Journal of Positive Psychology & Wellbeing
2023, Vol. 7, No. 3, 1-26

http://journalppw.com
ISSN 2587-0130

The Effect Of Mindfulness On Creative Thinking Within Organizations

Rosella De Nisco,[1,2] Juan Antonio Torrents Arevalo,[3] Jordi Vilajosana Crusells[4]
Compliance with Ethical Standards

[1] Doctoral Student, Business Administration and Management, the Polytechnic University of Catalonia – Barcelona Tech., Barcelona, Spain.
[2]Corresponding author, e-mail rossella.de.nisco@upc.edu
[3]Juan Antonio Torrents Arevalo is a Professor in the Department of Management at the Polytechnic University of Catalonia – Barcelona Tech., Barcelona, Spain.
[4]Jordi Vilajosana Crusells is a Professor in the Department of Management at the Polytechnic University of Catalonia – Barcelona Tech., Barcelona, Spain.

ABSTRACT

Objectives Research on the effects of meditation practice on creativity performance is a new and promising area of research. Although this field is still young, there are already enough studies showing a correlation between Mindfulness training and improvements in creativity, especially in the field of organizational psychology. In this study, we aimed to determine the efficacy of a 6-week Mindfulness-based intervention in improving creativity in organizations' workers.
Method For this longitudinal study, a 6-week specific protocol was used with a group of workers at the Polytechnic University of Catalunya, (n = 10). At the beginning of the training, the subjects were tested in Mindfulness and creativity using, respectively, the Five Facets Mindfulness Questionnaire and Crea tests. After the six sessions, the group was tested again.
Results The analysis of the Crea test results showed an improvement in the subjects' creative skills: On the first test, the mean total score was 573, and on the second test it was 694. Therefore, we can confirm that Mindfulness increases creativity; however, this improvement was observed only in the female subjects. Furthermore, we analyzed the effects of different aspects of Mindfulness on creativity and noted that the aspect of observation, (the ability to pay close attention to and carefully observe sensations, thoughts, and emotions) and the aspect of observation (the ability to distance oneself from what is happening in the attentional field without instantly reacting to the stimulus), yielded better results in our research.

Keywords: mindfulness; creativity; meditation; emotional intelligence; well-being, positive psychology.

Introduction

Mindfulness, a state of non-judgmental awareness of the present moment (Bishop et al., 2004; K. W. Brown & Ryan, 2003; Kabat-Zinn, 1982), has received considerable attention in several areas, ranging from health, to education,

to organizations, thanks to its positive effects on both emotion regulation and cognitive abilities.

Mindfulness was initially applied in the health care field as a technique that could improve outcomes for a variety of physical and mental illnesses, from chronic pain (Kabat-Zinn, 1982); to stress, depression, and anxiety (Khoury et al., 2013); and eating disorders (Kristeller & Wolever, 2010), to name a few.

In the past 20 years, there has been a change of perspective in the field of research about Mindfulness; on the ways it can improve performance in populations without a physical or mental health condition has increased. These findings include improved cognitive functioning, such as working memory capacity (Jha et al., 2010; Mrazek et al., 2013), intelligence (Chiesa et al., 2011), attention and task concentration (Lutz et al., 2008; Wallace & Shapiro, 2006), and the ability to switch perspectives (Carson & Langer, 2006). Studies of emotions in which Mindfulness training was shown to increase positive emotions (Davidson et al., 2003; Jain et al., 2007; Jha et al., 2010), communication skills (Dekeyser et al., 2008), empathy (Dekeyser et al., 2008), self-esteem (K. W. Brown & Ryan, 2003; Carson & Langer, 2006), and well-being (Carmody & Baer, 2008; Eberth & Sedlmeier, 2012), also have yielded positive outcomes. Most of those positive effects, both affective and cognitive, are very important in improving creativity skills, especially increases in positive affect (Baas et al., 2014), enhancement of working memory capacity (De Dreu et al., 2012), and cognitive flexibility (Baas et al., 2008; Carson & Langer, 2006).

In the past 10 years, many articles have been written, especially in the organizational psychological literature, that relate Mindfulness to improvements in the workplace (Malinowski & Lim, 2015), and many of them have tried to analyze the relationship between Mindfulness and creativity (Baas et al., 2014; Glomb et al., 2011; Henriksen et al., 2020; Kudesia, 2015). In this study, we attempted to explore the specific facets of Mindfulness that contribute to creative output.

What is Mindfulness?

There are many definitions of Mindfulness; the operative definition, based on a summary of different studies, was created in 2004, and it says that Mindfulness is a state of non-judgmental, present-centered awareness in which thoughts, feelings, and sensations that arise in the attentional field are acknowledged and accepted as they are (Kabat-Zinn, 1990; Bishop et al., 2004).

The term Mindfulness originated in Buddhism; it is the translation of the term Sati (Davids, 1910). In the Buddhist tradition, the word Mindfulness has different meanings, such as memory, recollection (Germer, 2005), and being aware (Bodhi, 2011). However, when Jon Kabat-Zinn started with what the scholars call secular Mindfulness (Brown, 2016; Sun, 2014), he took, as a basis for his studies, the definition of Mindfulness as bare attention; such a definition came from an important scholar, a monk named Ven., Nyanaponika Thera; bare attention means registering the facts observed without reacting, without judgement or reflection (Thera, 1962).

In this article, we refer to Mindfulness as bare attention: a state of alert awareness of all the experiences of the present moment, such as physical sensations, affective states, and thought. This awareness is associated with a mental attitude of no judgement and of acceptance (Kabat-Zinn, 1994). In the Mindfulness state, stimuli and resulting reactions are observed rather than habitually interpreted with positive or negative implications (Brown et al., 2007).

There are two principal practices in Mindfulness training: focused attention (FA) and open monitoring (OM; Lutz et al., 2008).

FA consists in voluntarily directing [illegible] on a chosen object in a sustained way, while the OM involves non-judgmental monitoring of the experience in the present moment without focusing on a specific object (Baas et al., 2014).

The main practice in Mindfulness-based programs is a mix of both; it consists of focusing on one's breath (FA); whenever the attention wanders from the breath to thoughts or

feelings that arise, the meditator takes notice of them and then lets them go (OM), and afterward returns his attention to the breath (FA; Bishop et al., 2004).

This process leads to the self-regulation of attention, which involves sustained attention, the ability to switch attention (bringing one's attention back to the breath once a thought, emotion, or sensation has been acknowledged), and inhibition of elaborative processing (when a thought has been acknowledged, the attention is directed to the breath without any further elaboration). The self-regulation of attention plays an important role in the improvement of creative thinking (Bishop et al., 2004).

Mindfulness is a multifaceted construct that comprises different skills. It can be a trait, or it can be achieved with training. Prior research has shown that mindfulness skills are not static but can be developed through regular meditation practice (Grossman, 2008; Kabat-Zinn, 1994; Sedlmeier et al., 2012).

