Effect of Meditation of Self-Perception of Leadership Skills: A Contol Group Study of CEOs

Amar, A., Hlupic, V. and Tamwatin, T.

This is an electronic version of a paper presented at the *Academy of Management Conference 2014,* Philadelphia, USA, 1 to 5 Aug 2014.

EFFECT OF MEDITATION ON SELF-PERCEPTION OF LEADERSHIP SKILLS: A CONTROL GROUP STUDY OF CEOs[1]

Abstract

Using self-perception of leadership skills (SPLS) instrument, constructed from Leader Practice Inventory (LPI) and Moral Competence Inventory (MCI) and validated with a pilot study (N=20), we conducted a randomized pretest-posttest control group study for a period of 12 weeks in a laboratory setting to learn the effect of mindfulness meditation (MM) in its secularized Vipassana form on senior managers (N=64) selected from a sampling frame of companies registered in London. The effect was measured on five components of leadership: *leader as a role model*, *inspiring a shared vision*, *demonstrating moral intelligence*, *enabling others to act*, and *encouraging the heart/motivating*, individually and collectively as a bundle. We found that meditation statistically significantly enhanced participants' self-perception of leadership skills as a bundle of all five skills, and the individual skills of *inspiring a shared vision*, *demonstrating moral intelligence*, and *encouraging the heart/motivating*. However, meditation did not statistically significantly enhance participants' skills *as a role model* and *enabling others to act*. Complete analyses with directions for further research are provided.

A large number of studies document psychological and physiological benefits of practicing meditation or mindfulness meditation (MM) (see, for example, Kabat-Zinn et al. (1998), Gallantino *et al*, (2005), Anderson et al., (2008), and Chan and Woollacott, (2007)). Researchers link it to relief from anxiety, depression, and pain (Goyal, et al, 2014), stress reduction

[1] To not exceed the page limit of 40, following the advice of the Division Chair, we have cut out some references. Readers may ask the corresponding author to receive those references.

(McLaughlin, 2005), increased concentration (Goleman, 1998), higher emotional intelligence (EI) (Goleman, 1995, 2003; Davidson *et al,* 2003; Lutz *et al*, 2004; Walsh Shapiro, 2006), improved consciousness (McLaughlin, 2005; McCollum, 1999; Harung et al., 1995), enhanced psychological capacities (Goleman, 2003; Davidson et al., 2003; Lutz et al., 2004; Walsh & Shapiro, 2006), better attention (Murphy & Donovan, 1997; Cahn & Polich, 2006; Walsh & Shapiro, 2006), equanimity (Goleman, 2003; Walsh & Shapiro, 2006), and motivation (Davidson & Harrington, 2002; Walsh & Shapiro, 2006).

There have also been several studies that show the benefit of MM to cognitive processes that impact task performance. According to Ellis and Ashbrook (1988) MM teaches one to disengage from a negative stimulus and return to more effective cognitive function for task at hand. It has been known that MM allows one to psychologically distance oneself from one's feelings, bringing one to a balanced emotional state (Kabat-Zinn, 1990). Brown and Ryan (2003) show that those who practice MM have higher concordance between implicit and explicit emotional states. Hayes and Wilson (2003) find that it promotes behavioral flexibility due to a decentered perspective which casts subjective experiences as transient and not as permanent outcomes of the self (Teasdale, 1999; Teasdale et al., 1995). Ortner, Kilner & Zelazo (2007) conducted studies that show that MM reduced emotional interference from unpleasant events, effectively prolonging reactivity to negative emotional stimuli. Tamwatin, Hlupic and Amar (2013) conducted empirical experiments linking meditation to higher levels of emotional intelligence in senior managers.

Meditation entered the business world during the 1990s, where managers of different religious faiths believed that it can add value to the work they do (McCormick, 1994; Wachholtz & Pargament, 2005). As a result, many companies, such as General Mills, Google, and Target, allow their employees to engage in organized sessions of meditation during their work hours and believe it to be having a beneficial effect (Gelles, 2012). General Mills, for example, allows

executives leading the company in areas such as product development, marketing, litigation, mergers and acquisition, and regulation to engage in meditation for "steeling their minds for the work week ahead" (Gelles, 2012).

While businesses are jumping on the meditation bandwagon, there is not enough evidence from scientific research of the effect of meditation on manager's leadership skills. A review of meditation literature indicates that more than 600 research studies have been conducted at over 250 universities in 30 countries (Chalmers, 2009), but academic journal research articles documenting effect of meditation on leader behavior or performance are rather nonexistent. The experiments reported in some journal articles on meditation are described as 'poor-quality studies' (Chiesa, 2010: 37). The drawbacks are highlighted by poor sampling method (Perez-De-Albeniz & Holms, 2000), such as the lack of randomization which is considered the heart of a true experiment (Coolican, 2004). In the work of Bowen et al. (2008), Simpson et al. (2007), and Emavardhana and Tori (1997), there is the absence of a control group. Goyal et al (2014), in their meta-analysis of 18,753 citations on meditation and 47 previous studies in health areas, questioned the findings of uncontrolled meditation studies due to the contrast in their outcomes from control groups. Chiesa (2010) found the lack of a statistical methodology, for example, in the works of Ostafin et al. (2006) and Cahn and Polich (2008). Some (Mead, 1988; Hicks & Turner, 1999; Saunders et al., 2000; Ghauri & Gronhaug, 2005) question the basic practice of meditation in studies, opining that people in Europe and America are not even familiar with meditation practice and believe communicating to them on this topic to be a challenging task, as most of the empirical studies on meditation have focused on clinical and medical psychology (Chan & Woollacott, 2007), or personal health-enhancing aspects (Epstein, 1990; Globus, 1980), whilst very little research has been done regarding its effect to the business management, especially leadership development (McCollum, 1999).

It was because of the above that we were motivated to undertake the current empirical study to scientifically test the effect of meditation on business leaders using control group experiments and expert-administered treatment. We hope that this study will advance the understanding on leader performance since effective leadership has been a perennial concern for every organization (Stogdill, 1974; Bass, 1990; Tjosvold, 1991; Harung, Heaton, & Alexander, 1995; Kotter, 1998; Zaleznik, 1998; McKenna, 2000; Owen et al., 2004; Porter, Smith, & Fagg, 2006). We are guided by the relationship between perceived self-efficacy and behavioral change (Bandura, 1977) and propose that meditation could be used as a tool for senior managers to build their self-perception of leadership skills.

Background

Meditation has been practiced in the East for thousands of years (Walsh & Shapiro, 2006) to attain one or some of the following goals: calmness, tranquility, insight, wisdom, concentration, awareness, mindful, mind-still, mind-stop, and happiness (Shapiro, 2007). Its roots are in an ancient text called the *Bhagavad Gita* (c. 3137 BCE (Kak, 2012)). During the 6^{th} to 5^{th} century BCE, meditation was given a new version by Gautama the Buddha, presently known as Vipassana meditation—a kind of mindfulness meditation. It has since been widely practiced (Chiesa, 2010). It traveled from India to ancient China about 2000 years ago where it entered the *Yellow Emperor's Classic of Internal Medicine* and was very simply described as "sitting still, doing nothing" in order to control the mind and emotions[2] (Leonard, 2006).

Contemporary Concept

Various researchers recognize meditation as a self-regulation mental training and development to cultivate mental capacities (Walsh & Shapiro, 2006) for self-awareness, calmness, and concentration (Shapiro & Walsh, 1984; Murphy & Donovan, 1997; Nyanaponika,

[2] Meditation researchers believe that this is not what constitutes authentic mindfulness meditation.

2000; Dalai Lama, 2001; Goleman, 2003; Cahn & Polich, 2006; Nielsen, 2006; Walsh & Shapiro, 2006; and Gupta *et al.,* 2007). The National Center for Complementary and Alternative Medicine (NCCAM) of the US National Institute of Health (NIH) defines meditation as a mind-body practice of many types, attributing its origin in ancient Hindu and Buddhist religious and spiritual traditions (NIH, 2013). There are about 40 recorded correct versions of meditation being practiced currently (Buddhaghosa, 1976). Nevertheless, every one of them involves some imagery with sitting, walking or other body postures with the goal to control thoughts to bring tranquility for turning the focus of attention deep inward "*towards the subtler levels of a thought*" (Maharishi, 1969: 49) to gain insight into the issues, with or without religious beliefs. The two most common forms of meditations are mantra meditation, popularly known as transcendental meditation and the second is known as mindfulness meditation (Goyal et al., 2014). The latter meditation trains in present-focused awareness (Goyal et al., 2014). The most practiced of the structured versions of meditation is known as mindfulness meditation (MM). It is practiced to gain a '*clear awareness of what is happening each moment'* (Goldstein & Kornfield, 1987: 62).

