESCP Europe

At the third location, ESCP Europe, participants reported feeling undervalued, unappreciated, difficulties in sustaining AMS, and inequality, in being lower status than teaching staff, for instance that they are not issued business cards and receiving little credit for their work and further, being reprimanded for the careless mistakes of others. They resented being required to swipe a card to a time clock every time they exit or enter, while professors come and go freely. Some had experienced being yelled at by those with higher ‘rank’ and even having doors slammed at them when they attempted to protest poor treatment. A number of participants complained of the school being a ‘patriarchal’ organisation, with a higher portion of males in faculty and directional positions and a higher portion of females in lower ranking jobs with accompanying lower status and salaries. Linked with this, and tied also with culture and other factors, these participants and others noted experiencing gender discrimination, such as negative comments when a female employee took maternity leave, as well as a lack of a sense of equality and fairness regarding gender and other factors. Many of the participants asked about having a designated space made available for contemplative practices for future use.

Overall, experimental participants’ feedback by the end of the sessions tended to focus on possible improvements that could be made, such as requesting business cards to be ordered for administrative staff, speaking up for themselves and their contributions and requesting to be trusted with respect to their working hours rather than being electronically monitored, whereas control participants tended to complain about lacking energy, frustrations
with colleagues and being unhappy in their position, resulting in impatience, anger and despondency.

Several respondents at the third experimental location selected more than one of the responses on questionnaires (whereas at the first two experimental locations always only one answer was selected). For instance, both 1 and 7 were circled (for which participants explained feeling both extremes at the same time, even though seemingly contradictory), or two neighbouring numbers (for which participants explained that they could more precisely define their position than the scale provided for, as being in the middle of the two chosen values). In all cases were more than one response was selected, the average of the two responses was reported. In addition, there were several occurrences of missed responses, and in these cases the average of the remaining responses on the questionnaire was taken as the value. This situation tended to happen more for participants in control groups than for those in experimental groups.

Having presented the main findings of the experiments, we move now to discussing these results in relation to the hypotheses.
6 Discussion of results

As the above presented statistical results show, as of six experimental sessions within three organisations, significant increases in well-being, creativity and mindfulness resulted amongst participants. Thus, the sessions were effective in eliciting alternate mindsets and leading to AMS benefits, which encompass physical, mental and emotional factors, such as lower absenteeism due to illness, reduced fatigue and stress, heightened focus, and greater physiological well-being.

6.1 Support of hypotheses

Support was found for each of the hypotheses as outlined here in significant findings related to each hypothesis.

6.1.1 Levels of employee well-being

Hypothesis 1: Start-of-day well-being will increase over the duration of the sessions.

Results indicate that the cumulative positive effect of sessions on the level of start-of-day well-being is significantly stronger in the experimental condition than the control condition as of the sixth session.

Hypothesis 2: End-of-day well-being will increase over the duration of the sessions.

Results indicate that the cumulative positive effect of sessions on the level of end-of-day well-being is significantly stronger in the experimental condition than the control condition as of the sixth session.
Hypothesis 3: Daily improvement in well-being (end-of-day minus start-of-day) will increase over the duration of the sessions.

Results indicate that the daily improvement in well-being is significantly stronger in the experimental condition than the control condition.

6.1.2 Levels of creativity

Hypothesis 4: Start-of-day creativity will increase over the duration of the sessions.

Results from both tests of creativity levels indicate that the cumulative positive effect of sessions on the level of start-of-day creativity is significantly stronger in the experimental condition than in the control condition as of the fifth session.

Hypothesis 5: End-of-day creativity will increase over the duration of the sessions.

Results from both tests of creativity levels indicate that the cumulative positive effect of sessions on the level of end-of-day creativity is significantly stronger in the experimental condition than the control condition as of the fifth session.

Hypothesis 6: Daily improvement in creativity will increase over the duration of the sessions.

Results from both tests of creativity levels (one that measures creativity ability and the other that measures creative production) indicate that the daily improvement in creativity is significantly stronger in the experimental condition than the control condition.

Creativity scores, based on both creative production and Domino’s creativity scale, increased over the duration of the sessions. These results could have occurred because AMS
training influences participant’s self-image—that AMS resulting from the meditation technique changes the way people perceive their personality towards being more creative. This could be explained by the notion of creative adaption (Valliant 2000; Meneely and Portillo 2005, p 156) which integrates theories from Gardner, Domino, Csíkszentmihályi and others to describe how people adapt to situations in a way that ‘involves flexibility in thinking, responsiveness to environment (self-adaptation), and transformation and evolution of the environment (domain adaptation). They found that ‘individual creative performance varied across tasks, providing support for a domain-specific rather than a global definition of creativity' (p. 157). Further support of the disparity of perceptions comes from Eagleman and his collaborators (2007), who documented individual differences in vividness or mental imagery, such as experimental participants evoked during the sessions. Next, Alice Isen (2009) and others conducted research showing have creativity is enhanced while in a positive mindset, as in AMS.

Further, an explanation for raised creativity levels could be that employee creativity is stifled while in TMS and AMS allow for fuller expression of latent creative talent. This causation could be amplified within organisations that restrict the employee freedom and autonomy which inhibits intrinsic motivation (Getz and Carney 2009) and AMS benefits. Lastly, Kagan (1998), within developmental psychology, “relying on Frege’s distinction between sense and referential meaning, suggests that theoretical meanings can change when the referents change and criticizes the practice of treating personality concepts as unchanging essences that transcend all assessment contexts” thus creativity can be seen a trait that can be strengthened by contemplative practices, leading to alterations in neural networks associated with monitoring and regulation, rather than as a fixed trait in this context.

6.1.3 Cultivation of alternate mindsets
Hypothesis 8: Level of mindfulness will increase over the duration of the sessions.

Results indicate that the daily improvement in level of mindfulness is significantly stronger in the experimental condition than the control condition as of the sixth session.

At City Hall and Aleph, there were statistically insignificant starting differences, in that the Monday sessions of the experimental groups started at slightly lower levels of measured values overall than sessions occurring on other weekdays. The control groups displayed slight yet insignificant increases on the reported measures, thus there is an insignificant placebo response to the technique used for these groups, similar to what other research has shown.

As the development of alternate mindsets was not included as a dependent variable, a second end of day measurement was not included.

6.2 Comparison of locations, times and other factors

In the following sub-sections, we utilise data from the experiments to draw comparisons between the three experimental locations, the two main experimental times (morning and mid-day), the extent of gender equality in participation, as well as comparing the proportion of each total potential population that participated and lastly, relate participation to possible connotations related to the research topic. We begin by looking at whether the experimental results differed between locations.

6.2.1 Experimental locations

In regards to comparing experimental locations for impact of experimental sessions, as the fixed effect model is a better fit than the random effect model, there are no significant
differences in the results between the experimental locations neither in Canada and France, nor between institution types, or between the public and private institutions.

Given that there were no significant differences between the experimental locations, this implies that the factor that is important is whether or not the meditation sessions take place rather than where the organisation is located and whether it is a public or private institution. Thus, implementing a series of minimum six sessions could potentially yield significant AMS benefits for a variety of organisations in various industries and locations.

6.2.2 Experimental times

In regards to comparing experimental times for impact of experimental sessions for the third location, ESCP Europe, where one experiment took place in prior to work day and another during lunchtime break, there are no significant differences in the results between the experimental times. Thus, the AMS-inducing technique was effective regardless of whether it takes place in the morning or at mid-day.

6.2.3 Gender balance

Experimental participants were 57.63% female, thus more women volunteered to participate than men. A possible exploration could have been to discover whether the experimental locations had a higher proportion of female employees or whether female employees have a greater propensity to volunteer for and/or participate in AMS-inducing activities, however this information was not made available. Perhaps the higher number of women than men is caused by a factor within organisational culture, such as social
acceptance or norms regarding AMS activities, which could differ for female and male employees. For instance, at City Hall, for other AMS-related activities including yoga and tai chi, the Wellness Co-ordinator stated that enrollment was typically higher for women than men, whereas other fitness activities such as running teams were more equally gender balanced and/or had higher male ratios in comparison.

Yet, in Canada at least, further inquiries into gender related issues (for which people are not limited to defining themselves as one or the other if they choose not to), as well as other personal data such as age, racial background, marital status and any disabilities, are understandably discouraged for risk of potential discrimination and/or unnecessary divisions where other personal characteristics or factors may be more important and thus these issues were not further pursued, even though they may have been fruitful to explore. Instead, other considerations were given attention, including overall interest driving total participation as well as interpretation and impressions of AMS activities in the two nations were the three studies took place.

6.2.4 Portion of total populations

Percentage of volunteer participants from the total population in each organisation varied between the three locations, as noted in Section 4.1, from a low of 3.11% at City Hall, to 9.77% at ESCP Europe to a high of 50.56% at Aleph. One reason for the significantly higher registration at Aleph was suggested to be their tight-knit organisational culture, and other factors are possible too. According to the Wellness Co-ordinator at City Hall, this low level of participation was typical for programs taking place outside of working hours, as employees tended to have hectic schedules and many options of activities to choose from.
6.2.5 Connotations of meditation in France versus Canada influencing participation

The proportion of organisations directly contacted that agreed to experimental sessions was approximately 38% lower in France than in Canada. This lower acceptance of the research study in France compared to Canada could be due to negative connotations with meditation in France. In 1995, for instance the Parliamentary Commission on Cults in France (Commission parlementaire sur les sectes en France) listed Transcendental Meditation (TM) as a cult, alongside a number of organisations which had involved extortion, group suicides and other problems (UNADFI), even though TM defines itself as a secular organisation.

Thus, in France, it is perhaps understandable that organisations would be hesitant to accept a meditation research study, given the negative connotation that this association with cults has given rise to. In Canada, TM is recognized as a meditation technique which is taught by a certified instructor, and the link with cults does not exist.

Another explanation for this difference could be varying cultural and organisational norms between the two countries. In France, it is less common for employees to participate in AMS activities on-site, as they are perceived as leisure activities to be done outside of working hours.

In contrast, in Canada, many organisations provide both on-site and off-site facilities, training and incentives for employees to partake in AMS activities, and these are generally accepted and encouraged in the culture and norms of organisations based there. For instance, both of the Canadian experimental locations have a staff member with the specific role of attending to the health and well-being of employees, such as ‘Wellness Co-ordinator’ whereas the French location did not.
6.3 Interpretation of changes in well-being

6.3.1 Well-being levels at City Hall

At the first location, City Hall, for participants in experiments measuring well-being, on average, experimental groups moved up from having slightly below average life satisfaction to having average scores, while control groups remained with an average score. This is according to the cutoff points defined by Diener’s 2006 interpretation of scores on the Satisfaction with Life Scale, for economically developed nations, which apply for Canada and France. Thus, the experimental participants increased in life satisfaction will the control participants remained within the same range, albeit that the experimental group started at a lower level. The start level of life satisfaction for the experimental participants is characterised by ‘small but significant problems in several areas of their lives…or one area that represents a substantial problem’. The ending level of life satisfaction for the experimental participants is characterized by being ‘generally satisfied, but have some areas where they very much would like some improvement.’ It seems that for the experimental groups, AMS benefits allowed their work situation to improve, which matches with feedback received from participants described in the results section of striving towards resolving challenges, to have greater fulfillment while for control participants their work situation remained relatively static.

6.3.2 Well-being levels at Aleph

At the second location, Aleph, both experimental and control groups, on average, moved up from having slightly below average life satisfaction to average scores (though the average values are different they fall within the same cutoff points). This improvement pairs with participant feedback of those who were striving towards having increased freedom and a
sense of purpose, which they felt would allow them to have more motivation, enjoy their work more, and ultimately have better performance in their work, and while control participants also crossed the threshold to average scores, their feedback was not as dynamic and optimistic.

6.3.3 Well-being levels at ESCP Europe

At the third location, ESCP Europe, for participants in experiments measuring well-being, on average, experimental groups moved up from having average life satisfaction to having high scores, while control groups remained with average scores. This improvement pairs with participant feedback of those who were striving towards having increased freedom, which they felt would allow them to have more motivation, enjoy their work more, and ultimately have better performance in their work, for which experimental participants expressed improvements, and while control participants also crossed the threshold to average scores, their feedback was not as dynamic and optimistic. At the organisational level, some potential changes might allow for greater improvements in well-being. Firstly, presumably the perceived, or real, inequality between faculty and administrative staff could lead to detrimental consequences for the organisation, such as lower motivation, less work engagement, lower productivity and higher absenteeism and turnover amongst administrative staff, thus initiatives could be put in place to flatten the hierarchy, bring more cohesiveness and strengthen a unified corporate culture. Secondly, perhaps the organisation could provide a space to be used for contemplative practices, and listen to and respond to feedback from administrative staff so that they feel their voices are heard and acknowledged, and thus their intrinsic needs met more fully.
6.3.4 Evaluation of changes in well-being at all three locations

To expand upon the interpretation of changes in well-being, Diener points to three components which comprise most people’s sense of life satisfaction.

Firstly, he addresses the vital role of social relationships in determining levels of life satisfaction (2006). Those with high scores tend to have close and support social relationships, which matches with the intrinsic need of relatedness of Deci and Ryan’s self-determination theory (1985). If the need for relatedness is not met in the workplace, employee well-being may be inhibited, and, alternately, if social needs are met this allows employees to flourish.

Additional research on this first factor, social relationships, has explored the important role that relatedness plays in well-being, and could be a necessary condition in order for AMS techniques to have a positive impact. As the techniques of this research are practiced individually, organisational actors are dependent upon other interactions during the work day to meet their social needs. Firstly, a study on positive engagement found a 0.71 correlation between happiness and Zimet’s social support scale (Anchor 2008), and organisational actors who initiate social interactions are ten times as likely to be engaged in their work and 40% more likely to be promoted (ibid). Next, Seppala and her colleagues (2008) showed social support to result from meditation mechanisms. Further, Ben-Shahar and Russo-Netzer (2011) cited social support as the greatest predictor of happiness during high-stress periods. Onwards, Holt-Lunstad and colleagues (2012) described how high social support leads to longevity as much as regular exercise does, whereas low social support can be as harmful as high blood pressure. This, social contact could be a catalyst for AMS benefits.

Also related to this first component of the well-being interpretations, Diener (2006) notes that setbacks in one’s life often cause a drop in life satisfaction, for which the practice
of AMS techniques can counteract, by building up resilience within individuals, allowing them to ‘bounce back’ from perceived losses. Naturally, although the AMS induction techniques in this research were conducted individually, social contact and interpersonal relationships influence resulting well-being, though this is not explicitly addressed in the experimental protocol.