The Five Facets Mindfulness Questionnaire (FFMQ; Baer et al., 2008), the most popular self-evaluation test to measure mindfulness, provides a summary of these skills:

1. Observation: the ability to pay close attention to and carefully observe both internal (e.g., bodily sensations, thoughts, and emotions) and exterior (e.g., noises and odours) occurrences.
2. Act with awareness: the capability to fully engage in one's current actions as they occur.
3. Description: the skill of verbally describing experienced phenomena without judgement and without engaging in conceptual analysis. Although this mode of awareness is not limited to meditation, we can also use it in our daily life activities, such as walking, eating, and other activities.
4. Nonjudging: the capacity to accept or be nonevaluative regarding present-moment experiences. This enables people to consider several emotional and behavioural responses to a circumstance and select the most adaptive ones.
5. No reactivity: the ability to distance oneself from what is happening in the attentional field and allow a period to pass in which there is no action or reaction to the stimulus. This allows the person to see different possible emotional and behavioral responses to one situation and choose the most adaptive ones.

Mindfulness-based interventions train the person, through meditation techniques, to learn the skills that are needed to improve mindfulness capacity. Therefore, there is a Mindfulness 'trait' and a Mindfulness 'state' (Bishop et al., 2004). In the present study, the current meditation techniques useful to enhance Mindfulness state were used. Changes have been measured using the FFMQ.

Definition of creativity

In 2010, IBM conducted an opinion study of CEOs, asking what the most important quality for a leader was; creativity was considered at the top of the list, so it was deemed the most important leadership skill (Berman & Korsten, 2010, cited in Kudesia & Parke, 2014).

The concept of creativity is multifaceted and therefore challenging to define and measure. For a long time, it was considered an element linked to the domain of the arts; it was only around the 1960s, thanks to Paul Guilford, the first investigations in the field of psychology began.

Guilford made a key distinction between convergent and divergent models of thinking. In convergent thinking, the person tries to narrow his mental process until he gets a single correct answer. In divergent thinking, mental processes are more free because there is no correct answer, so the mind allows spontaneous answers to emerge (Guilford, 1967; Torrance, 1966).

Although the creative process typically needs both types of thinking, divergent thinking has been considered more important in the literature on creativity because is authentic,

nonlinear, free of limitation. Throughout the process of divergent thinking, multiple alternative answers are explored, and novel connections are created in a short amount of time. After divergent thinking, convergent thinking then orders and arranges all the new ideas and connections toward a specific purpose (Clapham, 2010; Lieberman, 1965; Acar & Runco, 2012).

Lately, many researchers have agreed that creativity is more than divergent thinking. Based on a gradually accumulating body of research evidence, many scholars support a complex model of creativity in which several factors are considered necessary for creative performance to flourish (Amabile, 1983; Baas et al., 2008; McCrae, 1987; Sternberg, 2006;). According to those multidimensional theories of creativity, cognitive as well as emotional, dispositional, and environmental aspects are involved in the creative process (Sternberg, 2006).

Cognitive aspects of creativity are the ones individuated by Guilford in his theory of divergent thinking and are measured in Torrance Test of Creative Thinking (TTCT) (Torrance, 1966). They are (a) fluency, the total number of thoughts created in response to the stimuli that are interpretable, significant, and relevant; (b) flexibility, the number of distinct types of appropriate responses; (c) originality, the response frequency's statistical rarity, and (d) elaboration, the amount of detail in the responses (Torrance, 1966).

Emotional aspects of creative thinking are related to motivation, self-regulation, positive affect, self-efficacy, and well-being (Amabile, 1996; Fredrickson, 2001; Isen et al., 1987).

Examples of dispositional aspects of creative thinking are the ability to overcome obstacles, a willingness to take calculated risks, an ability to handle ambiguity, and a high perceived level of self-efficacy (Martindale, 1989; Sternberg, 2003). Environmental aspects are related to the external support and rewarding of creative ideas; one could have all the internal resources needed to think creatively, but without some environmental support, such as a space for proposing those ideas, the creativity that a person has may never be displayed (Sternberg, 2006). In contemporary psychology, Teresa Amabile led an investigation of creativity in organizations. She defined creativity as producing outcomes (e.g., ideas, drawings, and musical improvisations) that are both novel and appropriate (Amabile, 1996; Sternberg, 2006).

For Amabile, the key point of creative behavior is motivation; she distinguished between a person's dispositional capacity to be creative and the capacity to act creatively. She created a multidimensional theory of creativity in which she identified three elements: expertise, creative thinking, and motivation. According to Amabile, one person can have expertise in a domain and the capacity for creative thinking; however, if he or she does not have any intrinsic motivation for the task, this creative potential will not be revealed completely (Amabile, 1996). The motivation aspect relates to emotional regulation (Mauss & Tamir 2014), as we will see in the next paragraph, Mindfulness can be helpful in getting more intrinsic motivation for a task, and in this way, it enhances the creativity output.

According to Amabile's and Sternberg's theories, it seems that the emotional well-being is the background that allows our cognitive potential to unfold, and Mindfulness could be a key element that allows us to reach this emotional well-being (K. W. Brown & Ryan, 2003).

There are several tests for measuring creativity, the most frequently used instruments are ideation tasks and self-report questionnaires (Jaeger & Runco, 2012; Simonton, 2012).

Ideation tasks are open-ended assessments of an individual's ability to generate multiple alternative solutions (Baas et al., 2008). For example, participants are asked to come up with as many creative uses for a brick as possible (Guilford, 1967; Torrance, 1966). Another way to measure creativity with ideation tasks is by focusing not on problem solving but on problem finding (Runco, 2004).

According to this vision, creativity is the ability to find multiple problems to a solution. If creativity is finding different solutions to a problem, it is also finding different problems to a solution (Runco & Pritzker, 2020). In the present study we used the CREA test: an ideation task test based on problem-finding theory (Claphan and King, 2010).

Creativity is also assessed with self-report inventories about an individual's creative behavior, personality, and activities (Baas et al., 2008; Simonton, 2012). For example, participants are asked to indicate how often they come up with original solutions to problems (Janssen, 2001) or to indicate whether others recognize them for their creative achievements (Carson et al., 2005). Self-report measures of creativity often correlate substantially with more objective indicators of creative output, such as expert ratings of creativity and creative performance on ideation tasks (Carson et al., 2005; Batey & Furnham, 2008; Janssen, 2001; Simonton, 2012). This difference between self-report tests and ideation tasks tests could support Amabile's idea that there is a difference between the capacity to be creative and creative output, which is related to emotional aspects: If a person perceives themselves as efficient then it will be easier to translate this feeling into a creative action.

Mindfulness and Creativity

The literature on the positive effect of using Mindfulness training in the workplace is rich (Glomb et al., 2011; Good et al., 2016; Hülsheger et al., 2013; Malinowski & Lim, 2015). The positive effects regard different domains—cognition, emotion, and behaviour—that affect workplace outcomes such as performance, relationships, well-being, and creativity (Baas et al., 2014, Chiesa & Serretti, 2009; Good et al., 2016; Langer & Moldoveanu, 2000). In the past 20 years several articles have been published about the relationship between mindfulness and creativity, especially in the workplace (Malinowski & Lim, 2015; Kudesia, 2015; Carson & Langer, 2006; Baas et al., 2014). The results are positive and promising. Numerous facets of 'trait mindfulness,' or skills facilitated by mindfulness training, can help in the creativity process (Henriksen et al., 2020); specifically, there are direct and indirect mechanisms through which Mindfulness can affect creativity (Kudesia, 2015).