MEDITATION, LEADERSHIP AND THE HYPOTHESES

Practicing Meditation and Self-Perceived Leadership Skills

Meditating. For our empirical studies, while we connect operationalization of meditation with the scientific community researching the effect of meditation on physiological, psychological, and social aspects of human life, we apply mindfulness meditation in its most authentic form, known as Vipassana, to redress the question of validity of the technique itself (Lehmann et al., 2001; Zelazo et al., 2007) for business leadership. The

Vipassana[3] technique is a sitting meditation, in which the meditator focuses on an object, an image of a clear, crystal ball of the size of the pupil of the eye, located within his/her body, inches above the abdomen. As a certain level of concentration on the object is reached, the mind of the meditator becomes conscious of his/her surroundings and a true understanding of the self, called the 'insight' is developed (Ballentine, 1986). It involves using a mantra consisting of two words (nothing to do with any religion) repeated continuously until the mind stops wandering. These words are used as a framework in defining whether or not participants are in the optimal stage of meditation. In order to test whether each participant, after meditation, is not just sleeping or sitting still, but is in a meditative state, the instructor asks how each person is feeling, and the researcher observes and notes the responses. However, to ensure that they are really in a state of mediation, the questionnaires relating to participants' feelings were administered again after the final session.

Meditation is an independent variable in this study.

Leader. For this study, a leader is a person whose position was gained by appointment to be a chief executive or senior executive of a company. This individual must command a crucial role in making critical decisions that influence the work lives of many others. Inclusion in this category did not require investigation of the personal backgrounds of chief/senior executives or whether their positions as leaders were simply inherited or promoted through the strength of their personal abilities. By virtue of their being chosen, they are taken as leaders, and, therefore, it is assumed that their personal skills and qualities have equipped them with the requisite leadership skills to be a subject of this study.

Leadership skills. With regard to senior managers, effective leadership is about best facilitating achievement of their group's goals (House & Aditya, 1997). The question may be

[3] In ancient Indian languages, Pali and Sanskrit, Vipassana means insight into the true nature of reality.

what competencies they would need for achieving effective leadership. The answer may lie in knowing their group's goals. Are the group's goals task goals where manager can provide hands-on leadership? Or, are they goals where manager would be more a facilitator or motivator for their achievement by the group members themselves? While the former leadership may need developing cognitive skills, the latter rests on developing relationship with their group members so that they work to achieve these goals (Uhl-Bien, 2006)? Or, would it be some combination of both? Following Kouzes and Posner (2002), leadership may need both, the ability to motivate by understanding one's own and others' emotions, and to have abilities to act on goals and solve problems. It is derived from the leader behavior from practice because this is how the leaders mobilize others (Kouzes & Posner, 2002). It embodies some proven practices drawn from the experiences of many individuals with or without a formal leadership title (Lennick & Kiel, 2005; Kouzes & Posner, 2012). It embodies four leadership practices from Kouzes and Posner (2012): '*leader as a role model*', '*inspiring a shared vision'*, '*moral intelligence*', *'enabling others to act*', and '*encourage the heart*'.

To build further our leadership model for this research, we borrowed leader behavior from the business practices reported by Lennick and Kiel (2005; 2011) who find that '*moral intelligence'* is the key to enhancing self-perception of leadership skills.

To operationalize leadership following the working definition given above, we adapted Leadership Practice Inventory (LPI) developed by Kouzes and Posner (2002), as described in definition of leadership above, by adding the moral intelligence from Lennick and Kiel (2005) to comprise the self-perception of leadership skills questionnaire. The moral intelligence was included as one of the five components of the self-perception leadership skills (SPLS). Moral intelligence could be taken as a proxy for emotional intelligence because it heightens emotionally intelligent performance related to the development of organizational values (Sivanathan and Fekken, 2002). The aim of SPLS questionnaire is to understand better

the role of an effective leader. The moral intelligence inventory mainly assesses personal awareness of the individual values and goals which are conceptualized as principles and values, building trust through reliability, integrity, responsibility, compassion and forgiveness. Moral intelligence was adapted from the Moral Competence Inventory (MCI) by Lennick and Kiel (2005).

Leadership in the form of self-perception of leadership (SPLS) and its five component skills: '*leader as a role model*', '*inspiring a shared vision*', '*demonstrating moral intelligence*', '*enabling others to act*', and '*encouraging the heart/motivating*' and dependent variables. Demographic factors are treated as control variables.

With the understanding of meditation, leader and leadership, we formulate our first null hypothesis.

Hypothesis $H_0 1$. Leaders who practice meditation will not have higher self-perception of leadership skills than other leaders.

Meditating and Leading as a Role Model

Effective managers know that to gain commitment of others they have to model the behavior that they expect their group to follow. This leadership skill is labeled as '*leader as a role model'* and operationalizes a model behavior that effective leaders portray for their followers which is guided by the clear principles they espouse (Kouzes & Posner, 2012: 16). Variable '*leader as a role model*' included variables on being a personal example, adhering to principles and standards, following through on promises, asking for feedback, and being clear about principles of leadership. We formulated our second null hypothesis, $H_0 2$, to test the effect of meditation on the skill '*leading as a role model*'.

Hypothesis $H_0 2$. Leaders who practice meditation will not have higher performance on the skill labeled 'leader as role model' than other leaders.

Meditating and Inspiring a Shared Vision

Leadership is '*inspiring a shared vision'* of dreams and an absolute total belief in those dreams with their followers (Kouzes & Posner, 2012: 18). It includes variables related to talking about goals and trends, appealing to subordinates of sharing their dream, selling to employees the idea of a common vision, explaining to them what is the group aspiring, and the genuine conviction for higher purpose. This led us to our third null hypothesis linking meditation to '*inspiring a shared vision*.'

Hypothesis $H_0$3. Leaders who practice meditation will not have higher performance on the skill labeled 'inspiring a shared vision' than other leaders.

Meditating and Moral Intelligence

Moral intelligence is defined as a moral positioning and accounting system with deeply held principles and values. It enables leaders to better harness all their resources, such as the emotional intelligence, technical intelligence, and cognitive intelligence (Lennick & Kiel 2011: 25). Leaders with moral intelligence direct in their followers other forms of behavior which can become their role model, resulting in constructive values and collective aspiration (Lennick & Kiel, 2011). It inspires long-term business success by creating an organizational culture that possesses high moral values, which may result in gaining trust and long-term sustainable development within the business (Lennick & Kiel, 2010; Sivanathan & Fekken, 2002). Based on these principles, Lennick and Kiel, (2005) created a moral competency inventory measurement instrument (MCI) to assess leadership potential as their study shows that they are highly correlated. MCI measures competencies within a moral framework of beliefs, values, and principles.

Based on the above, we included in our study the effect of meditation on moral intelligence and formulated the following null hypothesis.

Hypothesis $H_0$4. Leaders who practice meditation will not have higher performance on skill labeled 'demonstrating moral intelligence' than other leaders.

Meditating and Enabling Others to Act

By increasing self-determination, confidence, and competence of their followers, they engage in '*enabling others to act*' through collaboration (Kouzes & Posner, 2012: 268). It includes variables relating to developing cooperative relationships, listening to varying points of view, treating others with respect, supporting followers' decision, and ensuring that people develop in their jobs. Based on these, we formulated the following null hypothesis, our fifth one.

Hypothesis $H_0$5. Leaders who practice meditation will not have higher performance on the skill labeled 'enabling others to act' than other leaders.

