

Cultivating alternate mindsets to enhance organisational Well-being and creativity

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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. 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. Alternative mindsets were primarily explored for their 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 three organisations, measuring well-being and creativity, consisting of eight 20 minute mindfulness meditation sessions, with a "placebo" relaxation technique for control groups.

Statistical analysis showed significant increase in well-being and creativity for experimental compared to control groups as of six sessions. As AMS organisational benefits span from enhanced well-being and creative production, as our experiments show, to potentially higher employee engagement, health and relaxation, AMS could potentially aid in minimizing occupational stress.

Introduction

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 characterised 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 (e.g. 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.

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 and what potential benefits and organizational applications could be implemented.

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.

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, 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?

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 practices 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.

Other research literature from this domain connects workplace spirituality and meditation with productivity, encouraging the utilisation of AMS practices. 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. Perhaps management research on AMS and spirituality can challenge traditional models of doing business, bringing a focus on compassion in addition to self-interest.

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-operation between firms could align corporate values with spiritual practices. For that to happen, it is likely that the gap between academic research and organisational practices will need to narrow for research findings to be practically applied.

In summary, the notion of 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.

Theory

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

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 developing higher levels of consciousness, a parallel notion to our research exploration of

developing alternate mindsets, can enhance effectiveness, problem solving capabilities and bring greater self-fulfillment within organisational settings.

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 and potential AMS organisational benefits. These include psychology, organisational science and cognitive neuroscience, 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 field. To begin with, Sedlmeier and his colleagues (2012) in a meta-analysis 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 Eastern 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.

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 relay how enhanced performance and a sense of fulfillment can 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 can correspond to improvements in how one makes decisions and implements them. In a similar vein, Gardner (2004) offered a framework for changing one's mindset to enhance 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—which focuses on learning, as opposed to a fixed mindset—and how it enhances performance and achievements.

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.

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. Further, Luders (2009) found that the brain continues to change during one's lifetime thus indicating the potential 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. Overall, these lines of research indicate that the brain's structure and function are changeable, giving 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, characteristic of AMS. Further, Lagopoulos and associates (2009) outlined several studies which have evidenced changes in spectral band frequencies during meditation. Similarly, Halsband and associates (2009) showed 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 to 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, 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, a prominent AMS technique, was effective in relieving pain by reducing the brain's emotional response to painful stimuli. 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 - allowing us to propose within our model that various mechanisms can induce AMS.

Accessing mindfulness

AMS have been explored within psychology and other domains in the context of mindfulness. Mindfulness, a well-researched AMS, is defined by Langer (1989) as an ever-ready state of mind that is alert, open to new perspectives and information. Similarly, Baer and colleagues (2006) define 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. Onwards, Jha and associates (2010) present mindfulness as 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 'paying attention, on purpose, in the present moment, non-judgmentally' (2002). Overall, the literature on entering a mindful mindset is parallel to entering AMS. Next, we explore how another prominent AMS, flow, can be accessed.

Accessing flow

AMS have been explored within psychology in the context of flow states. The researcher who created the notion of flow, Csíkszentmihályi (1975) defines it as a holistic sensation felt when one is fully involved in what they are doing -- similar to 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, Csíkszentmihályi and LeFevre (1989) discussed how subjects accessing flow feel

relaxed and motivated and in a positive frame of mind, such as in AMS. Next, we describe how positive mindsets, another type of AMS, can be accessed.