Secondly, Diener emphasises the importance of enjoyment and meaning in one’s work, which depends upon a good match between one’s strength and position and suitable circumstances. That is, people need to feel that what they are doing is important and that they can excel in it, and desire to perform the work. From participant feedback received from the three experimental locations, it was sometimes the case that participants reported that AMS practices made them more fully aware of difficulties which they had masked, having made themselves numb to their work environment in order to continue. Some participants mentioned having had a sense of their career aspirations and goals, but giving up on them with their current reality, even though they felt driven to make effort to strive towards and achieve what mattered to them. Bringing to light these issues brought a conflict for some participants between resigning themselves to stay in their current position, which was particularly the case for those with high financial constraints, or to risk changing roles and/or to a different organisation in the hope of finding a role that was better suited to them and/or more enjoyable and meaningful.

Thirdly, Diener’s interpretation includes personal-satisfaction as contributing to well-being levels. To expand, sources of personal-satisfaction including spirituality, learning and leisure can bring either satisfy or dissatisfy one’s sense of self worth. AMS mechanisms pair with the development of this source of well-being. Further, there are other influencing factors such as health, which is evident with for instance, chronic illness resulting from on-going stress, which prevents optimal well-being.
As well, this interpretation mentions the role of mindset, or temperament, on well-being. Those in AMS are more likely to have higher well-being, as was evident in the experimental results. The above mentioned and other factors combine in unique blends to foster or deter well-being for each individual. In line with Diener’s view of heightened well-being as a state which can rise with time and effort; people can mold their desired satisfaction with life, rather than it being an inherent fixed trait. This research on AMS techniques indicates that AMS cultivation can potentially provide a pathway for the development of this trait in organisational settings.

6.4 Within-day decreases in well-being and creativity

Between the experimental session and end of day, well-being and creativity scores decreased overall. These within-day declines are likely due to wear and tear during the workday. Many work environments may not be conducive to cultivating and maintaining AMS; reasons for this could include hostile, high-stress circumstances, high level of rules and bureaucracy that limit personal expression and initiative and lack of openness to change within an organisation. The implications section explores various factors which could ease the challenges experienced by participants and organisations as a whole, so as to minimise wear and tear.

Participants in the AMS groups interacted with those in TMS during their work days, and this could perhaps wear off the effects of inducing an AMS. As a measure of AMS was not re-completed at day-end, it is not possible to assess the extent to which the within day decreases of the two dependent variables, well-being and creativity, correlate with AMS.

To sustain well-being and creativity levels, it may be necessary for employees to supplement formal AMS practice with informal practice through their workdays (Kabat-Zinn
and Davidson 1988; Ricard 2008). These research experiments tested solely formal practice however onward sections explore complementary aspects.

### 6.5 Interpretation of differences in attendance

The lower attendance at the last session of participants in control groups than those in experimental groups for the second experimental location, Aleph, could be because participants in control groups sensed that they were not benefiting from the sessions enough to merit volunteering their time. The lower attendance at the last session of participants in both experimental and control groups for the third experimental location, ESCP Europe, could be explained by the feedback that they felt powerless to make any substantial changes to their working situation, that they lacked decision-making power and it was thus useless to seek to change their situation, and/or because of lack of time to participate in sessions in addition to the demands of their working days, and/or because of lack of a sense of commitment to a voluntary experiment.

While participants at the first two experimental locations, tended to notify the experimental organiser if they needed to miss an upcoming session and excused prior absences with an explanation of why they could not attend, those at the third experimental location tended to not explain their absence, either beforehand or afterwards, thus perhaps there are cultural or organisational differences in regards to attendance for voluntary activities.
7 Organisational implications

Having presented and discussed our research results, we now delve into the organisation implications of enhanced well-being, creativity and mindfulness.

7.1 Growing importance

The findings that including short meditations session can bring significant increased well-being, creativity and mindfulness imply many useful implications for organisations. As of six meditation sessions, conducted either prior to start of work day or during lunchtime, participants can reap the benefits of AMS, including boosted well-being, creativity as well as other advantageous aspects which are described in the research literature such as enhanced concentration, productivity, higher workplace morale, collaboration and intrinsic motivation.

These findings build upon other research, and add an international dimension, as previous experiments of this nature within organisations as previous experiments have been largely US-based, notably those of Davidson and Kabat-Zinn in 2003, with biotechnology employees as subjects, who showed measurably lower anxiety after eight weeks of mindfulness training, increased activity in brain parts associated with positive emotions, greater immune system functioning and greater well-being. The experiments herein also add a wider range or organisation types within which AMS benefits are shown.

The participants involved in this research spanned gender, age, occupation, education and income levels and extent of experience with AMS-inducing practices, thus AMS benefits are not merely for a select group of people, but are instead widely applicable across backgrounds as well as organisation type and location. These benefits can impact participants long-term, throughout their careers, allowing for greater fulfillment, health and less burnout,
plus benefiting their organisations with greater success, higher morale and corporate citizenship.

Although much research has explored the individual benefits that complementary and/or alternate mindsets provide over analytical-logical cognition mental systems, this research makes a contribution by displaying the organisational benefits of such systems. As a large amount of people’s lives are spent within organisations, applying the cultivation of alternate mindsets in these settings is feasible, and allows both for benefits both to the individual and to the organisation as a whole.

This domain is receiving increasing attention in research, as noted by Kabat-Zinn and Santorelli (2002) and Seligman, Peterson, Park, Hall (2009) and as well as within organisations, such as Google Inc., which has developed an integrated program ‘Search Inside Yourself’ in conjunction with Goleman and others. Thus, organisations can provide a unique and promising platform for people’s innate needs to be met, and in doing so can yield both successful business outcomes and greater fulfillment for individuals.

This research fits within the scope of applications of positive psychology within organisations, which focuses on how employee well-being can be optimised, rather than on problems. Employee well-being relates to the premise of the World Health Organisation (WHO) that “Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity.”(1948). Further, the WHO state that by the year 2030 mental health issues will be the biggest burden on health care resources, more costly than cancer and heart conditions. In following, this research applies not only for how to minimise stress, depression, anxiety and related health and wellness conditions, but moreover how employee well-being, a component of health, can be enhanced. While medical solutions can alleviate some conditions and symptoms of occupational stress, AMS provides a
transformative solution that arises without the possible side-effects and associated costs of pharmaceutical and medical solutions.

Recognising the great costs associated with healthcare for organisations, the next envisionable development of AMS could happen once healthcare providers embrace AMS into employee care, as Davidson and other researchers suggest, to compliment traditional medical practices with contemplative practices, for equal if not more effective results with potentially fewer drawbacks. Effectively, Kabat-Zinn (2013) refers to the current medical system as a ‘disease care system’ due to the predominant focus on treating illnesses, whereas he sees an ideal ‘health care system’ as placing more focus on well-being by integrating an AMS perspective, including mindfulness practices such as the mindfulness-based stress reduction program.

These findings have broad implications for organisations, in that introducing meditation sessions over a span of three weeks for 20 minutes twice a week, or more, yield a number of benefits on an individual-level, as well as for teamwork and for organisational outcomes overall. Some of the benefits of cultivating AMS include stress-reduction, increased clarity of mind, balance, energy, zest for life, improved complex problem-solving and decision-making, enhanced leadership, higher emotional intelligence, less reactivity, mood regulation and immune system enhancement. Thus, contemplative practices like meditation can benefit both people’s careers and business outcomes, and these mental exercises merit increased attention.

The implications of AMS benefits extend from the possibility of providing a basis for employees to enjoy greater well-being, mobilise their creative potential and become more mindful despite suboptimal management practices, lack of suitable leadership, or other unsatisfactory conditions such as facing pressures that cause stress. For this latter issue,
stress, we will briefly outline the problems that stress causes, its mechanism and then look at how AMS can ameliorate the situation.

7.2 Transcending occupational stress

Employee well-being and creativity are important elements for business success, as well as for the fulfillment of people through their careers. Indeed, prominent philosophers such as Aristotle posit well-being as “the meaning and the purpose of life, the whole aim and end of human existence.” Similarly, creativity is what gives rise to innovative and strategic abilities in organisations, which is increasingly important given the growing reliance on developing and utilising human capital to provide distinct advantages to firms. Given the vital role of well-being and creativity, finding ways of enhancing them are of primary importance for organisations.

The experiments conducted for this research have shown significant increases in well-being, creativity and mindfulness as of as few as six sessions of meditation techniques practiced over a three week span, which is a relatively small investment of time and effort. Seeing that organisations can reach greater success when its employees experience AMS benefits, it is worthwhile exploring implementing meditation sessions or other forms of AMS-inducing mechanisms. To understand the value that AMS bring to organisations, it is necessary to comprehend what is impeding optimal levels of well-being and creativity in the workplace, namely workplace stress while in TMS. Herein is the explanation of how the practice of AMS-inducing techniques provides a path to overcoming obstacles to enhanced well-being and creativity.

Stress can be defined as the consequence of the person's perceived inability to respond adequately to mental, emotional, or physical demands, whether actual or imagined. Stress,
while up to a certain level can enhance productivity and creativity, has reached such high levels within organisations that many people are nearly not able to function at all. Optimal performance occurs with the existence of some arousal, such as job tasks and responsibilities, and plummets as anxiety and stress increase, as shown in figure 12 below.

![Stress Levels and Performance Graph](graph.png)

**Figure 12. Stress levels and performance**

Current levels of well-being, creative production and mindfulness are sub-optimal as a result of this stress phenomenon pushing organisational actors to the brink of meltdown because of high stress levels.

We now turn to describing the stress mechanism and the potential of AMS mechanisms to alleviate the stress epidemic.

### 7.2.1 Stress response

Stress is defined by Selye as an organism’s non-specific response to change, which can lead to the development of a pathological state when persistent and unrelieved (1956).
Without perturbations, the body is in homeostasis, having an ideal body temperature, an ideal level of glucose in the bloodstream, and all other optimal conditions. A stressor is anything in the outside world that prevents an individual from being in homeostatic balance.

The causes of stress are psychological, and its effects are both psychological and physiological. Stress occurs when a psychological mechanism triggers a physical reaction from the brain. If a situation is novel, unpredictable, or threatens either one’s survival or ego, and which a person don’t feel a sense of control over, the brain reacts with its primordial flight/flight/freeze response. This acute stress response is due to our primordial survival instinct is an accompanying state of hyper-arousal that served humans well in life-threatening situations but not for many modern-day occupational situations (Cannon 1994).

We now move to describing the extent to which stress impacts organisational actors, underlining the importance in addressing this phenomenon.

7.2.2 Occupational stress epidemic

Occupational stress has been classified as a “global epidemic” by the UN International Labour Organisation, and according to researchers at Fairleigh Dickinson University, 3 of 4 workers are on the brink of meltdown due to high stress. In a recent NIOSH research study, 40% of workers reported their job was very or extremely stressful and 25% view their jobs as the number one stressor in their lives. Over half of the 550 million working days lost annually in the U.S. from absenteeism are stress-related (European Agency for Health & Safety at Work). Rather than ameliorating over time, the problems caused by stress appear to be increasing, emphasising the importance of finding a way to reverse the trend.
Here, we first describe the downward spiral of the stress mechanism and in the following section, the potential of AMS mechanisms to lead to a counter-acting upward spiral.

### 7.2.3 Downward spiral

Research has shown a negativity bias once the startle response is evoked; the mind and body have a tendency to continue on a downward spiral. Some stress hormones continue to be produced until the relaxation response is elicited because the sympathetic nervous system dominates the parasympathetic nervous system. Stress ‘feeds’ off of itself in vicious psychological and physical circles, often leading us into a downward spiral if the direction of this momentum is not counteracted, as pictured in the below diagram.

![Figure 13. Psychological and physical factors of the downward spiral](image)

As a result of the downward spiral, organisational actors become less motivated and less creative, and rational thinking is impaired. To further understand the psychological and physical aspects of the downward spiral, Langer outlined how premature cognitive commitment signals the central nervous system and immune system to continue to react
negatively to stress until re-trained with AMS techniques. Thus, often conscious effort is required, namely, practising an AMS technique as one potential solution to reverse the downward spiral, to re-establish metabolic equilibrium, allowing for optimal functioning including greater well-being and creative production, to return.

We turn now to the potential benefits of AMS for alleviating stress and for AMS mechanisms to reverse the downward spiral.

7.2.4 Virtuous cycle

Selye (1978) and others pointed to the need for ‘stress therapy’, in a preventative and holistic manner, and currently, there is ever more attention to the critical need for both dealing with and avoiding stress and its complications. Selye further cited that “adopting the right attitude can convert a negative stress into a positive one,” thus adopting an AMS could create eustress – curative stress – which could otherwise have been harmful stress in TMS.

Thus, a key alternative to the downward trend towards stress, depression and anxiety of the default mode of a TMS, in contrast, AMS techniques provide, is to pay attention to what triggers the startle response, and re-train the brain to remain in, and deepen the extent of, AMS, leading to an upward, virtuous cycle. By changing one’s thoughts, emotions and behaviour at the very beginning of the cascade, by altering one’s perception (being in AMS rather than TMS, the ceaseless, driven and fixated thoughts of the everyday neurotic mind), the activation and effects of the startle response could be minimised.

The process through which AMS techniques could reduce stress has been linked by various research. In exploring the mechanisms that could assist in managing stress, Benson and colleagues (1974) showed how meditation, an AMS technique, reduces somatic-arousal,
potentially allowing for stress levels to be curtailed. Further, Smith (1986) explored how meditation alters cognitive appraisal and perceived self-efficacy, allowing for increased awareness of how thoughts and emotions arise in response to various environmental events, ultimately leading to the potential for better handling potentially stressful situations. This and other research points to the possibility of AMS to strengthen one’s abilities to manage stress, particularly with ongoing practice, which will now outline.

7.2.5 Building reserves to alleviate workplace stress

The potential of AMS techniques to build abilities to counteract workplace stress had been previously ignored or discredited, however, they are receiving more and more attention and acceptance, driven in part by financial crises which have necessitated considering new approaches to addressing organisational challenges, especially those such as AMS techniques that don’t require extensive financial resources. Yet, Goltz (2011) points out that current models of social power have excluded spirituality and AMS techniques as a source of power. Spiritual power she claims, which have empirically demonstrated positive effects shown by practice of AMS techniques, don’t depend on external resources and are not depleted when they are spent, and stimulate transcendent behaviour, allowing a valuable alternative pathway to traditional models for handling workplace stress.