Meditating and Encouraging the Heart/Motivating

Motivating followers, especially when they are despondent, is an important function of leadership. Leaders '*encourage the heart*' of their followers to succeed when they are ready to give up (Kouzes & Posner, 2012: 23). They get personally involved in the celebration of success and recognition (Kouzes & Posner, 2012: 327). This is close to the leaders' motivating skills that comprise the ability to motivate and encourage themselves and others to carry on toward completion of the goal. Self-perception of leaders toward their motivational skills is perceived on the basis of their ability to recognize contributions by showing appreciation for individual excellence as well as to celebrate value and victories by creating the appropriate nurturing atmosphere for their subordinates. We incorporated this in our study as a leadership skill labeled '*encouraging the heart/motivating*', making it our last null hypothesis.

Hypothesis $H_0$6. Leaders who practice meditation will not have higher performance on the skill labeled 'encouraging the heart/motivating' than other leaders.

The above five skill sets were adapted from LPI and MCI and compiled as Leadership Skills Inventory of 25 questions, 5 for each of the five skills and for each of the five hypotheses from *Hypothesis $H_0$2* to *Hypothesis $H_0$6*. For *Hypothesis 1*, all twenty-five questions were used. Each of these questions was designed as a Likert's 5-point scale item. Four of these, Leader as role models, Inspiring a shared vision, and Enabling others to act came from Kouzes and Posner (2002), and Moral Intelligence from Lennick and Kiel (2005).

Figure 1 presents a conceptual framework of the study linking the independent variable, meditation, with the six dependent variables discussed above.

-------Figure 1 about here ----------

METHODS AND EXPERIMENTATION

The experiment was designed as a randomized pretest-posttest control group study following research strategy steps adapted from Bryman and Bell (2007).

Sampling

Sampling frame. The sampling frame was derived from companies registered in London and categorized into sampling units, referring to the participants to be studied. An individual chief executive from each company was the sampling unit. One leader or chief executive represented one company. The sample, then, was taken from the mailing list in an Excel spread sheet. After that, the participants were randomly assigned into experimental and control groups. Having a random assignment of participants into two groups ensured that no sampling bias occurred (Coolican, 2004) and therefore promoted reliability and validity of the outcome (Hicks and Turner, 1999).

The sampling frame primarily represented Western culture in terms of its customs, lifestyles, languages, and beliefs. Nevertheless, since London is a highly regarded commercial city, it is possible to find many business executives working for successful multi-national corporations with cross-cultural awareness. We also put a condition that only one leader, or chief executive, represented each company.

Sampling and Drawing Process. A mailing list of 4,914 companies registered in London was obtained as eligible for inclusion in the study. Of these, 493 companies were randomly selected using Excel generator, and they were sent out invitation to participate in this research. Seventy-five of these responded. Due to several limiting circumstances narrated, only 64 respondents agreed to participate and were randomly assigned into two groups of 32 each, one labeled experimental group and the control group. Figure 2 provides the sampling scheme from sampling frame to the two groups.

---------- Figure 2 about here ---------

The participants were given a Participant Information Sheet and a Consent Form. The Consent Form was sent out with an invitation letter, requesting subject participation, which resulted in the respondents either agreeing or not agreeing to participate in this study. The respondents had no part in their selection in the study or placement in any of the two groups. Therefore, there was no self-selection, a typical flaw with most such studies. However, to avoid error dues to the participants dropping out (Coolican, 2004), we requested the participants for their full commitment for the 12 consecutive weeks of the meditation.

The sample selection method has been done through the process of randomization of the samples into the experimental group and control group. This was done to minimize the possible biases that may cause irrelevant results to the research. As an outcome of these steps, the adaptation of the screening questionnaire has been appropriately edited to complement the nature

of this research as well as making it more substantial and relevant to the objectives of the research.

The primary research design chosen for this study was a 'randomized, pretest-posttest, control group' experiment (Fraenkel & Wallen, 2007: 274). The essential features of this research design are based on Hick and Turner (1999) and Coolican (2004). Some important features of our design are:

1. The participants were randomly assigned into two mutually exclusive groups, the control group and the experiment group.
2. The control group was not exposed to the prescribed treatment. The word 'treatment' here refers to the meditation technique taught for this study.
3. The experimental group was given the prescribed treatment.
4. The responses of both groups were measured twice, before and after the intervention, using the instruments that were tested for validity and reliability.

Participants

Following (Cohen, 1992), the sample size came to 32 participants each for control and experimental group, for medium to large effect with α=.05. Sixty–four senior managers comprised the two groups. They were drawn out of a sampling frame, described above, of chief executives/leaders working at large companies registered in London following the three stage process described below:

Stage 1: Screening. The screening process consisted of sending three letters in one envelope to each randomly sampled participant: (1) An invitation letter introducing the project, but not the aims and objectives of the research; (2) A participant information sheet describing the project research, but not the research questions and objectives; and (3) A demographic questionnaire, including questions about meditation. The screening was conducted by mail for

the sake of cost and quickness. The participants were provided with a pre-paid envelope to mail their responses back to the researcher. However, we took into consideration the fact of low response rate, normally less than 50% (McNeill & Chapman, 2005).

Stage 2: Receipt of consent and demographic questionnaire. Consent forms were received from invitees stating their agreement to participate in the study and of awareness of its conditions. At this stage, they did not know the group, control or experimental, to which group they were to belong.

Stage 3: Random assignment participants into groups. The participants who consented were randomly assigned to the experimental or control group following the standard randomization process (Coolican, 2004; McNeill & Chapman, 2005).

Instruments

For various measurements in this study, we designed and administered the following three instruments.

The Screening Questionnaire. The screening questionnaire included the information covered in the screening process given under the section titled "Screening", above.

The Demographic Questionnaire. The demographic questionnaire was designed to qualify candidates for inclusion as participants in the study. It was a 27-item instrument with two parts; the first part elicited demographic information, whereas, the second part covered information on meditation. It collected personal information from the respondents, including their gender, age, education, religion, race, nationality, marital status, education, employment and position in the organization, sector of the organization, and experience of meditation if any.

The 25-item Self-Perception of Leadership Skills (SPLS) Questionnaire. Self-perception of leadership skills was measured at the scale/interval level as the total score based on the five component skills described previously, namely:

The twenty-five item Leadership Skills Inventory (LSI) was designed into an instrument for measuring the effect of meditation on self-perceived leadership skills, the dependent variable in this case. The independent variable was the meditation administered as treatment on participants. Operationally, the dependent variable became the change in scores between the pretest and the posttest readings on SPLS of participants. The two readings were separated by 12 weeks, the experiment time. Time, therefore, became an implicit variable in the pretest-posttest design.

A reliability test, including content validity, in the SPLS instrument was conducted on its 25 items to check if it produced the same outcomes either across testing or within itself (Coolican, 2004). With an internal reliability by Cronbach's alpha=.906, and 'corrected item-total correlation' value of each item above 0.2, the tests indicated good correlation between each item (Kitpredaborisood, 2006).

Pilot Study

A pilot study was conducted, as recommended by McNeill and Chapman (2005), to test the quality of the three questionnaires: screening, demographic, and the self-perception of leadership skills. It tested the readability and other related issues concerning the wording of the draft questions. The first part of the pilot questionnaire included demographic questions. The second part elicited relevant information regarding meditation. For the pilot study, an opportunistic sampling strategy was employed. An introductory letter, project information and screening questionnaire were distributed via an e-mail to 20 managers of large companies in London. Feedback was obtained regarding the clarity and understanding of the questions. The final versions of the screening and demographic questionnaires were produced after gaining the useful feedback.

Meditation Treatment

Experimental group participants engaged in secularized Vipassana version of mindfulness mediation (MM) under the supervision of a London-based expert. The technique is described in 7 detailed steps[4]. Step 1 involves visualization; Steps 2-6 involve moving the visualized image to seven different sites in the body. Step 7 involves continuously reciting a mantra consisting of two words in Pali and stopping when the mind sops to wander. Each complete exercise lasted 60 minutes.

The meditation was conducted in the basement of the university. Apart from the participants who took part in the study during the 12-week period of the meditation experiment, there was no one else present. Therefore, it was assumed that all external disturbances were minimized during the study.

There was no participant attrition during the study.

Settings

The experiment took place in London, United Kingdom and commenced with a planning period between February-August 2009. The actual experiment took place from May 2009 to August 2009.

Timing. The timing of the meditation was controlled, however, the period of practicing meditation, weekday and weekend, was impossible to control. As far as possible, the environmental conditions, under which the participants meditated, were controlled. The meditation room was a square classroom located in a peaceful area of the university basement. For secularizing the study to avoid any confounding effect, the room did not have any religious symbols.