The direct mechanisms are primarily cognitive, and the indirect mechanisms are primarily affective. One of the direct mechanisms is to improve the quality of attention: stability, control, and efficiency (Kudesia y Nyima, 2015). Better attention increases creative output because it boosts persistence and decreases mind wandering (Brewer et al., 2011). There are two types of minds wandering; one is mindful/deliberate, and the other is more uncontrolled/spontaneous. Research indicates that deliberate mind wandering can enhance creative output, and uncontrolled mind wandering is correlated negatively with creative performance (Agnoli et al., 2018; Berkovich-Ohana et al., 2016). Moreover, good stability in attention allows the person to enter in a particular state of mind that Mihaly Csikszentmihalyi defined as flow, a state that allows a person to be highly creative and at the same time feel energized and enjoy the process of the activity (Csikszentmihalyi & Csikszentmihalyi, 1988, Csikszentmihalyi, 2003). Improving the quality of attention also allows one to switch attention more easily from one object to another. This process increases cognitive flexibility (Baas et al., 2014), another key element of the creative process.

Another direct mechanism is the enhancement of working memory. The capacity of observation and the stability of attention gained in Mindfulness training improves one's working memory (De Dreu et al., 2012). Working memory facilitates divergent thinking by enabling people to produce and hold several ideas at once and choose fresh ideas over more traditional ones (Lee & Therriault, 2013). Those who are mindful have more mental room in which to hold and control ideas (Kudesia, 2015).

The indirect mechanisms are related to emotion regulation (Arch & Craske, 2006,

Salovey & Mayer, 1990, Salovey et al., 2001). By increasing the positive effect and lowering stress, mindfulness aids in the regulation of our emotions (K. W. Brown & Ryan, 2003; Hülsheger et al., 2013; Grossman et al., 2004).

Positive affect increases creativity (Ashby et al., 1999; Isen et al., 1987; Frederickson, 2001; Frederickson & Joiner, 2002). According to the broaden-and-build theory of positive emotions, one's thought-action repertoires would rise as positive feelings increase. This would lead to an increase in one's own resources, including well-being, optimal performance, and long-term psychological development. Positive emotions extend thought-action repertoires, and negative emotions constrain them, allowing us to choose from a wide range of potential cognitions and behaviours in response to emotional cues. According to this perspective, when people experience good emotions, they are free to engage in creative, playful, inquisitive, and experimental behaviours. Opportunities to acquire additional physical, social, and intellectual resources result from these activities (Frederickson, 2001).

Malinowski and Lim (2012) showed how a Mindfulness program in the workplace produces positive effects on optimism and well-being and positively affects how those elements predict a higher level of work engagement. The process of learning how to regulate our emotions is a result of the meta-awareness that we cultivate in Mindfulness practice; the ability 'to step back' from discursive thought helps emotional regulation and enhances well-being (Chambers, et al., 2009, Goldin y Gross, 2010). In addition, meta-awareness produces higher cognitive flexibility because it gives us the capacity to look at things in different ways, and cognitive flexibility is a very important cognitive factor in divergent thinking (Colzato et al., 2012; Kudesia & Parke, 2014,).

Baas suggested that different aspects of Mindfulness can have different effects on creativity. In specific Bass analyses the differences between the two Mindfulness skills act with awareness (AWA) and Observation (Baas et al., 2014). The ability to observe requires an open awareness of arising feelings, ideas, and sensations as well as diffused attention, in contrast to AWA, which focuses on a specific topic. As a result, the ability to observe has been related to an increase in cognitive flexibility and is more strongly linked to creativity than the other Mindfulness abilities (Valentine & Sweet, 1999). Consequently, observation has been associated with increased cognitive flexibility (Chambers et al., 2009; Slagter et al., 2007), ease in applying alternative approaches to complex problems (Greenberg et al., 2012), and inhibition of automatic responding (Schmertz et al., 2009). In the present research, we investigated more deeply the relationship between different Mindfulness skills and creativity.

Method

Participants

The study was carried out with a group of workers of the UPC university (Universidad Polytechnical de Catalunya). The workers came from different departments of the university; some of them were academics (80%), others worked in administration (10%), and others were PhD students (10%).

Approximately 70% of them were female and 30% were male. Their ages ranged between 30 and 60; 40% were between 30 and 45, and 60% were between 46 and 60.

Procedure

The study consists of a 6-week Mindfulness based intervention (MBI) online course handed at the Institute of Education Sciences (ICE) of the Polytechnic University of Catalonia from May 24 to June 29 of 2022.

Each session lasted 3 hours, for a total of 18 hours, in which different themes were addressed, alternating between theoretical explanations and practical exercises.

Before the training, the FFMQ and the Crea test were administered to the participants to measure their Mindfulness abilities levels and creativity levels.

The project was based on a general hypothesis that a Mindfulness training program enhances creativity in the workplace as well as on a more specific hypothesis based on the different aspects of Mindfulness: observation, description, no judgement, no reactions, and acting with awareness. We propose a positive relationship between Mindfulness and creativity across individual components of mindfulness, according to the idea that different Mindfulness skills may differentially predict creativity.

The two tests (FFMQ and Crea) were administered to the participants again after the training to measure changes in their Mindfulness skills and creativity level compared to the beginning of the program.

The main topics of the MBI training were Mindfulness, creativity, character strengths, emotional intelligence, cognitive psychology, and positive psychology. MBIs are structured trainings that use a Mindfulness approach. MBIs focus on concepts such as acceptance, non-judgement, and objectivity of all thoughts, feelings, and sensations. There are different kinds of MBIs; most of them are used mostly in a clinical setting rather than for the pursuit of well-being, but in recent years this tendency has changed. Although Mindfulness made a significant contribution to clinical psychology, the term Mindfulness has a far larger and more expansive connotation that goes beyond clinical symptom reduction and toward improved psychological well-being human activity and flourishing. In recent years, Positive Psychology Interventions (PPIs) that integrate Mindfulness elements, such as the Niemec program, based on the character strengths, have shown some promising outcomes (Allen et al., 2021). The MBIs that we used in the present research are based on three different MBIs: Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 2003), Mindfulness-Based Cognitive Therapy (MBCT; Segal et al., 2002), and Mindfulness Based Strengths Practice (MBSP; Niemec et al., 2012). The MBI, that we used in this study was expanded to include other topics that have been shown to promote creative thinking, such as emotional intelligence, self-care, values, motivation, and flow, with the target of improving creativity in organizations' workers. The training alternated between theoretical explanations and practical activities. The Mindfulness protocol is described in Table 1.