Given that one’s thoughts can often easily slip into the default mode of TMS, which involves re-playing the past, worrying about the future and experiencing negative thoughts, this often leads to over-activation of the stress response. The stress response is designed to overcome dangers and threats, which is useful for survival, but more frequently in modern occupational settings it is activated by psychological threats rather than external dangers, and this over-activation can cause wear and tear over time. Research shows this wear and tear
caused by prolonged stress can increase risk of illnesses, such as heart attacks, strokes, high blood pressure and diabetes (Benson 1975).

Learning to ‘switch off’, allowing AMS to return, through meditation or other AMS techniques, can dampen these effects. This can be done by applying one’s willpower, or internal resources, to inhibit the stress response and gain control over one’s response to potential threats. Edelman (2007) describes how resisting unpleasant emotions or sensations create secondary pain that amplifies the initial source of distress. AMS mechanisms could potentially reduce or remove this secondary pain by removing the resistance to emotions and sensations, by allowing what arises in the mind to be observed, acknowledged, and then followed by a chosen response rather than an automatic reaction.

The mechanisms through which AMS bring about reduced stress and the possibility of an alternative choice to be made to override the otherwise automatic stress response is that meditation, the AMS technique focussed on in this research, reduces distractive and ruminative thoughts and behaviors, as shown by Jain and colleagues (2007) in a randomised controlled study of a month of mindfulness meditation compared to somatic relaxation training. Their findings that meditation improves positive mind states that reduce thoughts and behaviours linked with stress is strengthened by findings of other researchers, including van den Hurk and colleagues (2011) who investigated the relationship between mindfulness meditation and personality traits and whether mindfulness meditation has a mediating role in this relationship. Specifically, they found that meditation practice is linked with personality traits which could prevent repetitive negative thoughts and worry, allowing for greater openness and extraversion and lower neuroticism and conscientiousness. They explain that AMS training, in their case mindfulness meditation, takes effect through a process of taking notice of and accepting all thoughts and feelings, including unwanted and negative ones,
without judging them and then letting them pass, and in doing so, a downward spiral can be
averted (ibid, Baer et al. 2006).

Further evidence of how AMS can build resources to potentially ward off workplace
stress was garnered from a randomised controlled study of full-time workers by Manocha and
colleagues (2011) found a mental silence technique, Sahaja Yoga meditation to be a safe and
effective way to reduce depression, anxiety, perceived stress and work stress (as measured
by the Psychological Strain Questionnaire, part of the Occupational Stress Inventory, and the
depression-dejection subscale of the Profile of Mood States) compared to a relaxation
technique used as an active control as well as to a wait-list control. Their research supports
the potential for AMS techniques to improve occupational health by reducing work stress
through a process of thought reduction and mental silence.

Consistently practising AMS techniques has been suggested to build a reservoir of
mental calm, resilience and willpower, strengthening one’s ability to dampen the mind and
body’s automatic responses to stress triggers (Kabat-Zinn & Davidson 2011). A ‘Pause and
Plan Response’ – in contrast to the fight or flight response – can then occur when an internal
threat is recognised, allowing a conscious choice to be made in response to stimuli in place of
the automatic stress response, according to Segerstrom and her colleagues (2012). This
alternative was explored by Baumeister and colleagues (2012), who researched this
mechanism through which AMS mechanisms can ameliorate stress by building willpower
and self-control. Ryan (2013) furthered this research by explaining how greater insight, self-
control and self-monitoring, which AMS mechanisms have been shown to strengthen, are
valuable adaptive strategies with broad applications.

Another process through which AMS techniques, including mindfulness meditation,
been shown to bring benefits is through influence the one’s control of cortical alpha rhythms,
which fMRI studies have linked with what mind and body sensations are paid attention to (Davidson & Begley 2012). By directing attention instead of allowing it to be captured by stimuli, emotions can be voluntarily modulated and not stimulus-driven.

In this way, over time, reserves are built to allow for more planned responses to stimuli, allowing individuals to better manage potentially stressful situations even when external circumstances are non-optimal. These qualities of resilience and willpower develop gradually; each repeat practice of AMS mechanisms reinforces their supporting the neural pathways. As Thoreau describes, “As a single footprint will not make a path on the earth, so a single thought will not make a pathway in the mind. To make a deep physical path, we walk again and again. To make a deep mental path, we must think over and over the kind of thoughts we wish to dominate our lives”. Such is the process of AMS mechanisms that embed neural pathways for these qualities from repeated activation of particular brain circuitry.

At this point we move to explaining the advantage of the improvements that AMS provide in regards to enhanced well-being and creativity in comparison to attempting to affect these improvements through altering external conditions.

7.3 Inexpensive effective solution for bolstering well-being and creativity

Paradoxically, in modern society, objective conditions continue to improve but populations are not experiencing greater well-being overall. Income and other factors including gender, education, and marital status have little impact on levels of subjective well-being. The chart below relates per capita GDP of various nations with the percentage of highly satisfied citizens, from which we see that those with higher GDP do not necessarily have higher percentages of highly satisfied people. For instance, a Gallup survey found that
even though France has much higher GDP than many other nations, it ranked lower than even Iraq and Afghanistan in its level of expectations for 2012. Even with general economic stability and good working conditions, the French display low levels of trust and a large extent of dissatisfaction (Barber 2013).

To expand upon this notion, Kahneman, Angus and Deaton (2009) found that higher incomes improve evaluation of life but not emotional well-being. Also, a study of lottery winners showed them reporting higher levels of happiness immediately following the event, but dropping back down to their normal baseline within months to years, thus even substantially higher financial resources was not found to reliably lead to long term happiness (Brickman and colleagues 1978). Thus, increased external resources do not always lead to improved internal psychological states.

To clarify, the terms evoked here in regards to well-being, including happiness, satisfaction with life, and positive affect are related but distinct concepts. Well-being is defined by Deci and Ryan (1999) as a complex construct involving optimal experience and functioning. Further, they distinguish happiness as the hedonic approach to well-being – attaining pleasure and avoiding pain – whereas they link the second perspective of well-being, the eudaimonic approach, to meaning and self-realisation. Research within hedonic psychology deals primarily with subjective well-being, while research on the eudaimonic approach focuses on psychological well-being. The hedonic perspective describes subjective well-being as consisting of life satisfaction, a positive mood, and the absence of a negative mood. Thus, the terms satisfaction with life, positive affect, which is referenced interchangeably with positive mood, and subjective well-being are closely connected though not identical.
The figure below compares GDP with satisfaction levels across countries.

Figure 14. Comparison across nations of GDP levels with satisfaction with life

The two nations where these experiments took place, Canada and France, have similar levels of life satisfaction - average to high - yet, further improvements could be possible with AMS without changing income levels or other factors. Studies have shown that once people’s basic needs are met, higher income has little or no impact on bringing more well-being. While income levels and GDP are useful financial measures, they fail to take into account additional factors which influence well-being, as stated by Harvard economist and Nobel Laureate Simon Kuznets, "the welfare of a nation can...scarcely be inferred from a measurement of national income..." (1934). Perhaps future organisational and societal measures could benefit from including factors including subjective well-being rather than
strictly financial criteria. The countries where the research experiments took place, Canada and France, have already added measures of citizen happiness to their official national statistics.

As lower satisfaction with life, as well as lower workplace productivity, results when the mind is wandering, multi-tasking, and/or ruminating about the past or future. through mental training, notably, AMS-induction techniques, one’s well-being set-point can incrementally increase by strengthening the mind’s ability to recognize when it’s attention is distracted from its point of focus and to return to a chosen object of focus (i.e. a work task at hand), which is associated with the greatest satisfaction of life, as well as greater attentional focus. This notion has roots in Hindu scripture, The Bhagavad-Gita: "Joy is inward" and has been evoked by figures through history, such as Mahatma Gandhi, in saying "turn the spotlight inward", meaning, bring mental focus to changing one’s stream of thoughts, during an AMS-inducing mechanism. According to Goleman, developing AMS through mindfulness techniques increases emotional intelligence, which strengthens the ability to self-monitor one’s stress response, and lessen its effects. Thus AMS provides a viable pathway to alleviate stress and allow well-being, creativity and mindfulness to return.

In the default mindset, TMS, mind-wandering is persistent and typically involuntary, that is, a lot of endogenous mental activity occurs even when the mind is supposedly ‘at rest’. An interior dialogue ensues, termed ‘mental chatter’, that is often self-focused rumination about the past and the future (Christoff, Gordon, Smallwood, Smith, & Schooler, 2009). To counteract this, AMS techniques strengthen the ability to bring the mind back to a positive or at minimum, neutral state. With repeat practice, practitioners learn to mind wander less and control the mind. Further, AMS techniques bring sustained focus, reducing task-switching and relational complexity, and with fewer variables held in the mind at any one time, effective decision-making and bolstered productivity results.
In support of this aspect of how AMS can ameliorate positive affect by replacing distraction and mind-wandering with focus and engagement, Lutz and his colleagues (2009) documented how AMS trains selective attention – being able to focus on a chosen object and to ignore other objects – which is useful for keeping employees on task, as well as being intrinsically rewarding by supporting raised levels of well-being. Following a three-month retreat with daily AMS practices, compared to a control group, participants displayed significant improvement in their ability to selectively give attention to stimuli. As well, changes in their prefrontal brain function reflected these behavioral changes, substantiating subjective results with objective measures that AMS participants learn to control their attention and mental activity. Controlling the mind is best regarded as a skill that can be enhanced through training, and which differs in development levels across individuals depending on genetics, experience and other factors, and the critical regions of the prefrontal cortex which are engaged for this mental training only fully mature by around 25 years of age (ibid).

There is growing importance of enabling maximum well-being within organisations, and it is gaining recognition, such as at Aleph ‘many of our employees would reach burn-out without strategies of avoiding stress and dealing with stress levels’ (HR manager, 2011). The Dalai Lama describes:

“There are two kinds of happiness - the temporary pleasure derived primarily from material comfort alone and another more enduring comfort that results from the thorough transformation and development of the mind. We can see in our own lives that the latter form of happiness is superior because when our mental state is calm and happy, we can easily put up with minor pains and physical discomforts. On the other hand, when our mind is restless and upset, the most comfortable physical facilities do not make us happy.” (2012)
From this, it could be deducted that the restless state, that of TMS, that the Dalai Lama outlines, has been prevalent in workplaces, given surmounting stress levels. Further, developing AMS, as the quote describes, transforms individuals in a way that provides a more sustainable source of well-being than salary raises, objective financial measures and other external conditions.

In sum, AMS provides a pathway towards greater well-being and creativity within organisations without substantially raising salaries and benefits, rather, by incorporating AMS practices, which provide the conditions for employees to flourish and become mindful.

7.4 Organisational feasibility

Here we address practical implications of our research in terms of concrete programs and settings that workplaces can implement to harness the benefits of wellbeing and creativity benefits from AMS techniques.

AMS techniques, which research indicates have a cumulative and lasting effect as of a relatively low threshold, that is, as of six 20 minute bi-weekly sessions, have wide potential organisational implications. While much research to date has been done on expert meditators, having over 10,000 meditation hours, even novice practitioners can reap improvements, within a short-time span, such as has been shown in these research results.

This small time commitment makes meditation a feasible AMS technique to implement. Further, the AMS mechanism applied in this research is practical in that no additional equipment or facilities are needed.
7.4.1 Workplace environment

It will be important to consider how organisations could change to include meditation sessions or integrate wellness programs, as well as in what ways organisations would need to adapt in order to obtain AMS benefits. Recognising the importance of employee well-being and creativity in counter-acting the workplace stress epidemic, there is an increasing need for organisationally feasible ways to cultivate AMS. Meditation, such as utilised in this research, is a viable option, as it can be done on-site in a short time span and brings benefits not only during sessions but through the work days.

Beyond the personal benefits of greater happiness and creative expression for employees, this research has significant potential gains for organisations in terms of innovative ability and productivity (not only because of less absenteeism and lower turnover but also because of higher concentration, sense of purpose and greater engagement, for instance). AMS techniques have the potential to give lasting results, similar to that which has been found for research regarding enhanced workplace spirituality, optimism, gratefulness, goals and social relationships, yet likely simpler to implement. Kabat-Zinn and Davidson’s 8 week mindfulness programs (1985) brought about a change in participants’ emotional set-point, evidenced by activity in the prefrontal cortex, linked with enhanced emotional intelligence and emotional balance.

AMS-inducing activities, such as the eight twenty-minute sessions of these experiments, are suitable for organisations, generally require no extra equipment or facilities, and bring tangible results in a short time span on-site (while additional off-site sessions could be advantageous), and these results can establish a new set-point mindset when practiced in a regular and systematic way.
7.4.2 Logistics, setting and timing

AMS sessions can be conducted on-site at organisational locations, to avoid extra time and logistical effort needed if a separate location was used. Available chairs or folded mats or other materials can be used for seating if preferable to sitting directly on the floor, and no other materials are necessary, thus there is minimal cost and logistics involved for the sessions. An off-site location could be used if preferable.

It could be advantageous for AMS sessions can be practiced in a separate area than daily working space, which is effective for organisations so as not to distract other people in the working space and to not be distracted by others, and to minimise background noise. Background noise level can be a difficult variable to control, and while more background noise may make it more difficult for participants to hold their focus, AMS mechanisms can still be effective, even if potentially more challenging. A metaphor from Eastern philosophy for the external environment in which one practices AMS techniques, is the internal person as a candle, which in TMS is unlit, and in AMS is lit. Then, if in a quiet space, such as a reclusive meditation retreat, this lit candle is in a dark room and lights up the room, and it’s light is easier to notice, and if the setting has noise and distractions, the lit candle is in a more bright room, and it’s light is more difficult to distinguish from the light of the room, but it still emits as much light as in a dark room. In this way, the external environment does not compromise the internal mindset but the silence of a ‘dark room’ could facilitate the transition to AMS, particularly for novice practitioners (Tolle 2009, Oz 2012).

7.4.3 Secular applications

Applications of ancient contemplative practices within workplace settings can be done in a secular way, which excludes religious dogma while keeping the beneficial outcomes. In
following with the Dalai Lama, “Those who have little interest in spirituality shouldn’t think that human inner values don’t apply to you. The inner peace of an alert and calm mind is the source of real happiness and good health. Our human intelligence tells us which of our emotions are positive and helpful and which are damaging and to be restrained or avoided”. Thus, according to this line of thinking, excluding religious undertones and connotations, albeit from Buddhism or other belief systems, makes AMS practices inclusive, and suitable for organisations, with the same or equivalent benefits as religious practices.