Accessing a positive mindset

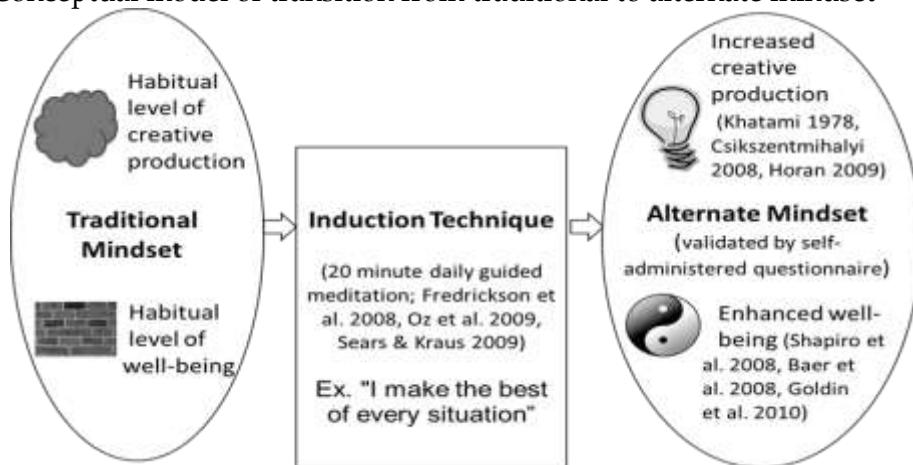
Accessing AMS has been explored within the domains of positive psychology and organisational science, as a way of enhancing individual and organisational performance. First, Quinn (1990) showed how accessing a state of mind that is results-centered, internally directed, focused on others and externally 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 and implements decisions. Further, Gardner (2004) offered a framework for changing one's mindset, and the impacts of 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. Thus, the growing field of positive psychology can add to the understanding and exploration of AMS, as it bridges humanistic with mainstream psychology. We now proceed to describe our conceptual model.

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. Over time, AMS has the potential to become a regular state of mind.

Specifically, we propose introducing a bi-weekly meditative practice into organisations, a psychological mechanism evidenced in research literature to induce an alternate mindset (AMS). As a result of shifting from a traditional mindset (TMS), 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 shows these two mindsets and their connecting psychological mechanism:

FIGURE 1: Conceptual model of transition from traditional to alternate mindset



The conceptual model describes the transition from the traditional mindset, a habitual way of being that typifies the mode of consciousness having 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 psychological transition (guided mindfulness meditation, chosen for its organisational feasibility) is practiced individually to bring about a shift to an alternate mindset. We next explain the concept of mindset.

Mindset refers to frame of mind, one's outlook or perspective, a mental model or mentality, alternatively, an emotional disposition. 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, a mindset is a characteristic state, and not a trait. 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, to improve how experiences are perceived and handled. After discussing the concept of mindset, we turn to the discussion of the traditional and alternative mindsets.

Traditional mindsets defined and characterised

Prior to studying the transition from a traditional mindset to an alternate mindset, we define and characterise traditional mindsets, which, like alternate mindsets exist within a range on a continuum that connects these two groupings of mindsets. 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. TMS is an active though slightly anxious mode, although the anxiety can seem temporarily exciting and pleasurable. Next, we define and characterise alternate mindsets.

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, and 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.

Neuropsychological substrates of traditional and alternate mindsets

For neuropsychology research studies, it is apparent that the brain is modifiable. Regarding the neurophysiology of alternate mindsets, Davidson et al. (2007) suggest that humans possess an innate potential for directing attention. Next, Brewer and colleagues (2011) describe how meditation quiets brain regions in the default mode network. Overall, alternate mindsets are evidenced to have distinct neuropsychological substrates from traditional mindsets. We now proceed to describe benefits of alternate mindsets.

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 are more engaged and experience greater fulfillment. In a similar

vein, Sinclair and Ashkanasy (2005) showed 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). 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.

Lastly, a fourth type of individual benefits is better judgment in problem-solving. For example, Simon (1947) found that while in AMS, people have an increased willingness to make decisions when all the facts are not available, which is beneficial for decision-making in organisational situations with incomplete information. Next, Blattberg and Hoch (1990) pointed out that AMS allows one to judge when normative analyses break down. Further, Dane and Pratt (2007) showed AMS allow for affectively charged judgments that arise through rapid, non-conscious, and holistic associations. Finally, Ericson (2010) showed how AMS allows organisational actors to conceptualize a broader view of strategic decision making, leading to enhanced sense-making. Overall, this diverse research indicates that AMS bring individual benefits in terms of better judgment and sense-making. We turn now to organisational benefits.