[4] For the sake of saving space, detail of the meditation technique is omitted from this paper. The interested reader may write to the corresponding author at the address given in this paper.

Temperature. To avoid room temperature from confounding the meditation effect, we controlled the temperature of the meditation chamber. It was set at between 20 to 25^{o} C at a level that was most comfortable to participants, determined by a vote conducted before the start of the experiment.

Other extraneous or confounding variables were eliminated or their effects were reduced because the researcher asked all the participants, both in the experiment and control groups, not to do the following:

1. Participate in other meditation activities, no matter what type of meditation;
2. Go to a temple during the experiment;
3. Have group discussions regarding extra topics concerning meditation, EI and self-perception of leadership skills;
4. Watch any TV channels regarding meditation, EI and self-perception of leadership skills; OR
5. Participate in other similar techniques; for instance, yoga, and relaxation techniques, OR take any other tests related to meditation, EI and self-perception of leadership skills.

Experimental Procedure and Data Collection

A quantitative research method was used to gather information as numeric values, as opposed to qualitative research, which obtains information by descriptive studies (Zikmund, 2003), using experimental designs to test the hypotheses. This was advantageous as it allowed us to directly measure results (Coolican, 2004).

The experimental procedure and data collection were performed in three stages described below:

Stage 1: Assignment. The participants were assigned into two groups. The experimental group was to have Vipassana meditation taught by an expert, whereas the control group

participants were to perform breathing and relaxation exercises as it is suggested in the literature that relaxation techniques are not the same as meditation practice (Moore & Malinowski, 2009; Slagter *et al.* 2007; Dunn *et al*., 1999; Kokoszka, 1994). Dunn *et al*, (1999) compared EEGs of meditating participants to those doing relaxation with their eyes closed and found that meditation differed from relaxation.

Stage 2: Treatment. The experimental group practiced Vipassana meditation for 12 weeks. The meditation sessions were conducted by an expert who had been practicing meditation for 20 years. They were for one hour each, every week, for three months. The members of the control groups did not practice any kind of meditation and were monitored to confirm that they did not do so.

Stage 3: Questionnaires. Each member of the group completed the leadership inventory (LPI) which consisted of 25 items. The pretest was administered before the first session began (Week 1). At this stage the order of the items was low to high, 1 to 25, and the posttest was administered after 12 weeks (Week 12), when the sessions had finished, with the items ordered from 25 to 1. The problem of order effect is said to be a disadvantage of a pretest-posttest experiment. Coolican (2004) noted that by reversing the item order, the problem of item ordering biases could be minimized. Changing the order of the items helped to minimize the problem of an order effect in which the participants may remember the content due to the past experience that came from the first administration of the questionnaire (Coolican, 2004); in doing so it is assumed that participants may not be biased by this issue. The experimental and control groups both completed the same questionnaires. The same questionnaires were used for both the pretest and the posttest assessments.

Measurement

The first set of measurements, collected before treatment, was named ‘the pretest’, and the second set of measurements, collected after treatment, was named the ‘posttest’. The changes in the responses of the subjects between the posttest and the pretest were taken as the dependent variable in case of each of the five factors of our study.

Frequency distribution histograms of the dependent variables, EI and self-perception of leadership skills, were constructed, and their shapes were compared visually against bell-shaped, normal probability curves. Figure 3 gives these differences for the 64 senior managers in our study. Although these differences are not perfectly normal bell-shaped curves, the observed dome-shaped frequency distributions were considered to be sufficiently close to normality to justify the use of parametric descriptive statistics, such as the means, standard deviations, and 95% confidence intervals, and parametric inferential statistics (MANOVA, and ANOVA). All p values for the Mahalanobis distance statistics were > .001, indicating no multivariate outliers, and all Z scores were >3.3 indicating no univariate outliers. Consequently no cases were excluded from the statistical analysis.

---------- Figure 3 About here ----------

ANALYSES

Test of Demographic Equivalence of the Control and Experimental Groups

Our experiment research design assumed that the demographic characteristics of the subjects in the control and experimental groups were equivalent. This assumption was tested with goodness of fit tests (Chi-square test). The χ^2 statistics at α=.05, based on the frequency distributions of the subjects, indicated no significant differences between the control and experimental groups with respect to males and females distribution (χ^2, 0.166). Complete detail on Chi-square analysis of the distribution of gender between the two groups is given in Table 1.

---------- Table 1 and Table 2 about here ----------

There was, however, a significant difference in the age of subjects in the experimental and control groups. The results from a Chi-square test performed on the distribution of ages between control and experimental groups are given in Table 2; (χ^2, (1, N=64) =17.163, p=.001). Specifically, in the 36-45 age range, there only 2 participants in the control group but 10 in the

experimental group; and, in the 46-55 age range, there were 18 participants in the control group but only 10 in the experimental group. However, overall, statistically, the age differences between the control and experimental groups were not large enough to seriously violate the assumption of the research design. The two groups were considered demographically equivalent.

Reliability Analysis

We used values of Cronbach's alpha to determine internal consistency reliability of the pretest and posttest measurements of the self-perception of leadership skills following common practice for estimating the internal consistency reliability of variables measured using questionnaires (Hogan et al., 2000). We adopted the convention that Cronbach's alpha must be at least 0.7 for the reliability to be adequate and 0.8 for it to be considered good (Tabachnik & Fidell, 2007). For our questionnaires, Cronbach's alpha for both pretest and posttest dependent variables was 0.929, classifying the internal consistency reliability as "good."

Spearman's rho correlation coefficient test gave the correlation between self-perception of leadership skills and the age group as 0.102 (p=0.423), which was not significant at α=.05. The mean (posttest-minus-pretest) measures in self-perception of leadership skills were consistently higher in the experimental groups than in the control groups. Thus, it can be inferred that self-perception of leadership skills in subjects in experimental group were enhanced by meditation practice. A summary of description statistics of self-perception of leadership skills is given in Table 3.

---------- Tables 3, 4 and 5 about here ----------

The Effects of Meditation on Self-Perception of Leadership Skills

ANOVA assumed that the variances in the measures of self-perception of leadership skills were equal across the two groups. The null hypothesis H_01 of equality of variance using Levene's test was rejected at α=.05 (p-value=0.000), so the variances were not equal. Table 4 gives detail on this result on Levene's test for equality of variance for dependent variables in this

study. Accepting the alternate hypothesis, we state that meditation did enhance the self-perception of leadership skills level in the experimental group, by 5.18% as given in Table 5 listing mean statistics of the meditation treatment. The null hypothesis of ANOVA, detailed statistics given in Table 6, was rejected. The alternative hypothesis was accepted (p-value=0.000). Hence, leaders who practice meditation will have higher self-perception of leadership skills than other leaders.

---------- Table 6 about here ----------

The Effect of Meditation on '*Leader as Role Model*' Skill

Assumption of ANOVA is that the variances in the measures of self-perception of leadership skills for dependent variable '*leader as role model*' are equal across the groups. However, the null hypothesis, $H_0 2$, of equality of variance using Levene's test was not rejected at α=.05 (p-value=0.199) for the London population. Accordingly, we accept that leaders who practice meditation will not have higher performance on the skill labeled 'leader as role model' than other leaders.

The descriptive statistics (Table 3) indicates that the mean (posttest-minus-pretest) measures of self-perception of leadership skills for role models in the experimental group increased by 3.4%, not statistically significantly higher, indicating that meditation did not enhance role model level in the experimental group, as detailed in Table 5.

The Effects of Meditation on Inspiring a Shared Vision

The descriptive statistics given in Table 3 indicate that the mean (posttest-minus-pretest) measures of inspiring a shared vision in the experimental group were consistently higher than in the control group. Mean statistics in Table 5 give this increase to be 7.67%, implying that meditation does enhance inspiring a shared vision skill in leaders. The assumption of ANOVA that the variances in the measures of '*inspiring a shared vision*' were equal across the two groups does not hold. The null hypothesis of equality of variance using Levene's test was rejected at

α=.05 (p-value=0.003) and the null hypothesis of ANOVA was rejected at α=.05 (p-value=0.007). Hence, meditation does enhance inspiring a shared vision by a small size. Because the assumption of ANOVA was violated, we accept the alternative to hypothesis $H_0$3. Leaders who practice meditation will have higher performance on the skill labeled 'inspiring a shared vision' than other leaders.