7.4.4 Choice of time usage

While time spent by employees cultivating AMS could be seen as unproductive, on the contrary, indications are that higher productivity can result overall, thus organisations stand to benefit from implementing and supporting AMS inducing mechanisms, not merely for the sake of benefiting the health and well-being of their employees. The philosopher Pascal stated, ‘All man’s miseries derive from not being able to sit in a quiet room alone.’ This research pursues the contrary, the benefits resulting from sitting quietly, working with one’s mind. An old Zen adage posits that ‘Sit in meditation for 20 minutes a day, unless you’re too busy; then sit for an hour.’ In light of the ancient wisdom traditions, AMS techniques are a priority to implement, not an unnecessary extra to be disregarded.

To draw from philosophy, the words of Lao Zu ‘By non-doing, all doing becomes possible’ describe this, in that what may seem to be doing nothing can actually allow for great creativity and productivity. Attaining increased productivity within organisations can result from mental training practices (Brefczynski-Lewis 2007), in line with the Tibetan concept of Gom, meaning to familiarise or habituate and the Buddhist concept of Bhavana, meaning to cultivate. Thus, AMS practices can be seen as an optimal use of time, as cultivating AMS brings lasting and impactful personal and organisational benefits.
As research indicates that AMS could a mindset to be cultivated rather than an instantaneous and permanent change, to optimally reap the benefits of AMS, an inducing mechanism such as meditation would need to become a fixed, integral, and essential part of daily life, similar to physical exercise. It can be easiest to implement AMS mental exercises by setting aside a specific time and making it a priority, choosing to commit to attend to one’s inner world, in a similar way as other aspects of work and life. This can be seen as making an appointment with oneself. Each practitioner can choose the AMS technique that suits their lifestyle and personality type, such as seated meditation that was applied in these research experiments and other forms that can be practiced individually or with a group, either with or without an instructor.

To sum up, a variety of practical factors can facilitate organisations in maximising gain from AMS benefits, such as a suitable environment, logistics, and aligning with the philosophy of AMS techniques.

7.5 Impacts of increased workplace well-being

Various organisational implications exist as a result of increased employee well-being. In the absence of AMS, employees endure diminished well-being, are sick twice as often, and absent six times as often as those enjoying greater well-being (Anchor 2008). Whereas in contrast, employees with greater well-being are 31% more productive (ibid), nine times as loyal, have 3.9 times higher growth of earning per share (Gallup), and their career is extended from 4.9 up to 6.6 years (Securex).

Well-being, which can been seen as “a deep sense of flourishing that arises from an exceptionally healthy mind…not a mere pleasurable feeling, a fleeting emotion, or a mood, but an optimal state of being” (Ricard 2003), is an optimal state of being which is a
“profound emotional balance struck by a subtle understanding of how the mind functions” that can be increased through training, as it is a moving set-point. Our experiments have shown a significant improvement in well-being levels resulting from implementing AMS mechanisms in the workplace.

7.5.1 Productivity and performance

Better workplace performance can result from employees experiencing greater well-being. First, those with higher well-being levels are significantly more likely to receive high ratings from customers, and in one study, retail stores scoring higher on employee life satisfaction (a measure of well-being) generated $21 more in earnings per square foot of retail space than stores in the comparison group, adding $32 million in profits to the company overall (Gallup Poll 2006). This allows companies to make more efficient use of space and resources as a result of AMS techniques. Second, in a meta-analysis of 225 academic studies, Ljubomirsky, King and Diener found that employees with high well-being have, on average, 31% higher productivity and 37% higher sales. Overall, organisations benefit from greater success, including higher productivity and efficiency, as a result of the enhanced well-being that AMS mechanisms can provide.

7.5.2 Pro-social behaviour and engagement

Next, enhanced well-being has been linked with more pro-social development such as displaying greater empathy, compassion and consideration of others. As a result, employees who score high on providing social support are 40% more likely to receive a promotion, have higher job satisfaction, and feel ten times more engaged at work than those in the lowest quartile (Anchor 2008). As well, corporate culture can improve and employee
turnover can decrease, from having stronger social bonds and employees having greater commitment to their employer (Goleman 1998). Thus, the benefits of enhanced well-being from AMS mechanisms extend beyond the individual - of being more empathic, satisfied and engaged at work - to enhance group and organisational factors.

Having looked at a few of the many beneficial impacts of increased well-being, we now present the impacts of increases in the second dependent variable, creativity.

7.6 Impacts of increased workplace creativity

Along with lower employee well-being, the creativity is curtailed while employees are in TMS; maximising employee creativity through AMS mechanisms has substantial potential value for organisations. Creativity can be seen as applied imagination, the process of having original ideas that have value. And then innovation can be seen as putting good ideas into practice. Thus, nourishing imagination, by providing the circumstances and environment in which organisational actors can freely think of new ideas, is vital, as well as implementing rather than discarding these ideas.

Given that many individuals and workplaces typically operate in TMS, new ideas may be rejected because of a narrow perspective, inadvertently discouraging active imagination, and further, their application may be inhibited for various reasons. High stress or other sub-optimal environments may not allow the mental space and resting state needed for ideas to originate, percolate and be formulated into organisationally beneficial applications. Thus AMS mechanisms could unblock creative potential, leading to optimal organisational innovation and strategic advantage.
Here, we address two potentially valuable categories of organisational implications of enhanced creativity resulting from AMS – technical innovation and intrapreneurship. We begin with the notion of technical innovation and how AMS techniques could serve as useful processes towards that aim.

7.6.1 Technical innovation

The enhanced employee creative production resulting from AMS could benefit firm performance by allowing for greater technical innovation to stem from all employees. To begin with, Torrance (1959) explained the serendipitous nature of technical innovation, in that creativity and invention happen unexpectedly during experiences, and called for `renewed energy for continuous adaptation`.

In light of this, Collins and Porras (1997) pointed to the need for `mechanisms of progress`, systematic approaches, for continuous improvement and innovation from all organisational actors. This aligns with AMS mechanisms, as, following a 20 minute technique, employees continue with their normal working day, as a result of which they have greater creative potential to notice what improvements could be made and what new ideas could be implemented from all available sources while they are carrying out their tasks, rather than separating innovation to a distinct department. In support of this, Robinson and Stern (1998) state that the creative potential of firms is typically greater than their creative performance, thus enabling fuller expression of employee creative potential could narrow this gap. These researchers, along with Torrence, also emphasise that corporate creativity tends to occur in unplanned and unexpected ways, thus, implementing AMS techniques to allow for fuller expression of innate creative potential could prove to be more advantageous and cost-saving than allocating additional resources to designated research and design projects for
technical innovation. Further along this vein, Getz and Robinson (2003) propose the implementation of processes in a system of managing ideas (SMI), that, for instance, `use of an entirely different process that a traditional suggestion scheme`. AMS techniques respond to this need, enabling corporate creativity to occur as an open system to which all employees can contribute, and further, derive a sense of meaning from feeling that they have made a positive difference, given suitable a workplace environment that allows for their ideas to be listened to and integrated.

Thus, enhanced technical innovation can result from the boosted creativity of employees as a result of AMS techniques, along for improved organisational success. Now we address a second factor alongside technical innovation of how increased employee creativity from AMS techniques can impact organisations, improved intrapreneurship.

### 7.6.2 Intrapreneurship

Intrapreneurship, defined by Shabana (2010) as internal entrepreneurship, that is, employees using their creative ideas and entrepreneurial skills towards devising and implementing innovation within their organisation. Also referred to as corporate entrepreneurship, intrapreneurship can improve from utilising creativity that results from AMS techniques by allowing employees to use their experiences to come up with insights to devise and exploit opportunities (Rerup 2005). In view of the development of alternate mindsets, Kok and Fredrickson (2013) suggest that a mechanism by which AMS techniques allow participants to display greater intrapreneurship is by strengthening self-regulation of the vagus nerve of the parasympathetic nervous system, allowing participants to ‘calm and connect’, improve social skills, self-awareness and other necessary components of intrapreneurship.
AMS techniques can provide an impetus for greater intrapreneurial activity by uncovering the innate creative potential of employees, through various mechanisms that have been described in earlier sections, for instance, by removing barriers to the expression of employee creativity, and by allowing a mindset that enables maximal use of one’s creative ability. According to Getz and Carney (2009), all employees generate new ideas and act towards the collective goals of their organisation, if given a workplace climate and management style that allows and supports this. In regards to suitable environments for intrapreneurship to flourish, Getz and Carney prescribe steps that organisations can take towards a leadership form that embraces employee creativity, what they term ‘liberating leadership’, which suggests that traditional corporate environments often limit employee creativity, and giving employees freedom to take initiative and responsibility can lead to greater success. With these conditions met, of a leadership and organisational style that allow for the benefits of AMS to be expressed, this allows for intrapreneurship to result from the increased display of creativity.

In brief, with a suitable environment, increased workplace creativity can positively impact intrapreneurial potential of firms. Now that we have presented a few of the salient impacts of increased workplace creativity, we move forward to outlining the organisational implications of increased workplace mindfulness, an additional benefit that we discovered while analysing our experimental results.

7.7 Impacts of increased workplace AMS

Our research experiments did not use mindfulness, an indication of AMS, as a dependent variable, yet, since the findings show that AMS techniques are a practical method to increase the extent of AMS, it is worthwhile discussing its organisational implications. To
begin with we explain the detrimental impacts of TMS before moving to the benefits that increased AMS that various mechanisms can provide.

Lack of mindfulness, that is, lack of present, non-judgmental focus, as in TMS, can have dire bottom line consequences. According to a recent Gallup poll, employee disengagement, as could potentially be linked with employees in TMS, costs organisations in the USA $350 million annually. Enhanced mindfulness from the practice of AMS-inducing mechanisms strengthens emotional and social competencies, and the faculty of attention, which have been shown to be learned abilities rather than innate abilities.

7.7.1 Emotional intelligence

One valuable quality that practitioners develop as a result of maintaining an alternate mindset, such as mindfulness, is emotional intelligence- ‘the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (Salovey and Mayer, 1990), that is, being more aware of, and in control of one’s emotions. Greater emotional intelligence also allows organisational actors to have more influence on others around them through enhancing how conflict is managed, increasing adaptability and improving teamwork (Goleman 1988).

Emotional intelligence can assist in optimal addressing how challenges are dealt with (Boyatzis 1998). Organisational actors in various industries and levels of authority, and in an array of jobs stand to benefit from increased emotional intelligence to better handle their reactions to stressors and for enhanced interpersonal functioning. Workplace environments conducive to greater emotional intelligence can be cultivated by encouraging openness, which can lead to better cooperation, collaboration, authenticity and trust. Most companies aspire to have high employee morale, and a corporate culture that spurs creativity and values
employees’ contributions and commitments can provide fertile ground for emotional intelligence to develop, improving quality of work-life as well as the company’s bottom line.

In sum, greater emotional awareness due to a greater extend of alternate mindsets in the workplace leads to more accurate self-assessment which in turn leads to greater self-confidence, providing a pathway from AMS to its individual and organisational benefits.

### 7.7.2 Self-awareness

Another notable implication for organisations is that mindfulness enhances the attentional capabilities of participants, training a strong, stable and perceptive attention. Building upon the foundation of this stable, clear and non-judging attention, participants gain self-awareness- the ability to examine one’s thoughts and emotions from a third person perspective. This self-awareness equates to ‘response flexibility’, the ability to pause before acting, such that an emotional stimulus does not necessarily trigger the stress response. As described by Viktor Frankl, ‘Between stimulus and response, there is a space. In that space lies our freedom and our power to choose our response. In our response lies our growth and our happiness’. This response flexibility is increased while in AMS, from the equanimity and stability that these states of mind provide, such as evidenced by Briefczynski-Lewis and colleagues (2007) using neuro-imaging experiments in which expert meditators (more than 10 000 hours) who were subjected to negative sounds showed less activation in the amygdala than novice meditators, meaning that AMS techniques alleviate the stress response.

While AMS can be entered spontaneously without conscious effort, the regularity and depth of it are strengthened with practice. Through AMS-inducing mechanisms, attentional calmness and clarity grows, and emotional intelligence develops – the foundation for superior organisational outcomes. Expanding on how AMS transcends occupational stress by avoiding
triggering the stress response, Leiberman and colleagues (2007) explored using ‘affect labeling’ to generate AMS to assist in managing emotions, causing increased activity in the right ventrolateral prefrontal cortex (RVLPFC) which leads to increased activity in the medial prefrontal cortex, down-regulating the amygdale, ameliorating the stress response. Similarly, Creswell and Lieberman (2007) showed how mindfulness resulting from meditation, an AMS-inducing mechanism optimises brain functioning.

7.7.3 Physiological improvements

Physiological factors are important to incorporate when considering benefits of mindfulness, due to the feedback loops between body and mind. That is, information can be gained by tuning in to one’s physical self, and ‘listening’ to what thoughts and emotions arise, moment by moment. The bodily senses can provide information that might otherwise elude organisation actors. First, Lieberman (2007) states that paying attention to bodily sensations, an AMS inducing mechanism, leads to more vivid and clear perception and awareness, both valuable tools for workplace success. Further, Goleman (2007) emphasizes the importance of physiological aspects of AMS practices, that there is “evidence suggesting that the basal ganglia are the neuro-anatomical bases of both implicit learning and intuition…The basal ganglia observes everything we do in life, every situation, and extracts decision rules…Our life wisdom on any topic is stored in the basal ganglia. The basal ganglia is so primitive that it has zero connectivity to the verbal cortex. It can’t tell us what it knows in words. It tells us in feelings, it has a lot of connectivity to the emotional centers of the brain and to the gut. It tells us this is right or this is wrong as a gut feeling.” Thus, physiological AMS practices could enhance decision-making within organisations, by allowing organisational actors to access a greater amount of information in AMS, including that which comes from bodily sensations.
Another physiological improvement linked with AMS is increased heart rate variability (HRV), meaning, a greater difference between the increased heart rate with in-breath and decreased heart rate with out-breath, which is a physiological correlate of physical and psychological health, also known as vagal parasympathetic tone. In support of this, Burg and colleagues (2012) investigated the relationship between mindfulness and HRV by conducting a clinical study of undergraduate students practicing a mindful breathing exercise (MBE), a type of AMS mechanism. Their findings showed positive correlations between indices of HRV and mindfulness (AMS), demonstrating that the improved ability to self-regulation one’s attention is associated with higher HRV. Their intervention shows potential physiological benefits of implementing AMS techniques, which is complimented by the findings of Fenton-O'Creevy and Lins (2012) extension of HRV research in an organisational setting, by conducting an empirical study on investment bank traders examining the relationship between trader experience, market conditions, and emotion regulation, indexed by high-frequency heart rate variability (HF HRV). Their study found a significant positive relationship between HF HRV and trader experience, suggesting that emotion regulation may be an important part of trader expertise.