Table 1. Mindfulness Protocol

Week	Course Content
1	Introduction to the Mindfulness and creativity concepts and how they are related, practice of the awareness of breath.
2	Introduction to the Buddhist theory of perception of reality; body scan (awareness of body sensations) practice.
3	The effect of Mindfulness on our emotional intelligence and creativity; practice awareness of emotions.
4	The effect of Mindfulness on our thoughts and creativity; practice awareness of thoughts.
5	Characters strength theory, flow theory and its effect on creativity; practice of Mindfulness for the enhancement of character strength awareness.
6	The importance of self-care and values in our daily life and consolidation of the techniques learned.

Measures

FFMQ

Several tests have been developed to evaluate mindfulness; most of them are one-dimensional self-reports, backed by certain definitions of mindfulness that have been refined through time (Baer et al., 2006; Brown & Ryan, 2003). The Mindful Attention Awareness Scale (MAAS), created by K. W. Brown and Ryan in 2003, evaluates how much one acts consciously during the day and was one of the first assessments of mindfulness. Baer developed the Kentucky Inventory of Mindfulness Skills (KIMS), a multidimensional self-report questionnaire that was created in accordance with the theories of Dimidjian and Linehan (2003) and Baer et al. (2004). Four mindfulness skills were identified in the KIMS: observe (OBS), describe (DES), act with awareness (ACT), and accept without judgement (ACC). The FFMQ (Baer et al., 2006) is a scale developed by the authors of the KIMS; it is based on the results of a factor analysis of five of the most important Mindfulness scales, the KIMS scales (Baer et al., 2004), the Freiburg Mindfulness Inventory (FMI; Bucheld et al., 2001; Walach et., al. 2006), the Mindfulness Questionnaire (MQ: Chadwick et al., 2005), the MAAS (K. W. Brown & Ryan, 1993), and the Cognitive and Affective Mindfulness Scale (CAMS; Feldman et al., 2007). The FFMQ basically comprises the four Mindfulness skills of the KIM previously proposed by the authors themselves, with the exception that the skill 'acceptance without judgement' become 'non-judgement', plus it includes a new factor that refers to the 'absence of reactivity' to internal experience. Summarized in the FFMQ measure are five Mindfulness facets or skills: Observing, Describing, Acting with Awareness, Non-judgment, and Non-reactivity to internal experience.

CREA

Crea test is an ideation task (Runco, 2004; Simonton, 2012). These kinds of tests measure the cognitive aspect of creativity or divergent thinking (Guilford, 1967). The Crea is based on problem-finding theory (Clapham &King, 2010), that is, the ability to find multiple problems to a solution. The test requires the participants to generate as many questions as possible concerning a given image. The amount of nonredundant thoughts and the fluency of participant-generated ideas are measured. Crea measures a construct like that measured by the TTCT (Clapham, 2010), the most frequently used creativity test (Cramond et al., 2005). Built on J. P. Guilford's (1967) work and created by Ellis Paul Torrance (1966), the TTCT measures creativity by considering creative thinking synonymous with divergent thinking. In TTCT four characteristics of divergent thinking are scored: flexibility, originality, fluency, and elaboration. Crea provides a measure of the subject's cognitive capacity of fluency.

DATA

Now we would like to show the figures about test FFMQ and Crea

Table 2. Study Variables

Five Facets Mindfulness Questionnaire	N
Age	
30–45	4
46–60	6
Gender	
Female	7
Male	3
Questions	39
Tests: first before course second after course	2
Types	5

1. Observation	8
2. Description	8
3. Act with Awareness	8
4. Do Not judge the internal experience questions	8
5. Nonreactivity on the internal experience questions	8
Crea	n
Tests: first before course second after course	2
Age	
30–45	4
46–60	6
Gender	
Female	7
Male	3

RESULTS

In the case of Crea, in the first test the total mean score was 573 and in the second test it was 694; therefore, we can confirm that the MBI increased creativity. Regarding the male participants from the first test and the second test the total score decreased (153 to 138); however, for females the total score increased (420 to 556). Among the female subjects between 30 and 45 years of age, the rise in points is from 270 to 326, and between 46 and 60 years of age, the increase is from 150 to 230. Therefore, in this study, we can confirm a positive relationship between Mindfulness and creativity in the female participants, but not among the male's ones.

For the FFMQ, we analyzed the effect of the MBI on the five facets of Mindfulness: Observation, Description, Act with Awareness, Accept Without judgement, No reactivity; before and after the test. We took into consideration the following statistics: mean, median, error standard means, variance, standard deviation, and kurtosis. The results are listed in Table 3.

Table 3. Facet 1: Observation

	Before			
Sum variables	30–45	46–60	M	F
M	3.00	3.25	3.59	3.04
Mdn	3.13	3.35	3.67	3.14
Error standard mean	0.36	0.36	0.31	0.38
Variance	1.33	1.11	0.85	1.29
SD	1.03	1.01	0.88	1.06

	After			
Sum variables	30–45	46–60	M	F

M	3.41	3.82	3.81	3.68
Mdn	3.63	3.85	3.67	3.86
Error standard mean	0.32	0.22	0.19	0.28
Variance	0.86	0.42	0.29	0.69
SD	0.90	0.62	0.54	0.80

Note. M = male; F = female.

In regard to observation, the ability to attentively pay attention to both internal (e.g., bodily sensations, thoughts, and emotions) and exterior (e.g., noises and odours) occurrences; in every case, the outcomes were better after the MBI; the results show an increase in the mean for both the male and female subjects; on the other hand, the variance, error standard mean, and standard deviation decreased, which means the all participants achieved a good performance after the training.

Table 4. Face 2: Descriptions

	Before			
Sum variables	30–45	46–60	M	F
M	2.95	3.16	3.34	2.96
Mdn	2.75	3.71	4.17	2.93
Error standard mean	0.27	0.46	0.56	0.32
Variance	0.76	2.04	2.89	0.98
SD	0.74	1.30	1.57	0.90

	After			
Sum variables	30–45	46–60	M	F
M	3.03	3.18	3.09	3.16
Mdn	3.13	3.94	3.83	3.50
Error standard mean	0.46	0.59	0.59	0.49
Variance	1.94	3.00	2.99	2.19
SD	1.30	1.65	1.62	1.38

Note. M = male; F = female.

About description, the capacity to describe observed phenomena in a nonevaluative way and without cognitive analysis, the mean scores were better; however, the other variables did not show improvement; they even had worse data, which implies more distortion in the sample.

Table 5. Face 3: Act with Awareness

	Before			
Sum variables	30–45	46–60	M	F
M	3.16	2.57	1.88	3.28
Mdn	3.00	2.58	2.00	3.21
Error standard mean	0.24	0.21	0.15	0.25
Variance	0.50	0.45	0.28	0.51
SD	0.68	0.60	0.42	0.69

	After			
Sum variables	30–45	46–60	M	F
M	2.44	2.46	2.11	2.72
Mdn	2.38	2.65	2.33	2.71
Error standard mean	0.22	0.19	0.12	0.24
Variance	0.40	0.39	0.17	0.51
SD	0.62	0.54	0.33	0.68

Note. M = male; F = female.