The Effects of Meditation on Demonstrating Moral Intelligence

The descriptive statistics in Table 3 show that the mean (posttest-minus-pretest) measures of '*demonstrating moral intelligence*' in the experimental group were consistently higher than in the control group. The mean statistics in Table 5 tell us that meditation enhanced '*demonstrating moral intelligence*' in experimental group by 3.96%, a small improvement.

ANOVA assumption that the variances in the measures of moral intelligence were equal across the two groups is used to check the results. The null hypothesis $H_0$4 of equality of variance using Levene's test was accepted at α=.05 (p-value=0.211) as given in Table 4. However, from the results given in Table 6, the null hypothesis of ANOVA was rejected at α=.05 (p-value=0.011). Hence, meditation does enhance moral intelligence. While the effect size is small, we cannot decisively state that meditation does not enhance the skill of demonstrating moral intelligence and accept the alternative.

The Effects of Meditation on Enabling Others to Act

The descriptive statistics for this dependent variable given in Table 3 show that the mean posttest-minus-pretest measures of enabling others to act in the experimental group were not consistently higher than in the control group.

ANOVA assumed that the variances in the measures of enabling others to act were equal across the groups. The assumption of equality of variance was not violated for the London population from Levene's test results given in Table 4. The null hypothesis of ANOVA was not rejected at α=.05 (p-value=0.054) for the London population. The effect size was small. Hence,

we accept that leaders who practice meditation will not have higher performance on the skill labeled 'enabling others to act' than other leaders

The Effect of Meditation on Encouraging the Heart/Motivating

Descriptive statistics for '*encouraging the heart*' from Table 3 show that the mean (posttest-minus-pretest) measures of this dependent variable for the experimental group were consistently higher than for the control group; in fact, by 7.21%. It means that the meditation does enhance encouraging the heart/motivating skill level in leaders.

When we apply the results to ANOVA's null hypothesis of equality of variance between control and experimental groups using Levene's test, at α=.05 (p-value=0.03), we reject the null hypothesis, $H_0$6. Results on this are given in Table 4. The null hypothesis of ANOVA was also rejected at α=.05 (p-value=0.028). See Table 6 for detail. Even though by a small amount, meditation does enhance the '*encourage the heart/motivating*' skill in leaders. We accept the alternate hypothesis that leaders who practice meditation will have higher performance on the skill labeled '*encouraging the heart/motivating*' than other leaders.

Summary

Experiments to test the effect of meditation on senior managers in London to see if leaders will be able to enhance their self-perception of leadership skills has given us some important results, compiled in Tables 7, 8 and 9. The aggregated leadership skills did statistically significantly improve. Of the five components of SPLS, for two the null hypotheses were rejected and for two other they were not. For one of the components, by one test, the null hypothesis was rejected, whereas, by the other test, it was not. Overall, the outcomes clarify some of the questions on an increasing interest in meditation of businesses in the West. Table 9 presents effect sizes listed according to the magnitude of the test results. The effect sizes, indicating the proportion of the variability in the dependent variables explained by the independent variable, were computed by SPSS for the purpose of this study (Field, 2009). Higher

practical significance was attributed to results with large effect size which are not relevant with the magnitudes of the test statistic and the p values. The distinction between small, medium, and large effects, defined by Cohen (1992), is based on the values of effect size statistics computed by SPSS. The two tables summarized the effect sizes sorted into their order of magnitude and indicated that meditation had medium effect on enhancing self-perception of leadership skills, small effect on '*inspiring a shared vision'*, '*demonstrating moral intelligence'*, '*encouraging the heart/motivating'*, and '*enabling others to act'*; and negligible effect on '*leaders as role models'*.

The statistical findings raise a number of interesting business implications. The evidence provided led us to the conclusion that meditation does not enhance self-perception of leadership skills for leaders in their capacity as role models, and does not enhance their ability to enable others to act. However, on every other dependent variable included in this study, meditation did enhance the leaders' performance in their role.

---------- Tables 7, 8 and 9 about here ----------

DISCUSSION AND CONCLUSION

By conducting London meditation experiments, we tested whether meditation can increase leader's perception of self-efficacy for influencing performance accomplishment of the group's goals (House & Aditya, 1997). Bandura's self-efficacy theory (1977) plays an important role in explaining the increase in perception changes in an individual's task and activity. The thoughts, behaviors and expected outcomes from activities influence an individual's perception which relies on specific tasks or activities in which one engages. Our research hypothesized that MM as Vipassana meditation can be an activity that enhances leader's perception of self-efficacy.

We defined self-perception of leadership skills by assembling five leadership skills/practices from the literature (Kouzes & Posner, 2002; Lennick & Kiel, 2005). The results

from our empirical study conducted on CEOs in London show that meditation does statistically significantly enhance overall self-perception of leadership skills, and the three individual components of these skills, viz., inspiring a shared vision, moral intelligence, and motivating. A logical explanation for the outcome may rest in Bandura's (1977) theory of self-efficacy, stating that an individual's perception of self-efficacy is impacted by the feelings, thoughts, effort, and the length of time experiencing these activities (Bandura, 1994).

Components of Self-Perception of Leadership Skills

All components of SPLS, such as encouragement or motivating skills, moral intelligence, enabling others to act, inspiring a shared vision, were enhanced by meditation. The only component that did not see improvement was leaders as role model. Table 8 shows a summary of SPLS presented in sequential order showing how meditation produced an effect on leaders' ability to motivate themselves; moral intelligence was a secondary benefit of meditation.

Interpretation

From our results, we see that meditation helps in enhancing leadership skills of *inspire a shared vision, encourage the heart/motivating skill,* and *demonstrating moral intelligence.* Collectively, these skills enhance leaders' ability to develop relationships between them and their followers (Uhl-Bien, 2006). These skills help leaders encourage their followers to achieve the group's goals. Based on our research, meditation did help increase leader's skill of *enabling others to act*, but not statistically significantly. Meditation did not help increase leaders' skill *as role model.* If we consider these latter two skills critically, we find that these are both intellectual acumen (Antonakis, Ashkanasy, & Dasborough, 2009). While these may also be essential for leadership, they are not enhanced by meditation. A discussion of the results from our London experiments on individual SPLS components is given in the following paragraphs.

Motivating skills. The study has shown that meditation enhances the self-perception of leaders' motivating skills that comprise the ability to motivate and encourage themselves and

others to carry on toward completion of the group's goal. Self-perception of leaders toward their motivating skills is perceived on basis of the ability to recognize contributions by showing appreciation for individual excellence as well as to celebrate value and victories, labeled by Kouzes and Posner (2002) as *encourage the heart* by creating the appropriate nurturing atmosphere for their subordinates.

Moral Intelligence. The analysis has also shown that meditation enhances the leaders' moral intelligence skills that comprise being aware of an individual's emotions and be able to differentiate right from wrong (Lennick and Kiel, 2005). The moral judgment usually concerns the relationship between conscious and unconscious procedure in justifying before or after the judgment is formed. Since meditation plays an important role in enhancing awareness and self-consciousness, it is possible to rationalize that the practice encourages awareness of reason for believing what is right or wrong. However, the formation of moral judgment is set with the universal principles, allowing for the differences in culture setting. The cultural factors may not apply to the issue of cultivating moral awareness as the moral judgment is said to be a universal principle of judgment.

In summary, based on the analysis presented on hypothesis H_04, we conclude that leaders who practice meditation will have a small improvement in moral intelligence. The logical explanation for the small increase may lay in the great emphasis senior managers of corporations in London place on abiding by the law and moral values. We would assume that effect of meditation on moral intelligence will depend very much on the emphasis a society places on laws and morals.

Leaders as role models. The study failed to show any statistically significant increase in the self-perception of leadership skills on the component *leaders as role model*. Null Hypothesis H_02 could not be rejected. Senior managers who practiced Vipassana form of MM for 12 weeks

under the supervision of an expert did not have greater skill to be a role model for their followers than those managers who were left untreated.