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 Osbaliston (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,

improves global business strategy and develops effective global leadership. Overall, AMS 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. After discussing several key concepts related to our model we turn now to presenting our hypotheses.

Hypotheses

Each variables' interaction with sessions for experimental compared to control groups:

Levels of employee well-being. Our first three hypotheses evaluate levels of the first dependent variable, well-being.

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

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

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

Levels of creativity: The three hypotheses relate to the second dependent variable.

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

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

Hypothesis 6: Difference in creativity (End-of-day minus start-of-day) will increase over the duration of the sessions

Cultivation of alternate mindsets: In addition, we posit that mindfulness will grow.

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

Having presented our hypotheses that we seek to explore in relation to research literature, we proceed to our research methodology.

Methods

Participants

A letter offering the research study was sent to 19 organisations in Canada and 17 in France. Three organisations accepted hosting the research study - 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 email. Willing – self-selected – employees were invited to contact the researcher directly. Each participant signed up for eight bi-weekly sessions.

Procedure

The experimental procedure, including which self-reported questionnaires were completed, is summarised below in Table 1.

Table 1: Interventions for measuring well-being and creative production

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

Having briefly presented our methodology, we move to outlining our research findings in light of our hypotheses.

RESULTS

Statistical model selection

All models included the following predictors: sessions (1 to 8), condition (experimental versus control) and interaction between sessions and condition. Akaike Information Criterion (AIC) was used to compare models including random effects with models with only fixed effects to discover whether context affected the experiment or not, as reported in Table 2.

Table 2

Fixed and random effects models comparisons using AIC

	Fixed effect Model AIC	Random effect Model AIC
Start-of-day Well-Being	1805.64	1826.83
End-of-day Well-Being	1821.46	1819
Start-of-day Creativity	2295.85	2315.26
End-of-day Creativity	2277.19	2298.12
Average Creativity	994.44	1632.75
Mindfulness (extent of AMS)	1569.34	1573.85

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.

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.

Predicting well-being, creativity and mindfulness

The estimates of the models are reported in Table 3.

Table 3

Estimates of the GLMs predicting morning well-being, afternoon well-being, morning and afternoon creativity, average creative production evaluation and mindfulness

	Start-of-day well-being	End-of-day well-being	Start-of-day creativity	End-of-day creativity	Average creative production	Mindfulness
Session	-0.02	.01	-0.01	0.01	0.01	0.00
Condition (Exp.)	-0.42*	-.32	-0.82	0.82	0.07	0.01
Session: Condition (Exp.)	0.13***	0.10***	1.03***	1.20***	0.14***	0.12***

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

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 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 session variable and 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.

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 remained for the following remaining sessions.

For start-of-day well-being, end-of-day well-being, mindfulness and average creativity, the interaction was significant as of the sixth session. For 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 and end-of-day well-being, mindfulness and average creativity was significant as of the sixth session. The effect of the experimental condition on start and end-of-day creativity was significant as of the fifth session.

Predicting the increase of well-being between start-of-day and end-of-day

Increases in well-being (end-of-day minus start-of-day) and creativity (end-of-day minus start-of-day) were introduced as dependent variables in two GLM. The predictor variables were: condition (Experimental versus Control), session (session 1 through session 8) and interaction between the two variables. Estimates of these GLM are reported in Table 4.

Table 4 Estimates of the GLMs predicting increases in well-being creativity

	Well-being increases	Creativity increases
Session	0.03	0.02
Condition (Experimental)	0.46***	1.65**
Session: Condition (Experimental)	0.00	0.18

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

The results suggest that both the increases of well-being and creativity are significantly higher in the experimental condition than in the control condition within each session day.

Discussion of Results

As the above presented statistical results show, as of six experimental session, significant increases in well-being, creativity and mindfulness. Support was found for each hypothesis as outlined here.

Levels of employee well-being

Hypothesis 1: Results indicate that the cumulative positive effect on start-of-day well-being is significantly stronger in the experimental than control conditions as of session six.