In regard to Act with Awareness, the ability to fully engage in current activities with undivided attention or focus on one thing at a time with full awareness, the mean scores were the worst; however, the error standard mean, variance, and standard deviation increase a little the efficient, so but not in relevant way.

Table 6. Face 4: Do Not Judge the Internal Experience

	Before

Sum variables	30–45	46–60	M	F
M	2.54	2.39	2.21	2.58
Mdn	2.50	2.17	1.83	2.57
Error standard mean	0.19	0.31	0.31	0.25
Variance	0.29	0.89	0.97	0.54
SD	0.52	0.86	0.88	0.68

	After			
Sum variables	30–45	46–60	M	F
M	2.22	1.98	1.97	2.30
Mdn	2.13	1.85	1.67	2.29
Error standard mean	0.14	0.27	0.28	0.20
Variance	0.23	2.32	0.60	1.88
SD	0.40	0.74	0.75	0.56

Note. M = male; F = female.

Regarding Accept Without Judgement, the capacity to accept or to not judge one's current experience (e.g., not assigning labels like 'right' or 'wrong' and allowing reality to be as it is), there was no increase in performance after the training; therefore, the participants in all cases did not show improvement.

Table 7. Face 5: Non-reactivity on the Internal Experience

	Before			
Sum variables	30–45	46–60	M	F
M	2.71	3.17	3.76	2.73
Mdn	2.50	3.25	4.00	2.57
Error standard mean	0.28	0.32	0.24	0.32
Variance	0.57	0.89	0.51	0.82

SD	0.73	0.85	0.62	0.84

	After			
Sum variables	30–45	46–60	M	F
M	3.14	3.50	3.90	3.16
Mdn	3.50	3.58	4.00	3.29
Error standard mean	0.25	0.27	0.19	0.28
Variance	0.46	0.57	0.30	0.60
SD	0.66	0.70	0.51	0.74

Note. M = male; F = female.

Regarding non-reactivity, the capacity to step back from what is happening in the attentional field and allow time for the stimulus's effect on internal experience to pass without action or reaction, the performance in all cases showed clear improvements in both female and male subjects.

Discussion

In agreement with the data emerging from the study, we can say that the Mindfulness program was able to increase the creativity of the subjects, especially in the case of women, so we could prove our main hypothesis.

In the case of FFMQ, we did not find the improvement we expected in the various Mindfulness skills; we found a significant improvement only in the skill of observation and no reactivity, in men and women. So, we could conclude that these two variables are the ones that most relate to creativity, which has already been shown in other studies (Kudesia, 2015).

Limitations and Future Research

The biggest limitation of this study is the number of subjects, which was only 10. Another limitation is the fact that it was not possible to have a control group, because this was a pioneer study and thus the first time that these two tests are correlated. As a pioneering study the results show once again that there is a correlation between Mindfulness and creativity and especially between some aspects of Mindfulness and creative thinking. Our intent is to continue to collect data for future studies and continue to investigate the relationship between Mindfulness and creativity in organizations; for example, it may be interesting to investigate more deeply why gender differences are present or to try to understand the specific mechanisms through which Mindfulness enhances creative thinking by investigating how emotions are involved in this process, considering that according to Amabile's and Sternberg's theories (Amabile, Sternberg, , it appears that emotional well-being is the background that allows our cognitive potential to manifest, and Mindfulness may be a key factor in achieving emotional well-being. Furthermore, these findings suggest that meditation may really change our way of managing creative tasks in

positive ways and underscore the need for additional research.

References

Acar, S. & Runco, M. A., (2012). Divergent thinking as an indicator of creative potential. Creativity Research Journal, 24(1), 66–75. https://doi.org/10.1080/10400419.2012.652929

Agnoli, S., Vanucci, M., Pelagatti, C., & Corazza, G. E. (2018). Exploring the link between mind wandering, mindfulness, and creativity: A multidimensional approach. Creativity Research Journal, 30(1), 41–53. https://doi.org/10.1080/10400419.2018.1411423

Allen, J. G., Romate, J., & Rajkumar, E. (2021). Mindfulness-based positive psychology interventions: A systematic review. BMC Psychology, 9(1), 1–18 . https://doi.org/10.1186/s40359-021-00618-2

Amabile, T. M. (1983). The social psychology of creativity: A componential conceptualization. Journal of Personality and Social Psychology, 45(2), 357–376. https://doi.org/10.1037/0022-3514.45.2.357

Amabile, T. M. (1996). Creativity and innovation in organizations (Vol. 5). Harvard Business School.

Arch, J. J., & Craske, M. G. (2006). Mechanisms of mindfulness: Emotion regulation following a focused breathing induction. Behaviour Research and Therapy, 44, 1849–1858. https://doi.org/10.1016/j.brat.2005.12.007

Ashby, F., Isen, G., & Turken, A. (1999). A neuropsychological theory of positive affect and its influence on cognition. Psychological Review, 106(3), 529–550. https://doi.org/10.1037/0033-295x.106.3.529

Baas, M., De Dreu, C. K., & Nijstad, B. A. (2008). A meta-analysis of 25 years of mood-creativity research: Hedonic tone, activation, or regulatory focus?. Psychological bulletin, 134(6), 779. https://doi.org/10.1037/a0012815

Baas, M., Nevicka1, B., & Ten Velden, F.S. (2014). Specific mindfulness skills differential predict creative performance. Personality and Social Psychology, 40(9), 1092–1106. https://doi.org/10.1177/0146167214535813

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: the Kentucky Inventory of Mindfulness Skills. Assessment, 11(3), 191–206. https://doi.org/10.1177/1073191104268029

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. Assessment, 13(1), 27–45. https://doi.org/10.1177/1073191105283504

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., & Williams, J. M. G. (2008). Construct validity of the Five-Facet Mindfulness Questionnaire in meditating and nonmeditating samples. Assessment, 15(3), 329–342. https://doi.org/10.1177/1073191107313003

Batey, M., & Furnham, A. (2008). The relationship between measures of creativity and schizotypy. Personality and Individual Differences, 45(8), 816–821. https://doi.org/10.1016/j.paid.2008.08.014

Berkovich-Ohana, A., Harel, M., Hahamy, A., Arieli, A., & Malach, R. (2016, July 15). Data for default network reduced functional connectivity in meditators, negatively correlated with meditation

expertise. Data Brief, 8, 910–914. https://doi.org/10.1016/j.dib.2016.07.015

Berman, S., & Korsten, P. (2010). Capitalizing on complexity: Insights from the Global Chief Executive Officer (CEO) study. IBM Institute for Business Value.