We rationalize this finding based on the fact that to be a role model requires technical skills and experience (House & Aditya, 1997). Both of them will need a much longer period than 12 weeks allowed for the London study to be impacted by meditation. Secondly, the effect of meditation practice did not influence change in perceived role model because it is possible that senior managers such as CEOs are already seen as role models and therefore had a relatively high perception of this characteristic before they entered the meditation study as indicated by their high scores on perceived role model when they entered the study.

Enabling others to act. The study failed to reject the null hypothesis $H_0 5$. Senior managers who practiced Vipassana form of MM for 12 weeks under the supervision of an expert did not have greater skill to enable others to act than those managers who were left untreated. In regard to the concept of *enabling others to act*, it can be seen that the result appeared to be the same as in case of *leaders as role models*. These two components of self-perception of leadership skills are outcome of leaders' behavior or skills rather than that of their feelings or thoughts. Self-efficacy theory (Bandura, 1977) is related to the perception towards the change in a specific task or activities rather than the actual behavior towards a particular task. Unlike *encourage the heart/motivating* and *moral intelligence*, the skills of *enabling others to act* and *leaders as role models* require cognitive skills, acumen and characteristics rather than the ability to build perceptions, thoughts or feelings. Therefore, it could be possible that the participants may have a mind-set that their action is improved, even though it actually may not be so.

In the role of a CEO, *enabling others to act* may already exist. CEOs in Western society are already admired by their followers. Therefore, we did not record any positive change in this component as a result of meditation.

***Inspiring a shared vision*.** Results from the London experiments have rejected Null Hypothesis $H_0$3. We accept the alternative that senior managers who practice Vipassana form of MM for 12 weeks under the supervision of an expert will have greater skill to inspire a shared vision in their followers than those managers who are left untreated. An analysis has shown that meditation has enhanced in senior managers the self-perception of leadership skill of *inspiring a shared vision*. We rationalize that *inspiring a shared vision* already existed in participants, which, after gaining a positive experience from meditation practice, generated a small additional gain in it, however.

Drawbacks

Possible limitations of the research. While we have used 12 weeks—a period much larger than all other such studies—to understand the effect of meditation on leadership skills, we believe that to study the true effect of meditation, a much larger study period is needed. On speaking with those who practice MM or other meditations on a regular basis, we have learned that to see the full effect of meditation could take a year, maybe even longer. Meditators have benefited from regular practice of meditation (Ivanovski & Malhi, 2007). Nevertheless, given the operational difficulties in carrying out such long controlled experimental studies, researchers may consider making some modifications to our methodology. After training participants in how to practice meditation and agreeing to do it regularly, they may be asked to return for reading/assessment after a longer period, maybe 6 months or a year, for a few years. Meditation effect is slow and stretched that only this method or longer periods will be able to capture.

Directions for Further Work

Organizations are very interested in learning about the effect of meditation on work performance and leadership; consequently, we expect the research in this area to continue to grow. The world's most preeminent management professional society, the Academy of

Management, is experiencing a growing interest in its division of Management, Spirituality and Religion. We have compiled the following directions in which practitioners and researchers of meditation may further pursue further work.

Considering the criteria for sampling participants. Sample size issue has been widely addressed in the past research. A large sample size is likely to provide more generalization of statistical inference. Therefore, in the future research, if possible and appropriate, it is recommended that, in a study of meditation, a larger sample size is used. The increase in the size of the sample could potentially benefit future research.

Study impact of culture on meditation effect. Building upon this study, as we have argued in several places in this paper, culture plays an important role in the effect of meditation on work and leadership. Specifically, we saw how it affected the outcome in moral intelligence. Other future works could consider combined sampling of two or more nations, merging the samples by ensuring that they are virtually matched samples, or as close as possible, in studying the culture effect.

An extra, more challenging task could be to conduct a one-time meditation study that could bring everyone to meditate in the same environmental setting so that the problem of different characteristics of sampling will be minimized.

Meditation measuring instrument. Since meditation study has been growing in interest, future research into the measurement of meditation effectiveness is advised to take the issue of a meditation measurement instrument that has been developed based on proper psychometric validity and reliability; this is to ensure that the subjects are fully involved in the real meditative stage. A meditation measurement instrument needs to be developed based on the real experience of meditation experts. Testing its reliability and validity should be carried out with large samples of differing populations, whose nations and cultures are different.

Considering the length of time of the meditation practice. Since the length of the activities is considered to be one of the important factors in the changes in perception towards self-efficacy, the period of meditation practice should be considered for a different length of time, for instance, less or more than a 12-week period of meditation practice to study the effect of the different time frame and then increasing it steadily to get the effect of duration of meditation.

REFERENCES

Anderson, J., Fincham, J., Qin, Y., & Stocco, A. 2008. A central circuit of the mind. ***Trends in Cognitive Science***, 12: 136-143.

Antonakis, J., Ashkanasy, N.M., & Dasborough, M. T. 2009. Does leadership need emotional intelligence? ***The Leadership Quarterly***, 20: 247-261.

Ballentine, M. l986. ***Theory and practice of meditation.*** Pennsylvania: The Himalayan International Institute of Yoga Science and Philosophy of the USA.

Bandura, A. 1977. Self-efficacy: Toward a unifying theory of behavioral change. ***Psychological Review***, 84: 191-215.

Bandura, A. 1994. Self-efficacy. In V. S. Ramachaudran (Ed.), ***Encyclopedia of human behavior,*** 4: 71-81. New York: Academic Press.

Bowen, S., Witkiewitz, K., Dillworth, T., & Marlatt, A. 2007. The role of thought suppression in the relationship between mindfulness meditation and alcohol use. ***Psychology of Addictive Behavior***, 32(10): 2324-2328.

Brown, K .W., & Ryan, R. M. 2003. The benefits of being present: Mindfulness and its role in psychological well-being. ***Journal of Personnel and Social Psychology***, 84(4): 822-848.

Bryman, A., & Bell, E. 2007. ***Business research method.*** New York: Oxford University Press.

Buddhaghosa, B. 1976. ***Visuddhimagga (The path of purification).*** Seattle, WA: Shambala.

Cahn, R., & Polich, J. 2006. Meditation states and traits: EEG, ERP, and neuroimaging studies. ***Psychological Bulletin,*** 132: 180-211.

Cahn, R., & Polich, J. 2008. Meditation (Vipassana) and the P3a event-related brain potential. ***International Psychophysiology.*** 72(1): 51-60.

Chalmers, F. 2009. ***Thomas C Chalmers (1917-1995).*** The James Lind Library (jameslindlibrary.org).

Chan, D. and Woollacott, M. 2007. Effects of level of meditation experience on attentional focus: Is the efficiency of executive or orientation networks improved? ***The Journal of Alternative and Complementary Medicine,*** 13(6): 651-657.

Chiesa, A. 2010. Vipassana meditation: Systematic review of current evidence. ***The Journal of Alternative and Complementary Medicine.*** 16(1): 37-46.

Cohen, J. 1992 A power primer. ***Psychological Bulletin,*** 112: 155-159.

Coolican, H. 2004. ***Research methods and statistics in psychology (4ed.)*** Hodder Arnold, London.

Dalai Lama. 2001. ***An open heart.*** Boston: Little, Brown.

Davidson, R. J., & Harrington, A. (Eds.), 2002. ***Visions of compassion.*** Oxford: Oxford University Press.

Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., & Santorelli, S. F. et al. 2003. Alterations in brain and immune function produced by mindfulness meditation. ***Psychosomatic Medicine***, 65: 564-570.

Dunn, B.R., Hartigan, J.A., and Mikulas, W.L. 1999. Concentration and mindfulness meditations: Unique forms of consciousness? ***Applied Psychology and Biofeedback,*** 24(3): 147-164.

Emavardhana, T., & Tori, C.D. 1997. Changes in self-concept, ego defense mechanisms and religiosity following seven-day Vipassana meditation retreats. ***Journal of Science Religion.*** 36:194-206.

Epstein, M.D. 1990. Beyond the oceanic feeling: psychoanalytic study of Buddhist meditation. ***International Review of Psycho-analysis.*** 17: 159-166.

Field, A.P. 2009. ***Discovering statistics using SPSS.*** (3rd Ed.) London: Sage.

Fraenkel, J. R., & Wallen, N. E. 2007. ***Hoe to Design and Evaluate Research in Education.*** New York: Mc-Graw-Hill.