7.7.4 Concentration

The mental faculties that AMS build are both attention, “taking possession by the mind, in clear and vivid form” (James 1890), and meta-attention, being able to pay attention to attention, which the philosopher Osho describes as witnessing, that “the moment you witness something you become separate from it, you are the witness, the thing becomes an object -- the witnessed.” Meta-attention, or witnessing, according to him, brings the experience of unity of consciousness, which is known in Eastern religions and contemplative traditions as moksha, nirvana, liberation, enlightenment and illumination. Stronger meta-
attention allows for greater concentration, meaning that employees can stay on-task, as they can bring back a wandering mind quickly and often.

Further, the combination of relaxation and alertness of AMS allows workers to stay calm, clear and at higher levels of well-being. The relaxed concentration state of AMS, termed *shamatha* by Wallace (2005), facilitates the mind in returning to its natural, default state of well-being. Next, Slagter, Lutz, Davidson and colleagues (2007) found that mindfulness meditation reduces ‘attentional blink’ deficit, enabling employees to more effectively process stimuli, and have more control over their reactions, leading to superior strategic performance. Further, these researchers found greater high-amplitude gamma brain activity resulted from meditating and lasted through people’s days, showing the lasting effects, a higher baseline for memory, learning and perception, allowing organisational actors to be more effective. This implication is echoed by neuroscience findings by Lazar and colleagues (2005) that meditators have a thicker cortex in brain regions associated with attention and sensory processing and with more gyrification (folding in the cortex).

Beyond alleviating the stress epidemic, optimising worker performance by enabling their full potential, and elevating collective performance, the organisational impacts of mindfulness extend also to an improved organisational culture with greater empathy and unity, likely leading to more ethical corporate performance and superior corporate social responsibility. These impacts may be dependent on organisations adapting themselves to utilise these impacts rather than stifling changes. Along this line, Goleman (2010) links the virtuous cycle with ecological competency, on how AMS can bring ‘radical transparency’ and ameliorate the ecological crisis, and that inevitable new market forces will reform both business practices and consumer choices.
In sum, organisational outcomes are optimised as a result of increased mindfulness from cultivating AMS, through enhanced work performance, organisational leadership and other factors. Having explored the organisational implications of enhanced well-being, creativity and mindfulness, we turn now to their potential implications in regards to education and training.

7.8 Integration with education and training

The resulting heightened well-being, creativity and mindfulness from AMS techniques has various implications within education and training, as these serve as ways of incorporating AMS techniques and the accompanying philosophical perspective. Already the potential applications of the techniques explored in this research are being integrated to some extent at educational institutions, such as positive psychology courses for undergraduates at Harvard University, where it has been the most popular course (Ben-Shahar and Russo-Netzer 2011) and new degree programs such as the Strasbourg University Faculty of Medicine diploma ‘Medicine, Meditation and Neuroscience’. At Stanford, The Center for Compassion and Altruism Research and Education (CCARE) supports and nurtures the practice and research or a myriad of AMS techniques. Thus this field is enjoying increasing attention, rising numbers of academic studies, and broader educational applications.

Indeed, building the notion of alternate mindsets into education fits with Lutz, Davidson and Dunne’s notion that “many of our core mental processes, such as awareness, attention and emotion regulation...should best be conceptualized as trainable skills” (2008), such as are in place in many school systems (Schonert-Reichl and Lawlor 2010, Schonert-Reichl and Hymel 2007) to counteract the trend that Sir Ken Robinson (2011) describes of education systems undermining creativity. Harry R. Lewis, former dean of Harvard,
explained how “universities have forgotten their larger education” (2006) and lack in enabling students to find a sense of purpose and create meaningful lives, by focussing on grading at the expense of learning, for instance. Yet more and more AMS-minded institutions and programs do exist and are being further developed and expanded, where students’ intrinsic needs and autonomy are given higher priority, allowing for artistic development alongside the sciences, for example.

The changing focus from downward to upward spiral, utilising aspects from positive psychology and contemplative neuroscience needs to continue within educational organisations in order to allow the maximum expression of well-being and creativity, as well as mindfulness, and their associated benefits.

Following James (1890) in *Principles of Psychology*, ‘the faculty of voluntarily bringing back a wandering attention over and over again is the very root of judgement, character, and will. No one is *compos sui* if he/she have it not. An education which should improve this faculty would be the education *par excellence*. ’ Thus, the cultivation of AMS is valuable to include in training, ideally from an early age, while the brain is most malleable.

Here, we move to implications at the group and organisational level that coincide with and could potentially be extensions of the individual benefits of AMS.

### 7.9 Interpersonal implications

State of mind can have a huge effect on each participant’s organisational performance, not to mention the performance of their close associates, the entire organisation, and indeed its wider constituency. This notion has roots both in sociology and ancient Eastern philosophy, notably the Vedic Sanskrit scriptures, which contains a verse about the
importance of people taking responsibility for their mindset and health (mental and physical) and the importance of remaining in balance as changes in them ‘ripple in the water of consciousness’ affecting the harmony of everyone (Bhagavad Gita, verses 7-5 and 13-26).

Interaction effects between TMS and AMS organisational actor - how they influence each other - was not looked at directly in these research experiments, however, research on mirror neurons has shown the contagion of emotion and emotional states, which held over time become mindsets. Business leaders’ mindsets are particularly influential, as research studies show that when a leader is in AMS, other people around him or her also moved into AMS, thus is especially important for leaders to take part in AMS inducing practices because of this domino effect (Goleman, Boyatzis and McKee, 2001, p 4).

Having looked at how interactions between organisational actors can be impacted from the research findings, we further explore the implications from the perspective of the philosophy that underpins AMS techniques from ancient wisdom practices.

7.10 Process versus outcome focus

A dilemma exists when applying meditation techniques with the aim of improving business outcomes, as traditionally, contemplative practices are intended to be done without desired outcomes, but rather for the process itself. In classical meditation, one is to let go of attachments and expectations, and while transformation and benefits come as the result, they are seen as natural consequences rather than the goal in itself for partaking in the practice. Expressed by Lao Tzu in the Tao Te Ching, “If you try to change it, you will ruin it. Try to hold it, and you will lose it,” meaning the focus of AMS practices is to bring awareness and acceptance instead of seeking to obtain something as a result (Osho 1975).
Adapting ancient AMS mechanisms for modern organisational environments and quantifying AMS benefits may contaminate the purity of the techniques, rendering the aim to be measurable outcomes rather than the experience itself. Kornfield (2011) posits that modern secular applications of AMS techniques threaten to reduce them to mere mental exercises practised for specific benefits rather than as an overall way of living in harmony with oneself and one’s surroundings as the ancient philosophy intended. Extended to business, Henry Ford held a parallel premise, that ‘Wealth, like happiness, is never attained when sought after directly. It comes as a by-product of providing a useful service.’ Thus the original focus of meditation and Eastern contemplative traditions being on the practice instead of what one can gain from the practice needs to be upheld when applied within modern organisational settings. Further, AMS depend upon present moment awareness, so yearning for future benefits or resenting past deprivations will dampen the attainment and sustainment of AMS effects from inducing mechanisms.

Yet, in organisational settings, there are typically limited resources and a need for activities to provide measurable benefits within a relatively short time span. Seeing that there are proven organisational benefits of AMS, this facilitates the incorporation of contemplative practices within organisations, however, may compromise the philosophy underlying the practices and bring negative consequences, such as limit the benefits to what is expected rather than allowing their full expression. As well, Rockman explains that this rapidly emerging field is as of now largely unregulated as to who may instruct AMS techniques, and how the techniques are conducted, with nearly inexistent standards thus far, compromising the extent to which the underlying principles and philosophy are upheld (Kingston 2013).

Corporate applications of AMS practices, according to Lopez (2012) have created tension between Buddhists and other long-term practitioners of AMS techniques, as many have the opinion that corporate and secular applications of these ancient techniques dilute
their significance. Purser and Low (2012) also spoke of this dilemma of mainstreaming mindfulness and AMS techniques, questioning “Is it a means of helping employees adapt to a toxic culture, rather than calling into question the fundamental reasons why stress is being generated in that toxic culture?” Their concern relates to institutional readiness for adapting AMS techniques, and their view is that secular applications of AMS techniques have proceeded too rapidly, stripping away the ethical responsibilities that are integral to these ancient techniques.

Meditation originated as a way of re-finding mental peace, clarity and balance, not as a way of increasing profits and out-witting competing firms. Loy sees the newly forming approaches of AMS techniques as reinforcing self-centered individualism and failing to address the most deep-rooted and problematic forms of suffering within organisations (Kingston 2013). In applying these ancient reverent practices in modern organisational settings, one must be cognisant of the way that these practices are implemented and of the intentions and expectations surrounding them, in order to most holistically benefit, and yet, practise the techniques for the process in itself and allowing the benefits to be perks that arise from the practice rather than goals in themselves.

This draws our discussion of organisational implications to a close, and lastly, we conclude our research exploration by summarising the main findings and implications of our research, and possible future evolutions in this field of research.
8 Limitations and further research

First we address limitations of our research study, including restrictions resulting from the procedural methods and potential biases. Then we will move to suggesting further research that can build upon the foundation provided by this and other research in this field.

8.1 Limitations and biases caused by methodology

Research in this field has been plagued with various limitations, including small numbers of participants, lack of active control groups, inclusion of only subjective endpoints, lack of details of participant characteristics that allow for generalisation of findings, insufficient details of treatment protocols and methods, inadequate documentation of protocol adherence by participants, and infrequent use of biological measures (Ludwig & Kabat-Zinn 2008).

To an extent we overcame some of these limitations, such as by having active control groups, and full details of protocols and methods, yet we experienced some of these limitations, including having relatively small numbers of participants, only subjective endpoints and lack of biological measures, as well as additional issues.

While the experiments of this research were carried out to the best of the ability of the researcher and available measurement tools, various limitations and biases resulted from the methodological choices that were made. We outline key limitations and biases here.

8.1.1 Limitations and biases due to data treatment choices

Some bias may result from the choice to include data from all participants, as the number of sessions varied from as few as three (one of the four session trial group
participants) to the maximum of eight, however, it was unrealistic to eliminate participants based on one or more missing sessions as it would drastically reduce the data set.

This bias could result from participants with lower attendance having different characteristics from those with higher attendance, and these potential differences are not taken into account in the data analysis. To speculate, a potential difference could be that those with lower attendance would tend to not regularly and consistently practise AMS techniques, while those with higher attendance may tend to make AMS techniques more of a habit that they schedule into their day and follow through with. As a further extension, perhaps those with lower attendance may not continue practicing AMS techniques after the end of the research study, while those with higher attendance could be inclined to continue practicing AMS techniques regularly onwards. As mentioned, these possibilities were not explored, as overall attendance was high, and had similar rates across experimental and control groups.

Another aspect of data treatment that could result in potential bias is that the analyses treat all subjects as independent however the sessions were conducted in small groups at different times, days and months, based on scheduling availability. Thus, a nested model could have been used in which subjects are nested in groups that receive different experimental conditions. However, as testing conditions were as similar as possible between the groups, we assume that small group differences are minimal, and as no salient differences between the small groups emerged in the data from preliminary analysis, and thus we choose to focus on solely individual measures.

Lastly, several analyses of difference scores—including the satisfaction with life scale interpretation and comparison between groups, location, times and attendance rates—have several statistical problems of potentially correlated error terms which can bias the results, yet these were not further explored.
8.1.2 Measuring individual versus group and organisational level factors

In terms of research methodology, one potential limitation relates to measuring factors individually rather than in groups or collective aspects to capture interpersonal dynamics that are integral to many organisational settings. That is, a possible experimental bias in the reported measures is that only individual factors were measured, however the sessions were conducted with groups, thus interpersonal aspects may have influenced participants.

Future experiments could have participants practise by themselves (Kabat-Zinn and Davidson 2012), to isolate individual responses to the sessions or if the sessions are conducted in groups, incorporate a way of measuring effects of interactions, such as with the previous suggestion of measuring group-level factors. However, even if the meditation practice is done individually, naturally interactions will occur during the day, which may be more impactful than the effects during group meditation compared to individual practice.
8.1.3 Field studies versus laboratory studies

A downside of selecting field studies for this research is that various externalities could affect the results, as limited variables could be controlled for. To minimise confounding the results with externalities, laboratory studies could be conducted to further verify and extend the findings from these field experiments. These could include measuring physiological factors, notably, measuring immune function and brain scans using fMRI, parallel to research by Davidson and colleagues (2003) and monitoring heart rate variability, such as research by Burg and colleagues (2012). While laboratory studies may provide more objective results, because of participants performing the same measurement tests in a controlled environment, drawbacks would include increased time involved for participants which could be considered non-productive activities by their employer, as well as likely having lower ecological validity.

Further, fMRI scans and other physiological measures can be costly, inconvenient and would typically need to be done at another premises (Davidson & Begley 2012). Thus, a combination of laboratory and field studies with collaboration between related research disciplines could be more promising for providing further organisational applications.

8.1.4 Lack of inclusion of an end-of-day measure of AMS

Only two dependent variables were selected for these experiments, however, the resulting rising mindfulness levels indicate that it could be valuable to include mindfulness as an additional dependent variable. This could be carried out by adding an end-of-day measure of alternate mindsets, by participants repeating the self-assessed MAAS questionnaire. Further, this would give data on the extent to which AMS is maintained throughout the work day. If alternate mindsets were shown to be maintained over time, this could allow
researchers to draw more firm conclusions of how alternate mindsets lead to individual and organisational benefits.

8.1.5 Control group

Regarding control and comparison groups within AMS research, there is a need to develop alternatives to double-blind studies, as participants in the experimental condition are presumably aware that they are receiving a meditation technique. In following with MacCoon et al. (2012), on every self-report measure, groups need to be structurally matched - the instructors of the comparison intervention need to have the same level of confidence that the intervention will promote well-being, as the experimental condition.

A challenge exists in finding a suitable control condition that does not evoke AMS. While relaxation techniques provides for an active control group technique, other options could be explored, to isolate the effects of meditative techniques. Another option for the control condition which may be less likely to cultivate AMS than mental techniques may be physical exercise, but this could make comparisons complicated if there are exercise-induced changes in the outcome measures that are being looked at, for example on the autonomic nervous system.