Bodhi, B. (2011). What does mindfulness really mean? A canonical perspective. Contemporary Buddhism, 12(1), 19–39. https://doi.org/10.1080/14639947.2011.564813

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., Segal, Z. V., Abbey, S., Speca, M., Velting, D., & Devins, G. (2004). Mindfulness: A proposed operational definition. Clinical Psychology: Science and Practice, 11(3), 230–241. https://doi.org/10.1093/clipsy.bph077

Brewer, J. A., Worhunsky, P. D., Gray, J. R., Tang, Y. Y., Weber, J., & Kober, H. (2011). Meditation experience is associated with differences in default mode network activity and connectivity. Proceedings of the National Academy of Sciences, 108(50), 20254–20259. https://doi.org/10.1073/pnas.1112029108

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. Psychological inquiry, 18(4), 211-237. https://doi.org/10.1080/10478400701598298

Brown, C. G. (2016). Can "secular" mindfulness be separated from religion? In Handbook of mindfulness: Culture, context, and social engagement (pp. 75–94). https://doi.org/10.1007/978-3-319-44019-4_6

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. Journal of Personality and Social Psychology, 84(4), 822-848. https://doi.org/10.1037/0022-3514.84.4.822

Bucheld, N., Grossman, P., & Walach, H. (2001). Measuring mindfulness in insight meditation (Vipassana) and meditation based psychotherapy: the development of the freiburg mindfulness inventory (FMI). Personality and Individual Differences, 40 1543–1555. https://doi.org/10.1016/j.paid.2005.11.025

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms, and well-being in a mindfulness-based stress reduction program. Journal of Behavioral Medicine, 31, 23–33. https://doi.org/10.1007/s10865-007-9130-7

Carson, S. H., & Langer, E. J. (2006). Mindfulness and self-acceptance. Journal of Rational–Emotive and Cognitive–Behavior Therapy, 24, 29–43. https://doi.org/10.1007/s10942-006-0022-5

Carson, S. H., Peterson, J. B., & Higgins, D. M. (2005). Reliability, validity, and factor structure of the Creative Achievement Questionnaire. Creativity Research Journal, 17(1), 37–50. https://doi.org/10.1207/s15326934crj1701_4

Chiesa, A., Calati, R., & Serretti, A. (2011). Does mindfulness training improve cognitive abilities? A systematic review of neuropsychological findings. Clinical Psychology Review, 31(3), 449–464. https://doi.org/10.1016/j.cpr.2010.11.003

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress

management in healthy people: A review and meta-analysis. The Journal of Alternative and Complementary Medicine, 15(5), 593–600. https://doi.org/10.1089/acm.2008.0495

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. Clinical psychology review, 29(6), 560-572. https://doi.org/10.1016/j.cpr.2009.06.005

Clapham, M. M., & King, W. R. (2010). Psychometric characteristics of the CREA in an English-speaking population Annals of Psychology, 26(2), 206–211.

Colzato L. S., Ozturk A., & Hommel B. (2012). Meditate to create: the impact of focused-attention and opening-monitoring training on convergent and divergent thinking. Frontiers in Psychology, 116(3). https://doi.org/10.3389/fpsyg.2012.00116

Cramond, B., Matthews-Morgan, J., Bandalos, D., & Zuo, L. (2005). A report on the 40-year follow-up of the Torrance Tests of Creative Thinking: Alive and well in the new millennium. Gifted Child Quarterly, 49(4), 283–291. https://doi.org/10.1177/001698620504900402

Csikszentmihalhy, M. (2003). Good business: Leadership, flow, and the making of meaning. Penguin Group.

Csikszentmihalyi, M., & Csikszentmihalyi, I. S. (1988). Optimal experience: Psychological studies on flow in consciousness. Cambridge University Press. https://doi.org/10.1017/cbo9780511621956

Davids, C. A. F. R. (Ed.). (1910). Compendium of philosophy: Being a translation now made for the first time from the original Pali of the Abhidhammattha-sangaha (No. 2). Pali Text Society. https://doi.org/10.1017/s0035869x00042490

Davidson, Richard J. PhD; Kabat-Zinn, Jon PhD; Schumacher, Jessica MS; Rosenkranz, Melissa BA; Muller, Daniel MD, PhD; Santorelli, Saki F. EdD; Urbanowski, Ferris MA; Harrington, Anne PhD; Bonus, Katherine MA; Sheridan, John F. PhD (2003). Alterations in brain and immune function produced by mindfulness meditation. Psychosomatic Medicine, 65(4), 564–570. https://doi.org/10.1097/01.psy.0000077505.67574.e3

De Dreu, C. K., Nijstad, B. A., Baas, M., Wolsink, I., & Roskes, M. (2012). Working memory benefits creative insight, musical improvisation, and original ideation through maintained task-focused attention. Personality and Social Psychology Bulletin, 38(5), 656–669. https://doi.org/10.1177/0146167211435795

Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. Personality and Individual Differences, 44(5), 1235–1245. https://doi.org/10.1016/j.paid.2007.11.018

Dimidjian, S., & Linehan, M. M. (2003). Defining an agenda for future research on the clinical application of mindfulness practice. Clinical Psychology: Science and Practice, 10(2), 166-171. https://doi.org/10.1093/clipsy.bpg019

Eberth, J., & Sedlmeier, P. (2012). The effects of mindfulness meditation: A meta-analysis. Mindfulness, 3(3), 174–189. https://doi.org/10.1007/s12671-012-0101-x

Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J. P. (2007). Mindfulness and emotion regulation:

The development and initial validation of the Cognitive and Affective Mindfulness Scale–Revised (CAMS–R). Journal of Psychopathology and Behavioural Assessment, 29, 177–190. https://doi.org/10.1007/s10862-006-9035-8

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. American Psychologist, 56(3), 218-226. https://doi.org/10.1037/0003-066x.56.3.218

Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. Psychological Science, 13(2), 172–175. https://doi.org/10.1111/1467-9280.00431

Germer, C. K. (2005). Teaching mindfulness in therapy. Mindfulness and Psychotherapy, 1(2), 113–129.

Glomb, T. M., Duffy M. K., Bono J. E., & Yang T. (2011). Mindfulness at work. Personnel and Human Resources Management, 30, 115–157. https://doi.org/10.1108/s0742-7301(2011)0000030005

Goldin, P. R., & Gross, J. J. (2010). Effects of Mindfulness-Based Stress Reduction (MBSR) on emotional regulation in social anxiety disorder. Emotion, 10(1), 83–91. https://doi.org/10.1037/a0018441

Good, D. J., Lyddy, C. J., Glomb, T. M., Bono, J. E., Brown, K. W., Duffy, M. K., Baer, R. A., Brewer J. A., & Lazar, S. W. (2016). Contemplating mindfulness at work: An integrative review. Journal of Management, 42(1), 114–142. https://doi.org/10.1177/0149206315617003

Greenberg, J., Reiner, K., & Meiran, N. (2012). "Mind the trap": mindfulness practice reduces cognitive rigidity. PloS one, 7(5), e36206. https://doi.org/10.1371/journal.pone.0036206

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits: A meta-analysis. Journal of Psychosomatic Research, 57(1), 35–43. https://doi.org/10.1016/s0022-3999(03)00573-7

Grossman, P. (2008). On measuring mindfulness in psychosomatic and psychological research. Journal of Psychosomatic Research, 64(4), 405-408. https://doi.org/10.1016/j.jpsychores.2008.02.001

Guilford, J. P. (1967). The nature of human intelligence. McGraw-Hill.