Gallantino, M/ L., Baime, M., Maguire, M., Szapary, P. o., & Farrar, J. T. 2005. Association of psychological and physiological measures of stress in health-care professionals during an 8-week mindfulness meditation program: mindfulness in practice. ***Stress & Health***, 21: 255-261.

Gelles, D. 2012. The mind business. *FT Magazine.* Retrieved on October 17, 2013. http://www.ft.com/cms/s/2/d9cb7940-ebea-11e1-985a-00144feab49a.html#axzz2JUPtdJFF.

Ghauri, P., & Gronhaug, K. 2005. ***Research methods in business studies.*** Pearson Education Limited. England.

Globus, G. 1980. On "I": The conceptual foundations of responsibility. ***American Journal of Psychiatry.*** 137: 417–22.

Goleman, D., Ed. 2003. ***Destructive emotions.*** New York: Bantam Books.

Goleman, D. 1998. ***Working with emotional intelligence.*** Bloomsbury London.

Goleman, D. 1988. ***The meditative mind.*** The varieties of meditative experience. New York: J. P. Tarcher.

Goleman, D. 1995. ***Emotional Intelligence & Working with emotional intelligence.*** Bloomsbury, London.

Goldstein, J. & Kornfield, J. 1987. ***The path of insight meditation***. Boston: Shambhala.

Goyal, M., Singh, S., Sibinga, E. M. S., Gould, N. F., Rowland-Seymour, A., Sharma, R., Berger, Z., Sleicher, D., Maron, D. D., Shihab, H. M., Ranasinghe, P. D., Shauna, L., Saha, S., Bass, E. B., & Haythomthwaite, J. A. 2014. Meditation programs for psychological stress and well-being: A systematical review and meta-analysis. ***JAMA Itern Med.,*** Published online January 06, 2014.http://archinte.jamanetwork.com/article.aspx?articleid=1809754.

Gupta, S. V, Russell, A., & Lo, E. 2007. Meditation: The adoption of eastern thought to western social practices. ***Journal of religion and Spirituality in social work,*** 26:49-61.

Harung, H., Heaton, D., & Alexander, C. 1995. A unifies theory of leadership: experiences of higher states of consciousness in world class leaders. ***Leadership & Organizational Development***, 16(7): 44-59.

Hays, S. C., & Wilson, K. G. 2003. Mindfulness method and process. ***Clinical Psychology: Science and Practice***, 10: 161-165.

Hicks, R. C., & Turner, V. K. 1999. ***Fundamental concepts in the design of experiments,*** New York: Oxford University Press.

Hogan, T.J., Benjamin, A., & Brezinski, K.L. 2000. Reliability methods: A note on the frequency of use of various types. ***Educational and Psychological Measurement,*** 60:523-531.

House, R. J., & Aditya, R. N. 1997. The social scientific study of leadership: Qua vadis? ***Journal of Management***, 23: 409-473.

Ivanovski, B. & Malhi, G.S. (2007). The Psychological and Neurophysiological Concomitants of Mindfulness Forms of Meditation. ***Acta Neuropsychiatrica***, 19: 76-91.

Kabat-Zinn, J. 1990. ***Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness***. New York: Bantam Dell.

Kabat-Zinn, J., Wheeler, E., Light, T., Skillings, A. Scharff, M. J., Cropley, TG, Hosmer, D., & Bernhard, J. D. 1998. Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). ***Psychosom Med,*** 60(5): 625-632.

Kak, Subhash. 2012. The Mahabharata and the Sindhu-Sarasvati tradition. Baton Rouge: Louisiana State Univ. Retrieved 12/25/2012. http://www.ece.lsu.edu/kak/MahabharataII.pdf.

Kitpredaborisood, B. 2006. ***Technique in gathering research instrument.*** Bangkok: Chamjuree Product.

Kokoszka, A. 1994. A rationale for multileveled model of relaxation. ***International Journal of Psychosomatics*****.** 41: 4-10.

Kotter, P. J. 1998. ***Harvard Business Review on Leadership.*** Harvard Business School, USA.

Kouzes, J. M., & Posner, B. Z. 2002. ***Leadership Challenge*** (3rd Ed.). San Francisco, CA: Jossey-Bass.

Kouzes, J. M., & Posner, B. Z. 2012. ***The leadership challenge: How to make extraordinary things happen in organizations*** (5rd Ed.).San Francisco, CA: Jossey-Bass.

Lehmann, D., Faber, P., Achermami, P., Jeanmonod, D., Gianotti, L., & Pizzagalli, D. 2001. Brain sources of EEG gamma frequency during volitionally meditation-induced altered states of consciousness, and experience of the self. ***Psychiatry Research***, 108: 111-121.

Lennick, D., & Kiel, F. 2005. ***Moral intelligence: Enhancing business performance and leadership success***. Boston, MA: Wharton School Publishing by Pearson Education.

Lennick, D., & Kiel, F. 2010. **The morally intelligence organization.** FT Press.

Lennick, D., & Kiel, F. 2011. ***Moral intelligence 2.0: Enhancing business performance and leadership success in turbulent time*** (2nd Ed.). Boston, MA: Pearson Education.

Leonard, D.W. 2006. Meditation: A new role for an old friend. ***American Journal of Hospice***, 23(4): 323-327.

Lutz, A., Greischar, L. L., Rawlings, N. B., Ricard, M., & Davidson, R. J. 2004. Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. ***Proceeding of the National Academy of Science,*** USA, 101:16369-16373.

Maharishi, M. Y. 1969, ***On the Bhagavad-Gita: A new translation and commentary.*** Penguin, Baltimore, Chs. 1-6. (First publish in 1967).

McCollum, B. 1999. Leadership development and self-development: An empirical study. ***Career Development International***, 4 (3): 149-154.

McCormick, D. W. 1994. Spirituality and management. ***Journal of Managerial Psychology***, 9(6): 5-8.

McKenna, E. 2000. ***Business psychology and organizational behavior: a student's handbook***. (3rd Ed.) New York: Psychology Press.

(Following the advice from the Division Chair, we have taken out the remaining references. Readers may contact the corresponding author for these references.)

FIGURE 1

A Conceptual Framework of Meditation (Independent Variable) with Six Dependent Variables

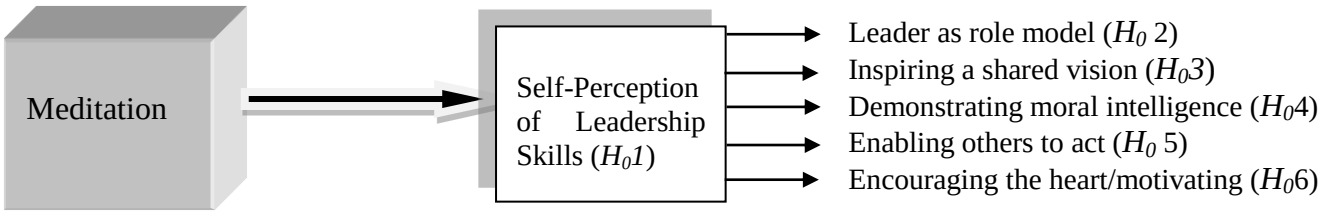

FIGURE 2

Meditation and Leadership Study Sampling Procedure

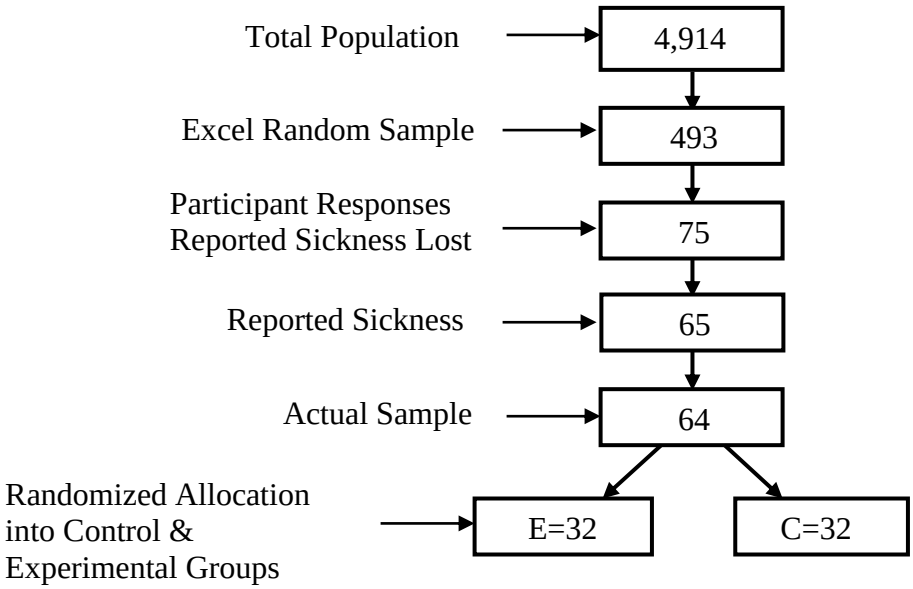

FIGURE 3

Frequency Distributions of the Post-Test Minus Pre-Test Measures of Self-Perception of Leadership Skills for N=64 Participants in London