Further, through employee interactions throughout their work days, some or all participants may discover that the technique employed for their sessions is different from others, and if control participants discover that they are part of a group employing relaxation techniques rather than meditation, Rankin (2012) points out that a nocebo effect could result which could lower their reported measures. Yet, Sedlmeier and his colleagues (2012) reported that expectation did not influence positive findings, that is, AMS benefits occur whether practitioners think they will reap greater well-being and creativity or not.
As well, experimental and control group participants interact through their workdays, as they are immersed in the same environment, and these interactions could not be controlled for beyond the instruction to not discuss the study with others until after its completion. For our research experiments, we assumed that contact between groups was insignificant, as they were, to our knowledge, unaware of who participated in other groups, and each organisation was relatively large, so as to make this assumption realistic.

8.1.6 Self-selection bias

For all three locations, participants were self-selected, which has the advantage that there was good attendance as they were motivated to attend, however has the drawback that certain characteristics of the volunteers might be different from those who chose to not participate, for instance, their propensity to cultivate alternate mindsets. Onwards, an experiment within an organisation with all organisational actors participating could avoid self-selection bias. However, it would be necessary for participation to remain voluntary, so as to avoid other biases, and it may be unrealistic to find organisations where all employees wish to take part.

Onwards, differing perceptions of meditation in various future locations could have lead to selection bias. Though no significant selection bias arose in the experiments conducted, there was a lower acceptance rate of French organisations (1 of 17) than Canadian organisations (2 of 19) that were directly contacted who agreed to the experimental sessions. Many French organisations that the researcher contacted preferred that such practices took place off-site unrelated with the work setting rather than on-site, and thus lacked willingness to participate, and even if interested, often lacked a suitable space to be used for the sessions, whereas in Canada most of the organisations considered for the sessions had space available for contemplative activities and the acceptance rate was about two times higher, and for those
who declined the research study, reasons tended to be the need for information secrecy, difficult logistics and lacking head office approval.

### 8.1.7 Motivation to participate

In order to implement these techniques to elicit AMS, employees need to be willing to give of their time and attention, in participating in the meditation sessions. As the participants in the experimental sessions were not paid by the employer or by the experimenter, each participant must be sufficiently self-motivated to attend the sessions on their own time, and to correctly follow the instructions during the sessions. As well, the experimental sessions were conducted on site in a separate location than their working areas, thus adequate space must be made available by the organisation for the sessions in a quiet area without disruptions.

Only a portion of employees may be self-motivated to attend and participate meditation sessions on their own time without pay or incentives, thus another solution could be sought if all employees are to participate, and thus benefit, from sessions. Some employees may wish to not participate for various reasons, ranging from time constraints to confidentiality to personal preferences. It would be important that employees are given choice to participate or not, to avoid resentment and other destructive emotions and behavior from being deprived of freedom and autonomy (Carney and Getz 2009). In that, organisations that recognise the importance of people’s innate needs of relatedness, competency and autonomy being met, as outlined in Self-Determination Theory (Ryan & Deci 2002), such as by giving employees autonomy by making participation in wellness programs voluntary, will reap greater increased intrinsic motivation (Deci & Gagné 2005), psychological benefits, lower job turnover, greater job satisfaction, enhanced team empowerment, heightened organisational commitment and less strain (Seibert et al 2011), amongst other benefits.
As well, organisations may be hesitant to implement meditative techniques or other AMS mechanisms because of skepticism of an unknown concept, fears of being a pioneer in a field that has, as-of-yet, limited scientific legitimacy in the newly emerging domain of mindfulness research. As a result, organisations may prioritise more standard wellness programs that have more robust scientific evidence and longer history of organisational applications, due to limited space and funding and to minimise risk.

8.1.8 Subjective rather than objective measures

In regards to AMS literature, a number of conceptual and methodological issues are present within the literature. There is a critical need for better, more reliable, objective and valid measures of AMS. Challenges exist regarding the meaning of these constructs and how they should be measured, and self-reported measures, such as employed in this research, may be inadequate. Many uncertainties surround meditation practices and scientific research on these topics lacks a common theoretical approach and often exhibit poor methodological quality.

This holds the domain back from drawing firm conclusions on AMS benefits because of weak available evidence. Future AMS research needs to be more rigorous in the design and execution of studies as well as in analysis and reporting of results. Further research could supplement psychological measures with physiological measures, pairing emotional self-reported data with fMRI results, for instance, to integrate and advance various streams of research.

For our research, we assume that participants gave honest and accurate responses to the questionnaires, and that they followed the instructions properly and in full.
8.1.9 Potential biases due to single-blinded experiments

Another limitation of this research for the first two experimental locations results from the experimental procedure being single-blind, as perhaps in leading the sessions the researcher influenced the results by conveying more enthusiasm and confidence in the benefits for the experimental groups versus the control condition.

Knowing that AMS have been shown to have benefits, the experimenter could have to an extent unintentionally influenced the findings for the experimental condition towards reaching anticipated conclusions of increases in the dependent variables, whereas for the control condition the experimenter could have displayed a less eager approach, and that could have in part led to changes in the impact of the sessions.

Though this bias is present to some extent in the research findings, it is not a dominant concern, as the same trends appeared for all three experimental locations, regardless of whether they were single-blind or double-blind.

Further experiments could eliminate, or at least minimise, this bias by implementing a double-blind experimental technique such as was used for the third experimental location, or even triple-blind methodology, by having the statistical analysis of results done independently from the researcher by someone who is unaware of the which condition that participants were assigned to.

Now we turn our attention to suggested future research, giving focus to potential changes and additional experimental factors that can best contribute to this growing field of research.
8.2 Further research avenues

The experiments conducted for this research had significant findings in regards to two important AMS benefits, well-being and creativity, and showed the potential for AMS techniques to cultivate a greater extent of AMS amongst participants at three workplaces. Yet, additional research in promising directions could translate into more robust research findings that could minimise many of the methodological limitations described above, supplement significant findings and advance potential applications of this rapidly evolving domain. We begin our discussion of future research possibilities with possible replications and various suggested adaptations.

8.2.1 Replications with additional or different criteria

In terms of further research, it could be advantageous to replicate experiments at additional organisations, measuring: (1) the same individual benefits of AMS, in order to strengthen the ecological validity of results and be able to have sufficient numbers of participants to make meaningful demographic comparisons such as we were not able to yet achieve, for instance on how cultivation of AMS varies with age, gender, job role (managerial versus front-line, various hierarchical levels) or venue (such as in an educational or health-care institutions or non-profit organisations), and/or (2) additional AMS benefits, either at the individual (such as level and duration of concentration, level of fulfillment, perceived stress levels or work engagement), team (such as group cohesiveness, team productivity or extent of synergy) or organisational level (such as corporate citizenship, turnover levels, absenteeism levels or productivity), or a combination of these, in order to show applications for other useful organisationally related aspects.
Further experiments would ideally measure two more dependent variables concurrently on the same groups of participants, if possible within time limitations, so that more comparisons could be made, compared to these experiments where each dependent variable was tested on different participants.

As the participants varied, though not significantly, in their starting values, ending values and changes over the 8 experimental sessions, additional research could further explore what individual differences exist, such as differing effects depending on gender, age, income level, occupation, previous experience with AMS-inducing activities, as well as participants’ values on the six dimensions of Davidson’s Emotional Style (2012) to determine what types are most receptive to the intervention. That is, presumably participants with high resilience, a positive outlook, high social intuition, self-awareness and sensitivity to context and with a focused attention style would show greater increases on measured values. Further, other research regarding well-being show that levels vary with age, thus a deeper look could reveal differences among AMS practitioners with greater experimental numbers.

8.2.2 Possible changes to scheduling and components of future experiments

AMS sessions could be conducted at different times and different workdays, to suit the schedules of employees. Those shown effective in this research were in the morning and during lunch time, Monday through Friday, two days per week for each group. As earlier discussed, it appears to be advantageous to avoid sessions on Monday mornings, as the first day of the work week could have distinguishing aspects compared to Tuesday through Friday that could impact research findings. Other options could be explored, including different duration and number of sessions.

Further, in contrast with other documented AMS interventions, no introductory session was held for giving participants an overview of the techniques and related theory prior to the
start of the experiment. However, some form of in-person session would be useful to include in future research so as to best prepare participants prior to commencing the sessions rather than just via phone and email, to minimise potential biases caused by not being able to properly follow the experimental protocol, especially during the first session.

A new more flexible alternative, offering AMS interventions online, is being explored for situations where in-person AMS sessions are impractical. To explore this alternative, Benson and colleagues (2012) carried out a pilot study of a virtual eight week mind-body AMS intervention and found a trend of decreasing stress, depression and anxiety amongst healthy participants, as measured by the Perceived Stress Scale (PSS) and Symptom Checklist. As a result, they found indications that online AMS interventions could have promising impacts on reducing psychological distress, and suggest further studies to provide more solid evidence.

8.2.3 AMS induction techniques

In addition, given the debate in the research of whether concentrative techniques such as transcendental meditation (Broome et al. 2005, Tanner et al. 2009) or mindfulness meditation such as those drawn from Buddhist traditions or others are more effective (Sedlmeier et al 2012), several meditation techniques could be tested, to identify those with greater and more lasting impacts. The intervention for these experiments was a seated meditation technique, which is well-established in the research literature for bringing about AMS benefits, however, future research could test other organisationally feasible mechanisms for entering AMS, such as physical wellness programs - fitness, moving meditation forms such as yoga, tai chi, qi gong, or outdoor activities, standing/walking work stations, etc. - or psychological activities - coaching, volunteering, mental training, etc - or
other forms of mental training - self-hypnosis, visualization, or other forms of meditation as mentioned above - or breathing exercises (prānāyāma) or a combination of different aspects.

The experiments we conducted were limited to an onsite activity which used limited space and resources, and thus, was relatively practical and inexpensive to implement, however perhaps other forms of interventions or a combination could be even more beneficial.

### 8.2.4 Improved measurement of AMS and its benefits

Future research could explore whether AMS one dimensional (alternate versus habitual state) or whether it has an additional—intensity—dimension, like mood, which in addition to the valence (negative-positive) has an intensity (weak-strong) dimension. While the MAAS of Brown et al. see the “mindfulness construct” as a unipolar dimension, Baer and her collaborators (Baer et al. 2006) recently demonstrated AMS to be five separate facets of the construct rather than a unipolar factor, through a comprehensive factor analytic study of the properties of the measuring scales. These five facets of Baer et al. include: observing, describing, acting with awareness, non-judging and non-reacting, which relate to qualities cultivated during AMS-inducing mechanisms.

A more appropriate way of measuring AMS could be applied to give more accurate and more comprehensive results. In terms of measurement tools, Valiant’s research (2000) calls for the development of a metric for positive mental health equivalent to the intelligence quotient, IQ, which could provide a more quantifiable measurement of AMS benefits relevant to organisations, for instance to guide managers towards what resources and environments maximise quality of work life, health and productivity for organisational actors.

Another limitation in this research domain that could be better addressed in future research is that AMS benefits have been primarily measured subjectively, such as the self-
reported questionnaires used in this study, which rely upon the accuracy of participants' comprehension of the questions and in being able to objectively assess oneself. Namely, AMS and its benefits involve the contents of moment to moment experience, which are often subjective and difficult to measure.

Future measurement tools could incorporate objective measures to counteract this limitation and not only approach accurate and precise results. This has been done to some extent by using physiological measurements, of heart rate, breathing, perspiration, and brain activity using functional magnetic resonance imaging, however these measures could be explored more fully and used in conjunction with subjective measurements to give a more complete comprehension of AMS benefits.

Further, perhaps there are intangible AMS benefits or benefits which have not yet been quantified which could be investigated in terms of what to measure and how they could be measured to advance research in this domain. For instance, perhaps AMS practices aid participants in defining their goals and sense of purpose, or towards a greater sense of calmness and serenity. AMS have been shown to change the way of perceiving, and conceivably in AMS a situation which was previously perceived as stressful while in TMS could then be perceived as manageable, however this and other aspects may be challenging to quantify and measure.

In addition, the impacts of AMS presumably extend into participants’ non-working hours, which also have impacts on their working life, thus perhaps it will be necessary to incorporate aspects of work-life balance or mediating factors, in order to obtain a more all-inclusive view of AMS within organisations.

Having presented possible research avenues to build upon in measuring AMS and its benefits, our next consideration relates to sustaining AMS.
8.2.5 AMS sustainability

In regards to the frequency and duration of sessions, both in length and number of sessions could be altered to explore which combination yields the greatest results. Indeed, while the results show that well-being and creativity are significantly raised as of the sixth session, and mindfulness was significantly raised as of the fifth session, the research could be further expanded over time to see to what extent these benefits are maintained, and what, if any ‘top-up’ would be necessary in order to sustain AMS benefits.

This research could explore at what point these new levels of well-being, creativity and mindfulness become integral as a new base-point for individuals, that is, at what point, if any, that alternate mindset states become traits. For instance, the two-phase Benson-Henry Protocol recommends daily 20-25 minute practice, of eliciting the relaxation response and visualization activity, for 8 weeks and for the practice to then be continued indefinitely as often as possible in order to maintain benefits (Benson 1975). In light of this, Kabat-Zinn suggests that implementing AMS practices over time becomes a way of living, or way of being, and thus the faculties and benefits that it brings become integral and lasting (1985).

Onwards, rather than merely seeking to maintain the level of benefits achieved, further research is merited to find ways of further increasing AMS benefits. Contemplative neuroscientist Davidson (2012) describes AMS states as becoming traits over time, meaning that new ‘set-points’ can be established, rather than returning to the same prior habitual mindset. Medium-term and long-term effects of continued practice likely exist, however most studies have been either short-term with novices or long-term with experienced AMS practitioners. Additional long-term studies with various levels of practitioners are warranted, not only with experts and novices but those at all levels of experience with AMS, such that the findings can be applicable for more general populations, while simultaneously showing effects over time.
8.2.6 Beyond the individual level

Up until present day a micro-level focus has dominated this domain, including this enclosed research, which is at the individual-level, however there exists for macro-level research, looking at organisation-wide and society-wide AMS benefits. On the macro-level, some researchers have explored impacts of one AMS technique, Transcendental Meditation (TM), to show decreased crime rates resulting from this meditation form by Hagelin and colleagues (1999) and others, yet with questionable results, as this and other macro-level impacts need to be studied rigorously by a quantitative social science.