Henriksen, D., Richardson, C., & Shack, K. (2020). Mindfulness and creativity: Implications for thinking and learning. Thinking Skills and Creativity, 37, 100689. https://doi.org/10.1016/j.tsc.2020.100689

Hülsheger, U. R., Alberts, H. J., Feinholdt, A., & Lang, J. W. (2013). Benefits of mindfulness at work: The role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. Journal of Applied Psychology, 98(2), 310-325. https://doi.org/10.1037/a0031313

Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. Journal of Personality and Social Psychology, 52(6), 1122-1131. https://doi.org/10.1037/0022-3514.52.6.1122

Jaeger, G. J. & Runco, M. A. (2012). The standard definition of creativity. Creativity Research Journal, 24(1), 92–96. https://doi.org/10.1080/10400419.2012.650092

Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., & Schwartz, G.

E. (2007). A randomized controlled trial of mindfulness meditation versus relaxation training: Effects on distress, positive states of mind, rumination, and distraction. Annals of Behavioral Medicine, 33, 11–21. https://doi.org/10.1207/s15324796abm3301_2

Janssen, O. (2001). Fairness perceptions as a moderator in the curvilinear relationships between job demands, job performance and job satisfaction. Academy of Management Journal, 44(5), 1039–1050. https://doi.org/10.5465/3069447

Jha, A. P., Stanley, E. A., Kiyonaga, A., Wong, L., & Gelfand, L. (2010). Examining the protective effects of mindfulness training on working memory capacity and affective experience. Emotion, 10(1), 54-64. https://doi.org/10.1037/a0018438

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. General Hospital Psychiatry, 4(1), 33–47. https://doi.org/10.1016/0163-8343(82)90026-3

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context past, present, and future. Clinical Psychology Science and Practice, 10, 144–156. https://doi.org/10.1093/clipsy.bpg016

Khoury, B., Lecomte, T., Gaudiano, B. A., & Paquin, K. (2013). Mindfulness interventions for psychosis: A meta-analysis. Schizophrenia Research, 150(1), 176–184. https://doi.org/10.1016/j.schres.2013.07.055

Kristeller, J. L., & Wolever, R. Q. (2010). Mindfulness-based eating awareness training for treating binge eating disorder: The conceptual foundation. Eating Disorders, 19(1), 49–61. https://doi.org/10.1080/10640266.2011.533605

Kudesia, R. S. (2015). Mindfulness and creativity in the workplace. Mindfulness in organizations: Foundations, Research, and Applications, 190–212. https://doi.org/10.1017/cbo9781107587793.010

Kudesia, R. S., & Nyima, V. T. (2015). Mindfulness contextualized: An integration of Buddhist and neuropsychological approaches to cognition. Mindfulness, 6(4), 910–925. https://doi.org/10.1007/s12671-014-0337-8

Kudesia, R. S., & Parke, M. R. (2014). The flexible mind: The role of mindfulness in cognitive adaptation [Paper presentation]. Academy of Management Annual Meeting, Philadelphia, PA.

Langer, E. J., & Moldoveanu, M. C. (2000). The construct of mindfulness. Journal of Social Issues, 56, 1–9.

Lee, C. S., & Therriault, D. J. (2013). The cognitive underpinnings of creative thought: A latent variable analysis exploring the roles of intelligence and working memory in three creative thinking processes. Intelligence, 41(5), 306–320. https://doi.org/10.1016/j.intell.2013.04.008

Lieberman, J. N. (1965). Playfulness and divergent thinking: An investigation of their relationship at the kindergarten level. The Journal of Genetic Psychology, 107(2), 219–224. https://doi.org/10.1080/00221325.1965.10533661

Lutz, A., Slagter, H. A., Dunne, J. D., & Davidson, R. J. (2008). Attention regulation and monitoring in meditation. Trends in Cognitive Sciences, 12(4), 163–169. https://doi.org/10.1016/j.tics.2008.01.005

Malinowski, P., & Lim, H. J. (2015). Mindfulness at work: Positive affect, hope, and optimism mediate the relationship between dispositional mindfulness, work engagement, and well-being. Mindfulness 6, 1–13. https://www.doi.org/10.1007/s12671-015-0388-5 https://doi.org/10.1007/s12671-015-0388-5

Martindale, C. (1989). Personality, situation, and creativity. In Handbook of creativity (pp. 211–232). https://doi.org/10.1007/978-1-4757-5356-1_13

Mauss, I. B., & Tamir, M. (2014). Emotion goals: How their content, structure, and operation shape emotion regulation. Guilford Press.

McCrae, R. R. (1987). Creativity, divergent thinking, and openness to experience. Journal of Personality and Social Psychology, 52(6), 1258. https://doi.org/10.1037/0022-3514.52.6.1258

Mrazek, M. D., Phillips, D. T., Franklin, M. S., Broadway, J. M., & Schooler, J. W. (2013). Young and restless: Validation of the Mind-Wandering Questionnaire (MWQ) reveals the disruptive impact of mind-wandering for youth. Frontiers in Psychology, 4, 560. https://doi.org/10.3389/fpsyg.2013.00560

Niemiec, R., Rashid, T., & Spinella, M. (2012). Strong mindfulness: Integrating mindfulness and character strengths. Journal of Mental Health Counselling, 34(3), 240–253. https://doi.org/10.17744/mehc.34.3.34p6328x2v204v21

Runco, M. A., & Pritzker, S. R. (Eds.). (2020). Encyclopaedia of creativity. Academic Press.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. Imagination, Cognition, and Personality, 9, 185–211. https://doi.org/10.2190/dugg-p24e-52wk-6cdg

Salovey, P., Woolery, A., & Mayer, J. D. (2001). Emotional intelligence: Conceptualization and measurement. In G. J. O. Fletcher & M. S. Clark (Eds.), Blackwell handbook of social psychology: Interpersonal processes (pp. 279–307). Blackwell. https://doi.org/10.1002/9780470998557.ch11

Segal, Z. V., William, J. M. G., & Teasdale, J. D. (2002). Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse. Guilford Press. https://doi.org/10.1002/shi.90

Schmertz, S. K., Anderson, P. L., & Robins, D. L. (2009). The relation between self-report mindfulness and performance on tasks of sustained attention. Journal of Psychopathology and Behavioral Assessment, 31, 60-66. https://doi.org/10.1007/s10862-008-9086-0

Sedlmeier, P., Eberth, J., Schwarz, M., Zimmermann, D., Haarig, F., Jaeger, S., & Kunze, S. (2012). The psychological effects of meditation: a meta-analysis. Psychological bulletin, 138(6), 1139. https://doi.org/10.1037/a0028168

Simonton, D. K. (2012). Teaching creativity: Current findings, trends, and controversies in the psychology of creativity. Teaching of Psychology, 39(3), 217–222. https://doi.org/10.1177/0098628312450444

Shapiro S. L. &Wallace, B. A. (2006). Mental balance and well-being: Building bridges between Buddhism and

Western psychology. American Psychologist, 61(7), 690. https://doi.org/10.1037/0003-066x.61.7.690

Slagter, H. A., Lutz, A., Greischar, L. L., Francis, A. D., Nieuwenhuis, S., Davis, J. M., & Davidson, R. J. (2007). Mental training affects distribution of limited brain resources. PLoS biology, 5(6), e138. https://doi.org/10.1371/journal.pbio.0050138

Sternberg, R. J. (2003). Wisdom, intelligence, and creativity synthesized. Cambridge University Press.