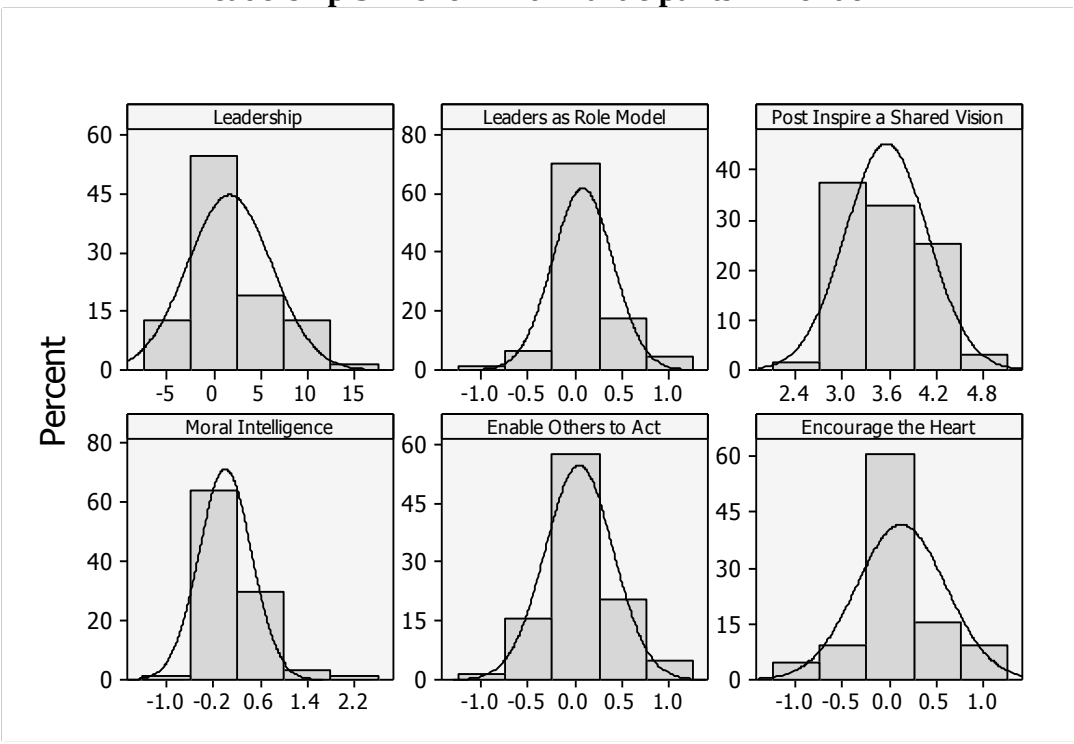

TABLE 1
Chi-Square Analysis of the Distribution of Gender between the Groups

Gender	Subjects in London		χ^2	p value
	Control (expected)	Experimental (observed)		
Female	9	8	.166	.683
Male	23	24		

TABLE 2
Chi-Square Analysis of the Distribution of Ages between the Groups

Age (years)	Subjects in London		χ^2	p value
	Control (expected)	Experimental (observed)		
26-35	3	1	17.163	.001*
36-45	2	10		
46-55	18	10		
56+	9	11		

TABLE 3
Descriptive Statistics of Meditation Treatment

Variable	**Group**	**N**	**Mean (Post-test minus pre-test)**	**Standard Deviation**
Self-perception of leadership skills	Control	32	-1.00	2.155
	Experimental	32	4.41	4.585
Leader as role model	Control	32	.037	.271
	Experimental	32	.113	.369
Inspiring a shared vision	Control	32	-.037	.280
	Experimental	32	.250	.508
Demonstrating moral intelligence	Control	32	-.140	.350
	Experimental	32	.140	.493
Enabling others to act	Control	32	-.050	.356
	Experimental	32	.125	.358
Encouraging the heart/motivating	Control	32	-.013	.313
	Experimental	32	.250	.574

TABLE 4
Levene's Test for Equality of Variance for All Dependent Variables

Dependent variable	Levene's F	Degrees of Freedom	p-value
Self-perception of leadership skills	20.940	1,62	.000*
Leader as role model	1.682	1,62	.199
Inspiring a shared vision	9.718	1,62	.003*
Demonstrating moral intelligence	1.598	1,62	.211
Enabling others to act	.734	1,62	.395
Encourage the heart/motivating	9.346	1,62	.003*

Note * Significant at α=.05

TABLE 5
Mean Statistics of Meditation Treatment

Variables	Pre-Test	Post-Test	Post- minus Pre-	Increase %
Self-perception of leadership skills	85.09	89.5	4.41	5.18%
Leader as role model	3.31	3.42	0.11	3.42%
Inspiring a shared vision	3.26	3.51	0.25	7.67%
Demonstrating moral intelligence	3.53	3.68	0.14	3.96%
Enabling others to act	3.49	3.61	0.13	3.58%
Encouraging the heart/motivating	3.44	3.69	0.25	7.27%

TABLE 6
ANOVA Statistics for All Dependent Variables

Effect	F	Degrees of Freedom	p	Effect size η^2
Self-perception of leadership skills	36.437[a]	1,44.061	.000*	.370
Leader as role model	.857	1,162	.358	.014
Inspiring a shared vision	7.858a	1,48.271	.007*	.112
Demonstrating moral intelligence	6.923	1,62	.011*	.100
Enabling others to act	3.846	1,62	.054	.058
Encouraging the heart/motivating	5.149a	1,47.892	.028*	.077

Note: * Significant at α=.05 [a] Using Welch's correction (robust test for equality of means)

TABLE 7
A Summary of the Results of the Null Hypotheses

Hypothesis		Outcome
$H_0$1	*Leaders who practice meditation will not have higher self-perception of leadership skills than other leaders.*	Rejected
$H_0$2	*Leaders who practice meditation will not have higher performance on the skill labeled 'leader as role model' than other leaders.*	Not rejected
$H_0$3	*Leaders who practice meditation will not have higher performance on the skill labeled 'inspiring a shared vision' than other leaders.*	Rejected
$H_0$4	*Leaders who practice meditation will not have higher performance on the skill labeled 'demonstrating moral intelligence' than other leaders.*	Rejected
$H_0$5	*Leaders who practice meditation will not have higher performance on the skill labeled 'enabling others to act' than other leaders*	Not rejected
$H_0$6	*Leaders who practice meditation will not have higher performance on the skill labeled 'encouraging the heart/motivating' than other leaders.*	Rejected

TABLE 8
Effect Size of Meditation

Effect of Meditation on	Effect Size	
Self-perception of Leadership Skills	.370	Medium
Inspiring a Shared Vision	.112	Small
Moral Intelligence	.100	Small
Motivating	.077	Small
Enabling Others to Act	.058	Small
Leaders as Role Model	.014	Negligible

TABLE 9
Summary of Effects of Meditation on 'Self-Perception of Leadership Skills' Components

	Research Hypothesis	SPLS Components	Effect	Effect Size
Meditation	H_0 2	Leaders as role models	X	-
	H_0 3	Inspiring a shared vision	✓	S
	H_0 4	Moral intelligence	✓	S
	H_0 5	Enabling others to act	X	-
	H_0 6	Motivating	✓	S

✓ Component enhanced by meditation Effect size: S=small, M=medium, L=large
x Component not enhanced by meditation (-)=no effect