Hypothesis 2: Results indicate that the cumulative positive effect level of end-of-day well-being is significantly stronger in the experimental than control conditions as of session six.

Hypothesis 3: Results indicate that the daily improvement in well-being is significantly stronger in the experimental condition than the control condition.

Levels of creativity

Hypothesis 4: Results from both tests of creativity levels indicate that the cumulative positive effect of sessions on start-of-day creativity is significantly stronger in the experimental condition than in the control condition as of the fifth session.

Hypothesis 5: 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: 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. 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).

Cultivation of alternate mindsets

Hypothesis 8: Results indicate that the daily improvement in level of mindfulness is significantly stronger in the experimental condition than the control condition as of session six.

We now move to discussing key organisational implications resulting from our significant findings in regards to heightened well-being and creativity from alternate mindsets.

Organisational Implications

We now transition to explaining the implications of our research findings, firstly those resulting from enhanced well-being and then from enhanced creativity.

Impacts of increased workplace well-being

Our experiments show a significant improvement in well-being levels resulting from implementing AMS mechanisms in the workplace, leading to organisational benefits including enhanced productivity and pro-social behavior.

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 (Gallup Poll 2006). 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. Thus, AMS enable higher productivity and performance.

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 AMS benefit of enhanced well-being extends beyond the individual - of being more empathic, satisfied and engaged at work - to enhance organisations.

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.

Impacts of increased workplace creativity

Maximising employee creativity through AMS mechanisms has substantial potential value for organisations. Creativity can be seen as applied imagination, the process of having valuable original ideas, and innovation can be seen as putting good ideas into practice. Given that many individuals and workplaces typically operate in TMS, active imagination may be inadvertently discouraged and new ideas may be rejected. AMS mechanisms could enable the expression creative potential, leading to optimal organisational innovation and strategy.

Here, we address two potentially valuable categories of organisational implications of enhanced creativity resulting from AMS – technical innovation and intrapreneurship.

Technical innovation. The enhanced creative production resulting from AMS could benefit firm performance by improving technical innovation. To begin with, Torrance (1959) explained the serendipitous nature of technical innovation 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. In support of this, Robinson and Stern (1998) state that firms' creative potential is typically greater than their creative performance. These researchers, along with Torrence, also emphasise that creativity tends to occur in unplanned and unexpected ways. Along this vein, Getz and Robinson (2003) propose implementing processes for managing ideas (SMI), that `use of an entirely different process than a traditional suggestion scheme`. AMS techniques respond to this need, enabling corporate creativity as an open system to which all employees can contribute, and derive a sense of meaning, given a suitable workplace environment.

Thus, enhanced technical innovation can result from boosted creativity resulting from AMS techniques. Now we address a second factor of how increased employee creativity from AMS techniques impact organisations- improved intrapreneurship.

Intrapreneurship. Intrapreneurship is defined by Shabana (2010) as internal entrepreneurship, that is, employees using their creative ideas and entrepreneurial skills towards devising and implementing innovation. Also referred to as corporate entrepreneurship, intrapreneurship utilises creativity 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 by strengthening self-regulation improve social skills, self-awareness and other necessary components of

intrapreneurship. AMS techniques can provide impetus for greater intrapreneurial activity by uncovering innate creative potential via a mindset that enables maximal use of creative ability.

In sum, organisational outcomes are optimised as a result of increased well-being and creativity from cultivating AMS, through enhanced work performance and other factors.

Limitations

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.

Motivation to participate

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. 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).

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.

Future research

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 methodological limitations described above, supplement significant findings and advance potential applications. We begin our discussion of future research possibilities with possible replications and adaptations.

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, to strengthen the ecological validity of results and have sufficient data to make demographic comparisons and/or (2) additional AMS benefits, 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).

Conclusion

Recognising the accelerating pace of organisational change and intensified pressures of modern work settings, alternative mindsets have great promise for bringing numerous benefits on the individual, group and organisational level. More than simply benefiting individuals, AMS have organisational implications including greater productivity and engagement, ultimately enabling greater innovative ability and competitive advantage.

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.

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