An indication exists that decreased health care utilisation could result from increased extent of AMS amongst participants, however more robust evidence and findings are needed in this area, including in mental problems that manifest physically, such that health insurance companies and health care providers could consider transiting to incorporate meditation into their programs.

The experiments of this research involved individual assessment, showing that AMS techniques can increase well-being and creativity for individual participants. An important element for well-being involves social interactions, which were not assessed at a group or organisational level, given that participants report their individual experiences and interpretations. An added element for creativity and innovation enters with collaboration, which is needed for creativity, to allow for the blending of ideas. Group and organisational level interactions and collaboration presumably took place and augmented the results to some extent, which could be explored in further experiments.

Overall, it could be useful to incorporate measurement tools that involve interaction amongst employees, to see whether interaction and collaboration produce synergies that
amplify AMS benefits, and if, and how, society at large could be impacted by the implementation of AMS techniques within organisations.

8.2.7 Secular development blending science with contemplating traditions

Research fields related to AMS, including the emerging disciplines of positive psychology, affective neuroscience and contemplative neuroscience are responding to, and moving forward, the growing acceptance of, and openness to AMS activities, shifting away from the former emphasis on negative phenomenon within psychology. Further explorations are needed, such as regarding the propensity to cultivate AMS via various techniques, such as via meditation practices, notably, non-referential compassion AMS. This research and onward studies can add most value by remaining secular, melding science and religion, for which there is support for within some religions, for instance, the Dalai Lama adapting Buddhism to scientific findings.

Granted that the field of this research, which encompasses contemplative neuroscience and positive psychology, are relatively newer research domains compared with traditional management and psychology domains, these areas build upon centuries of knowledge, and are increasingly important because of the value they add in responding to contemporary issues in society and organisations. In addressing how secular applications of AMS-inducing techniques can be applied within organisations, science melds with religious traditions in ways that are organisationally-feasible, applicable and advantageous for all people.

In support of research progress in this domain, the current Dalai Lama, the 14th, the highest leader within Tibetan Buddhism, maintains that Buddhism will adapt to scientific findings, such that if there are traditions or beliefs that are shown by academic research to be
unfounded, they will be discarded or changed in order to be in parallel with modern science. Thus, future research in these domains can have profound impacts in narrowing the gap between science and religion, ultimately enhancing AMS practices and applications within organisations and beyond.

Understandably these nascent branches of organisational science and psychology encounter hesitation from some, as the research sometimes relies on novel and unconventional approaches or because some perceive the benefits to be intangible or the topic to be outside the realm of management science. However, with work stress, anxiety and depression having reached such high levels, and the clear potential of AMS in overcoming these workplace problems, these areas such as AMS-inducing mechanisms merit additional attention, and it seems worthwhile to explore implementing these techniques in organisations to bring the benefits to fruition.

In support of this notion, researchers including Saveland and Putnam call for incorporating AMS-inducing technique, ‘mindfulness-based situational awareness’ in daily training for firefighters, to enhance situational awareness—the intimate awareness of one’s surroundings on a moment-to-moment basis as a precursor to decision-making under stress—which has received growing attention in military contexts. Towards this, they instruct mindful breathing, walking, and body-scanning, and how mindfulness could be applied to any kind of physical activity, referring to this as mind-body fitness. However, they note the resistance from some organisations due to the stereotype of mindfulness as being esoteric, which needs to be changed so that the benefits of mental exercise are as apparent and accepted as those of physical exercise.

Greater integration of various research fields linked with AMS is needed, from medicine to psychology, biochemists, organisational behaviorists, together with management
scholars and other areas, for a more interdisciplinary approach moving beyond “neuro-centric research toward mind-brain-body integration” (Davidson 2012). Davidson further suggests that future research in this field would ideally blend with discoveries in contemplative neuroscience, including research on “naturally occurring” virtuous qualities, toward a scientific foundation of secular ethics, further studies within epigenetics, gene expression, research on contemplative practices other than meditation, such as intentions; and developing appropriate interventions and measures.

To understand and assess the role of meditations in benefitting organisations, focused, effective multidisciplinary and transdisciplinary teams that incorporate experience in contemplative practices with clinical and trial design strategies, behavioural and cognitive neuroscience, psychology, and to bridge these sciences with organisational behaviour and management science.

Onwards, reflecting on the Buddhist philosophy underlying many AMS practices, which emphasizes the importance of the four brahmavirhāras, these virtues to be cultivated, particularly sympathetic joy, are challenging to attain in the midst of a competitive research environment and competitive workplace environment. To propel research in this field forward there is a need to practice science and dhárma, meaning natural law, in unison. This necessitates humility, and non-attachment to outcome. Combining science and practice will require new training models and collaboration, that is, deep engagement with contemplatives and contemplative scholars.

Overall, growing focus must continue to be given to investigating healthy minds, notably in-group, altruistic pro-social behavior, as well as social and emotional intelligence.
9. **Conclusion**

We began this study by presenting state of the art research on alternate mindsets and their multitude of benefits. We proceeded with describing distinctions between traditional and alternate mindsets, how alternate mindsets can be accessed, and necessary conditions. Further on, we discussed the research on the organisationally feasible techniques for inducing AMS. These techniques included focused attention, in which one’s full concentration is given to a thought of object; open monitoring, where one is as an observer to passing thoughts and emotions that arise; and meditative movement, which incorporates the alignment of the body and the mind simultaneously. Then, we presented research on the individual, and then, on organisational benefits of AMS. The span of individual benefits range from ameliorated well-being, reduced stress and heightened perception. At the organisational level, the benefits documented in the research included improved teamwork and enhanced strategic planning ability.

As AMS benefits have not yet been fully explored with organisational settings, we introduced our conceptual model and research experiments to test impact of AMS mechanisms on well-being and creativity within organisations. Then we presented the main findings of these experiments along with a discussion of salient aspects related to the enhanced well-being, creativity and mindfulness, that is, extent of AMS cultivated in participants, evidenced at the three experimental locations. Next, we outlined organisational implications of these research findings. Finally, we described limitations encountered and promising avenues for future research.

The research experiments conducted for this research show how human potential can be enhanced by combining modern science with ancient wisdom. Recognising the accelerating pace of organisational change and intensified pressures of modern work settings, employee stress and suboptimal working environments pose significant threats to
organisations; it is of crucial importance to explore alternatives to alleviate the stress epidemic, both for the sake of employee health and well-being, and for the success of organisations, both short-term and long-term. Alternative mindsets have been shown to have great promise as a solution to alleviate stress and bring numerous benefits on the individual, group and organisational level.

Considering that employees spend more time at work during their working years than at any other activity, the workplace is a crucial place for AMS interventions. Further, given neuroplasticity, AMS can make lasting positive changes in the brain of organisational actors in a matter of weeks, even for those who have no prior experience with AMS activities. That is, both novices and experts of AMS practices benefit, making these activities potentially valuable for alleviating suffering (from stress, anxiety, depression and other mental disorders) and promoting human thriving within organisations.

Further explorations are needed; however, as shown from the experiments within, significant increases in well-being, creativity and mindfulness can result from as few as six sessions of twenty minutes practice of an organisationally-feasible way of bringing about AMS in participants. These findings, which span several geographical locations, and populations with wide age ranges, income and education levels, various occupations and backgrounds, have valuable applications within a broad range of organisations.

More than simply benefiting individuals, AMS have organisational implications including greater productivity and engagement, ultimately enabling enhanced organisational strategy, profits and success. Enhanced well-being, creativity and other AMS benefits on individual, group and organisational-levels have the potential to enhance organisations in areas ranging from greater innovative ability, competitive advantage, and stronger corporate citizenship. Yet, methodological issues and other limitations need to be overcome in order to strengthen findings within this field of research, and additional well-designed and rigorous
studies, particularly those applying AMS techniques within organisational settings, will advance research in this domain, allowing for greater understanding of AMS and beneficial applications of cultivating these types of mindsets.
References


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Other references without stated author:


Annex
Annex A. Letter/Email sent out/given in person to recruit companies for research study locations in Canada
To Whom It May Concern,

I wish to provide you with information regarding an empirical study which I am offering to provide within several companies in Vancouver, on ways to improve employee creativity and well-being:

Organisations today face increasing pressure to consistently develop new innovations and efficiencies while simultaneously maintaining a desirable work environment conducive to productive and motivated employees. The puzzle of how to master such challenges has been the focus of my doctoral research within the Department of Strategy, Organisational Behaviour and HR at ESCP Europe School of Business.

Extensive research has shown how bringing about a more broad and aware state of mind can bring a multitude of benefits to organisational actors, from improved performance, wider scope of perception, greater well-being and increased intrinsic motivation, as well as organisational level benefits including enhanced teamwork and competitive ability. Specifically within this field, my research explores how meditative techniques can be used to induce a state of mindfulness and awareness that could generate benefits to themselves and the organisations they are a part of.

In early 2011, I will be conducting an experiment within a few selected organisations to assess how meditative techniques (guided visualization, relaxation and deep breathing practices and focused concentration methods) practiced by employees could enhance their creative abilities and bring an increased sense of well-being among them.

Might you be interested to have these empirical studies take place within your organisation? It would involve having two groups of your employees be led through a 15 minute guided meditation or similar activity two mornings a week for several weeks, and approximately 5-10 minutes for them to assess its impacts on creativity and well-being. The sessions are provided free of charge to participants.

In addition, after the completion of a set of sessions, I can share my research findings in a summary report, if desired, to provide the main findings as well as observations and recommendations which may be valuable for your company.

Please feel free to contact me for further information by e-mail or phone, at 604-367-8218.

Best regards,

Marie Holm
Annex B. Letter/Email sent out/given in person to recruit companies for research study locations in France
Bonjour,

Je souhaite vous fournir des informations concernant une étude empirique que j’ai pu mener dans plusieurs entreprises à Paris, au sujet de l’amélioration de la créativité et du bien-être des employés.

Les organisations, aujourd’hui, font face à une pression croissante afin d’être plus innovantes et efficientes, tout en maintenant un environnement de travail adapté aux salariés. Le casse-tête pour maîtriser de tels challenges a été au cœur de ma recherche, effectuée au département Stratégie, Hommes et Organisations à l’ESCP Europe.

Des recherches sur le sujet ont montré qu’un plein état de conscience peut favoriser un nombre significatif de bénéfices pour les acteurs organisationnels, en termes de performance, de meilleure perception, de bien-être et d’accroissement de la motivation intrinsèque, ainsi qu’à des niveaux organisationnels, comme le travail en équipe et les compétences, de façon générale. Dans ce champ précis, ma recherche explore comment les techniques de méditation peuvent-être utilisées pour induire un état de conscience pouvant produire des bénéfices pour eux et l’organisation toute entière.

Au début 2012, j’ai conduit une expérience avec une sélection d’organisations pour mesurer comment les techniques de méditation (visualisation guidée, relaxation et respirations profondes et méthodes de concentration) pratiquées par les employés pouvaient améliorer leurs capacités de créativité et apporter un meilleur bien-être.

Seriez-vous peut-être intéressé d’avoir le même type d’expérience au sein de votre organisation ? Cela impliquerait d’avoir deux groupes d’employés pendant 15 minutes, où serait pratiqué ce type d’activité, deux matinées par semaine, d’une durée de cinq à dix minutes, afin de mesurer l’impact sur leur créativité et bien-être. Cela est gratuit.

De plus, je pourrai partager avec vous mes résultats de recherche à la fin de ces sessions, à travers un rapport, ainsi que des recommandations pour votre entreprise.

N’hésitez pas à me contacter, par email ou téléphone, pour de plus amples informations.

Cordialement,

Marie Holm
Annex C. Newsletter/Email sent to recruit participants for studies at City Hall and Aleph (the below was one that was sent out a set at City Hall, for which Aleph staff received a similar message with different dates)
Subject: Interested to participate in a research study about learning and cognition?

Hello,

Might you be interested to participate in a research study that will be taking place on-site at Vancouver City Hall?

This scientific study looks at how certain stimulations and other techniques impact learning and cognitive processes. It is being offered during the month of March and again in April, two mornings a week from 8:00-8:20 am, for a limited number of participants.

Duration: 4 week commitment, from March 7th to March 31st or April 4th to May 2nd, your choice.

Individual follow-up will be provided to assess the impact of the techniques within the work setting.

Location: On-site. Details will be provided to participants

Contents: Mental exercises and psychological tests

How to register: Contact Marie at 604-367-8218 or by email at marieholm@escpeurope.eu

Best regards,

Marie Holm, PhD Candidate

ESCP Europe School of Business
Annex D. Email sent to recruit participants for studies at ESCP Europe (this is one that was sent for a set of morning sessions prior to start of workday)
Sujet: Séances matinales gratuites de méditation à ESCP Europe

De la part de Marie Holm, étudiante en PHD à ESCP Europe :

Séances matinales gratuites de méditation à ESCP Europe - Hors temps de travail

Marie Holm, dans le cadre de sa recherche doctorale, invite le personnel de ESCP Europe à s'inscrire à deux sessions de méditation proposées deux matins par semaine de 8 h 30 à 8 h 50 ou de 9 h à 9 h 20, d'une durée totale de 8 séances.

Lors de chaque session de méditation, les participants devront remplir des questionnaires courts afin d'évaluer l’impact de la méditation sur une journée de travail. Les données relevées contribueront ensuite aux recherches dans le domaine de la psychologie du management.

Dates des séances :

- tous les lundis et mercredis de 8 h 30 à 8 h 50 ou de 9 h à 9 h 20, 8 séances, à partir du 12 mars
- tous les mardis et jeudis de 8 h 30 à 8 h 50 ou de 9 h à 9 h 20, 8 séances, à partir du 13 mars

Pour plus de détails ou pour vous inscrire, veuillez contacter Marie au 07 70 75 59 10 ou par mail à marieholm@escpeurope.eu

Cordialement

Marie Holm
Annex E. Consent form signed by participants at City Hall and Aleph prior to commencing the research experiment
CONSENT FORM

CONSENT TO PARTICIPATE IN RESEARCH

You are asked to participate in a study conducted by Marie Elisabeth Holm, as part of her PhD research at ESCP Europe School of Business.

PURPOSE OF THE STUDY

to assess the impact of various mental techniques on learning and cognition.

PROCEDURE

If you volunteer to participate in this study, we would ask you to do the following things:

Attend two morning on-site sessions a week for the duration of the study from 8:00am to 8:20am.
Prior to the sessions, outline current business challenges/problems that you face, via email or phone.
Completion of short questionnaires after each session and at day end.
Brief follow-up at end of work day or evening, via email or phone, to assess potential solutions to some of your business challenges.

A follow-up session can be provided if desired in order to debrief the experiences related to the experiment. Research findings will be available to participants upon request following the completion of the data analysis and interpretation of results.

CONFIDENTIALITY

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study.

RIGHTS OF RESEARCH PARTICIPANTS

If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don’t want to answer and still remain in the study.

You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research participant, contact:

SIGNATURE OF RESEARCH PARTICIPANT

I have read the information provided for the study as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Name of Participant (please print)

__________________________________________
Signature of Participant

__________________________________________
Date
Annex F. Questionnaire for measuring well-being before session start: Satisfaction with Life Scale (Diener 2006)
Satisfaction with Life (Beginning of work day)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item.

1  Strongly disagree
2  Disagree
3  Slightly disagree
4  Neither agree nor disagree
5  Slightly agree
6  Agree
7  Strongly agree

In most ways my life is close to my ideal.
Strongly disagree  1    2    3    4    5    6    7    Strongly agree

The conditions of my life are excellent.
Strongly disagree  1    2    3    4    5    6    7    Strongly agree

I am satisfied with my life.
Strongly disagree  1    2    3    4    5    6    7    Strongly agree

So far I have gotten the important things I want in life.
Strongly disagree  1    2    3    4    5    6    7    Strongly agree

If I could live my life over, I would change almost nothing.
Strongly disagree  1    2    3    4    5    6    7    Strongly agree
Annex G. Questionnaire for measuring well-being at end of day: Satisfaction with Life Scale (Diener 2006)

Name: ______________________

Satisfaction with Life (End of work day)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item.

1 Strongly disagree
2 Disagree
3 Slightly disagree
4 Neither agree nor disagree
5 Slightly agree
6 Agree
7 Strongly agree

So far I have gotten the important things I want in life.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

The conditions of my life are excellent.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

If I could live my life over, I would change almost nothing.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

I am satisfied with my life.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree

In most ways my life is close to my ideal.
Strongly disagree 1 2 3 4 5 6 7 Strongly agree
Annex H. Questionnaire for measuring well-being before session start: Satisfaction with Life Scale (Diener 2006), French version
Nom: ____________________

Satisfaction dans la vie

Voici cinq déclarations avec lesquelles vous pouvez être en accord ou en désaccord.

Sur une échelle allant de 1 à 7, indiquez votre niveau d’adhésion en entourant un nombre.

1   Fortement en désaccord
2   En désaccord
3   Légèrement en désaccord
4   Ni d’accord ni en désaccord
5   Plutôt d’accord
6   D’accord
7   Tout à fait d’accord

En général, ma vie est proche de mon idéal.

En désaccord   1   2   3   4   5   6   7   Tout à fait d’accord

Mes conditions de vie sont excellentes.

En désaccord   1   2   3   4   5   6   7   Tout à fait d’accord

Je suis satisfait de ma vie.

En désaccord   1   2   3   4   5   6   7   Tout à fait d’accord

Jusqu’à présent, j’ai obtenu les choses importantes que je veux dans la vie.

En désaccord   1   2   3   4   5   6   7   Tout à fait d’accord

Si je pouvais recommencer ma vie je ne changerai presque rien.

En désaccord   1   2   3   4   5   6   7   Tout à fait d’accord
Annex I. Questionnaire for measuring well-being before session start: Satisfaction with Life Scale (Diener 2006), French version
Nom:_____________________

Satisfaction dans la vie

Voici cinq déclarations avec lesquelles vous pouvez être en accord ou en désaccord.

Sur une échelle allant de 1 à 7, indiquez votre niveau d'adhésion en entourant un nombre.

1   Fortement en désaccord
2   En désaccord
3   Légèrement en désaccord
4   Ni d'accord ni en désaccord
5   Plutôt d'accord
6   D'accord
7   Tout à fait d'accord

Jusqu'à présent, j'ai obtenu les choses importantes que je veux dans la vie.

Fortement en désaccord   1   2   3   4   5   6   7   Tout à fait d'accord

Mes conditions de vie sont excellentes.

Fortement en désaccord   1   2   3   4   5   6   7   Tout à fait d'accord

Si je pouvais recommencer ma vie je ne changerais presque rien.

Fortement en désaccord   1   2   3   4   5   6   7   Tout à fait d'accord

Je suis satisfait de ma vie.

Fortement en désaccord   1   2   3   4   5   6   7   Tout à fait d'accord

En général, ma vie est proche de mon idéal.

Fortement en désaccord   1   2   3   4   5   6   7   Tout à fait d'accord
Annex J. Questionnaire for measuring extent of AMS following session before starting/resuming work: Mindful Awareness Attention Scale (MAAS, Brown & Ryan, 2003)
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>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost Always</td>
<td>Very Frequently</td>
<td>Somewhat Frequently</td>
<td>Somewhat Infrequently</td>
<td>Very Infrequently</td>
<td>Almost Never</td>
</tr>
</tbody>
</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

I find myself listening to someone with one ear, doing something else at the same time. 1 2 3 4 5 6

I go places on ‘automatic pilot’ and then wonder why I went there. 1 2 3 4 5 6

I find myself preoccupied with the future or the past. 1 2 3 4 5 6

I find myself doing things without paying attention. 1 2 3 4 5 6

I snack without being aware that I’m eating. 1 2 3 4 5 6
Annex K. Questionnaire for measuring extent of AMS following session before starting/resuming work: Mindful Awareness Attention Scale (MAAS, Brown & Ryan, 2003), French version
Expériences quotidiennes

Instructions: Vous trouverez ci-dessous une liste d'expériences que vous pouvez vivre au quotidien. En utilisant l'échelle 1-6 ci-dessous, pouvez-vous, s'il vous plaît, indiquez selon quelle fréquence vous vivez chaque expérience. Essayez de répondre en vous rapprochant le plus possible de la réalité et non pas en fonction de ce qu'il vous semblerait bon de faire. S'il vous plaît traitez chaque élément indépendamment les uns des autres.

1  Presque 2  Très 3  Plutôt 4  Plutôt 5  Très 6  Presque
Toujours  Souvent  Souvent  Rarement  Rarement  Jamais

Je pourrais être victime d'une émotion et ne pas en être conscient quelque temps plus tard. 1 2 3 4 5 6

Je casse ou renverse des choses par négligence, manque d'attention ou de concentration. 1 2 3 4 5 6

Je trouve qu'il est difficile de rester concentré sur ce qui se passe dans le présent. 1 2 3 4 5 6

J'ai tendance à marcher vite pour arriver là où je vais sans faire attention à ce que je ressens le long du chemin. 1 2 3 4 5 6

J'ai tendance à ne pas remarquer les sensations de tension physique ou d'inconfort lorsqu'elles sont difficilement perceptibles. 1 2 3 4 5 6

J'oublie le nom d'une personne presque aussitôt après qu'on me l'ai dit. 1 2 3 4 5 6

Il me semble que je suis en "pilote automatique" sans avoir conscience de ce que je suis en train de faire. 1 2 3 4 5 6

Je m'adonne à des activités sans vraiment m'investir. 1 2 3 4 5 6

Je suis tellement concentré sur l'objectif que je veux atteindre que je perds le contact avec ce que je suis en train de faire pour y arriver. 1 2 3 4 5 6

Je travaille ou effectue des tâches sans être conscient de ce que je fais. 1 2 3 4 5 6

Je me retrouve à écouter quelqu'un d'une oreille, en faisant autre chose en même temps. 1 2 3 4 5 6

Je vais dans certains endroits en "pilote automatique" en me demandant ensuite pourquoi je suis allé en là-bas. 1 2 3 4 5 6

Je suis préoccupé par l'avenir ou le passé. 1 2 3 4 5 6

Je me retrouve à faire les choses sans y prêter attention. 1 2 3 4 5 6

Je grignote sans être conscient du fait que je mange. 1 2 3 4 5 6
Annex L. Message sent out to participants for preparatory session for research studies measuring creativity and response to preparatory session for research studies measuring creativity notifying participants of selected challenge.
Dear [Participant name inserted]

Re: Preparation for Sessions

Thank you for volunteering to participate in a series of eight sessions. Prior to commencing, we’d like to obtain the following input from you:

Please list several major challenges or problems that you are currently facing at work and send to marieholm@escpeurope.eu

If you need clarification or prefer to explain over the phone, please phone Marie at 604-367-8218 prior to 10pm or reply via email with contact information and desired time range.

Sincerely,

Marie Holm
Dear [Participant name inserted]

Re: Preparation for Sessions

We received your responses and appreciate your effort and time.

From the challenges that you described, we have selected one of them for you to please focus on for the purposes of the research study:

[Insert selected challenge of individual participant]

At the end of the day following your session, we will be requesting for you to provide what solutions you came up with the address and overcome these challenges, and also to note at what point during the day (before or after the session, while you were working, or while reporting your responses).

Thank you in advance. Let me know via phone, email or in person if you have any questions or further feedback.

Regards,

Marie Holm
**Annex M.** End-of-day feedback report for research studies measuring creativity.
Dear [Participant name inserted]

Re: Follow-up on reported challenges

Thank you for providing several of the challenges that you are encountering during your work.

As a follow-up to the session, would you please reply describing:

1) What solutions came to mind for how these challenges can be overcome?

2) When did these ideas come to mind: In the morning before/after the session, during the day, or now, while recording them?

You may phone me, at 604-367-8218, if anything is unclear or if you would rather describe your answers over the phone than in writing. Please insure that your responses are received at the end of your work day. I appreciate your time and consideration.

Best regards,

Marie Holm
Annex N. Adjective Checklist (ACL, Gough & Heilbrun, 1980) on 2 pages
The Adjective Check List

By Harrison G. Gough, Ph.D.

Name: ____________________________

Gender: □ Male □ Female

Directions: This answer sheet contains a list of 300 adjectives. Please read through them quickly and place a mark beside each one you would consider to be self-descriptive. Do not worry about duplications, contradictions, and so forth. Work quickly and do not spend too much time on any one adjective. Try to be frank, and place a mark beside the adjectives which describe you as you really are, not as you would like to be. Be sure to continue through adjective number 300.

<table>
<thead>
<tr>
<th>No.</th>
<th>Adjective</th>
<th>No.</th>
<th>Adjective</th>
<th>No.</th>
<th>Adjective</th>
<th>No.</th>
<th>Adjective</th>
<th>No.</th>
<th>Adjective</th>
<th>No.</th>
<th>Adjective</th>
</tr>
</thead>
<tbody>
<tr>
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<td>absent-minded</td>
<td>36</td>
<td>cold</td>
<td>71</td>
<td>dreamy</td>
<td>106</td>
<td>hard-headed</td>
<td>141</td>
<td>lazy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>active</td>
<td>37</td>
<td>commonplace</td>
<td>72</td>
<td>dull</td>
<td>107</td>
<td>hard-hearted</td>
<td>142</td>
<td>lersely</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>adaptable</td>
<td>38</td>
<td>complaining</td>
<td>73</td>
<td>easy-going</td>
<td>108</td>
<td>hasty</td>
<td>143</td>
<td>logical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>adventurous</td>
<td>39</td>
<td>complicated</td>
<td>74</td>
<td>effeminate</td>
<td>109</td>
<td>headstrong</td>
<td>144</td>
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<tr>
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<td>110</td>
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<td>111</td>
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<td>146</td>
<td>mannerly</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>77</td>
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Annex O. Creativity Scale (Domino, 1970), 59 selected adjectives of the 300 Adjective Checklist
absentminded
active
adaptable
adventurous
alert
aloof
ambitious
argumentative
artistic
assertive
autocratic
capable
careless
clear-thinking
clever
complicated
confident
curious
cynical
demanding
disorderly
dissatisfied
distractible
degotistical
energetic
enthusiastic
humorous
hurried
idealistic
imaginative
impulsive
independent
individualistic
industrious
ingenious
insightful
intelligent
interests wide
intolerant
inventive
logical
moody
original
outspoken
quick
rational
rebellious
reflective
reserved
resourceful
restless
sarcastic
self-centered
sensitive
serious
sharp-witted
spontaneous
tactless
unconventional
Annex P. Post-intervention letter sent to each participant following the completion of their involvement in a research study, English and French versions
Dear [Insert Name of Participant],

I would like to thank you for your participation in the research study on how various mental techniques impact learning and cognitive processes. To give you some additional information now that the research study is completed, the purpose of this study is to explore the impact of meditative techniques on levels of employee well-being, creativity, and mindfulness.

The data collected from the questionnaires, responses and feedback that you provided will contribute to a better understanding of how contemplative practices could be best implemented in workplaces in order to provide optimal benefits for employees and organisations overall. Please remember that any data pertaining to you as an individual participant will be kept confidential. Once all the data are collected and analyzed for this project, I plan on sharing this information with the research community through seminars, conferences, presentations, and journal articles.

If you are interested in receiving more information regarding the results of this study, or would like a summary of the results, please let me know, and when the study is completed I will send you the information. In the meantime, if you have any questions about the study, please do not hesitate to contact me at marieholm@escpeurope.eu

Sincere regards,

Marie Holm

PhD Candidate, Department of Strategy, HR and Organisation

ESCP Europe School of Business, 79 avenue de la République, 75011 Paris, France
Cher/Chère [Insérer le nom du participant],

Je vous remercie pour votre participation à l’étude sur la manière dont les techniques mentales influencent l’apprentissage et les différents processus cognitifs. Maintenant que l’étude est terminée, je souhaitais vous donner quelques informations complémentaires. Le but de cette étude est d’explorer l’impact des techniques de méditation sur l’état de bien-être des employés.

Les données recueillies à partir des questionnaires, les réponses et les commentaires que vous avez fournies contribueront à une meilleure compréhension de la façon dont les pratiques contemplatives pourraient être mieux mises en œuvre sur le lieu de travail, afin d’offrir des conditions de travail optimales aux salariés et aux organisations.

Soyez sûr que toutes les données qui vous concernent en tant que participant seront gardée confidentielle. Une fois que toutes les données auront été analysées, j’ai l’intention de partager ces informations avec la communauté de recherche, à travers des séminaires, conférences, présentations et articles dans des revues académiques.

Si vous souhaitez recevoir davantage d’informations sur les résultats de cette étude, ou bien un résumé des résultats, n'hésitez pas à me le faire savoir. En attendant, si vous avez des questions au sujet de l'étude, je suis à votre disposition: marieholm@escpeurope.eu

Bien cordialement,

Marie Holm
PhD Candidate, Département SHO
ESCP Europe, 79 avenue de la République, 75011 Paris, France