Sternberg, R. J. (2006). The nature of creativity. Creativity Research Journal, 18(1), 87.

Sun, J. (2014). Mindfulness in context: A historical discourse analysis. Contemporary Buddhism, 15(2), 394–415. https://doi.org/10.1080/14639947.2014.978088

Thera, N. (1962). The heart of Buddhist meditation. Weiser.

Torrance, E. P. (1966). The Torrance Tests of Creative Thinking: Norms–technical manual (research ed.). Personnel Press. https://doi.org/10.2307/1161826

Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—the Freiburg Mindfulness Inventory (FMI). Personality and Individual Differences, 40(8), 1543–1555. https://doi.org/10.1016/j.paid.2005.11.025

Appendix A

Observation Test 1 Before

Look	User1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	8	8	8	8	8	8	8	8	8	8
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	4.50	2.63	2.13	4.13	3.75	3.00	2.63	2.38	3.38	3.50
Mdn	4.50	2.50	2.00	4.50	4.00	3.00	3.00	3.00	3.00	3.50
Error standard mean	0.189	0.596	0.398	0.350	0.491	0.189	0.183	0.420	0.420	0.327
Variance	0.286	2.839	1.268	0.982	1.929	0.286	0.268	1.411	1.411	0.857
SD	0.535	1.685	1.126	0.991	1.389	0.535	0.518	1.188	1.188	0.926

Kurtosis	–2.800	–1.296	–0.989	–2.358	1.106	3.500	–2.240	–1.746	–1.229	—

Note. M = male; F = female.

Observation Test 2 After

Look	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	8	8	8	7	8	8	8	8	7	8
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	4.50	3.25	2.50	4.43	4.13	3.13	3.13	4.38	3.71	4.00
Mdn	4.50	3.50	2.50	4.00	5.00	3.00	3.00	4.50	4.00	4.00
Error standard mean	0.189	0.313	0.189	0,202	0.441	0.227	0.295	0.263	0.184	0.267
Variance	0.286	0.786	0.286	0.286	1.554	0.411	0.696	0.554	0.238	0.571
SD	0.535	0.886	0.535	0.535	1.246	0.641	0.835	0.744	0.488	0.756
Kurtosis	–2.800	–1.481	–2.800	–2.800	–1.132	0.741	–1.392	–0.152	–0,840	–0.700

Note. M = male; F = female.

Appendix B

Describe Test 1 Before

Look	User1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	8	8	8	8	8	7	7	8	8	8
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	3.50	3.13	3.13	3.38	3.25	3.00	2.43	2.88	3.13	2.88
Mdn	5.00	3.00	3.00	4.50	3.00	3.00	2.00	3.50	3.50	2.50
Error										

standard mean	0.732	0,398	0.227	0.706	0.250	0.000	0.429	0.479	0.350	0.350
Variance	4.286	1.268	0.411	3.982	0.500	0.000	1.286	1.839	0.982	0.982
SD	2.070	1.126	0.641	1.996	0.707	0.000	1.134	1.356	0.991	0.991
Kurtosis	–2.240	2.211	0.741	–2.230	–0.229	—	–0,743	–1.686	–2.358	–2.358

Note. M = male; F = female.

Describe Test 2 After

Look	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	8	8	8	7	8	8	8	8	8	8
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	3.50	3.00	2.63	3.14	3.50	2.75	2.88	3.50	3.25	3.25
Mdn	5.00	2.00	2.50	4.00	5.00	2.50	3.00	5.00	4.00	3.00
Error standard mean	0.732	0,500	0.263	0.769	0.732	0.313	0.295	0.732	0.590	0.250
Variance	4.286	2.000	0.554	4.143	4.286	0.786	0.696	4.286	2.786	0.500
SD	2.070	1.414	0.744	2.035	2.070	0.886	0.835	2.070	1.669	0.707
Kurtosis	–2.240	–1.643	–0.152	–2.695	–2.240	–1.481	–1.392	–2.240	–1.657	–0.229

Note. M = male; F = female.

Appendix C

Act With Awarness Questions Test 1 Before

Look	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	8	8	8	8	8	8	8	8	8	7
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F

M	1.63	2.75	3.00	1	3.38	3.13	3.38	3.38	3.25	3.71
Mdn	2.00	3.00	3.00	1	3.00	3.00	3.00	3.50	3.00	4.00
Error standard mean	0.183	0.366	0.267	0.000	0.183	0.227	0.183	0.263	0.313	0.184
Variance	0.268	1.071	0.571	0.000	0.268	0.411	0.268	0.554	0.786	0.238
SD	0.518	1.035	0.756	0.000	0.518	0.641	0.518	0.744	0.886	0.488
Kurtosis	–2.240	–0.448	–0.700	—	–2.240	0.741	–2.240	–0.152	1.851	–0.840

Note. M = male; F = female.

Act With Awarness Questions Test 2 After

Look	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	8	8	7	7	8	8	8	8	8	7
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	1.75	2.00	3.57	1.00	2.75	2.63	2.38	2.50	3.50	3.25
Mdn	2.00	2.00	4.00	1.00	3.00	2.50	2.00	2.50	4.00	3.00
Error standard mean	0.164	0.267	0.202	0.000	0.164	0.263	0.183	0.189	0.378	0.250
Variance	0.214	0.571	0.286	0.000	0.214	0.554	0.268	0.286	1.143	0.500
SD	0.463	0.756	0.535	0.000	0.463	0.744	0.518	0.535	1.069	0.707
Kurtosis	0.000	–0.700	–2.800	—	0.000	–0.152	–2.240	–2.800	5.469	–0.229

Note. M = male; F = female.

Appendix D

No-judgment Questions Test 1 Before

Look	User1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10

N	8	8	8	8	8	8	8	8	7	8
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	1.88	4.25	2.75	2.00	1.88	2.88	1.13	1.75	3,43	2.75
Mdn	2.00	4.00	2.50	1.00	2.00	3.00	1.00	2.00	3.00	3.00
Error standard mean	0.125	0.164	0.313	0.500	0.227	0.227	0.125	0.250	0.481	0.250
Variance	0.125	0.214	0.786	2.000	0.411	0.411	0.125	0.500	1.619	0.500
SD	0.354	0.463	0.886	1.414	0.641	0.641	0.354	0.707	1.272	0.707
Kurtosis	8.000	0.000	–1.481	–1.643	0.741	0.741	8.000	–0.229	–1.715	–0.229

Note. M = male; F = female.

No-judgement Questions Test 2 After

Look	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	8	8	7	7	8	8	8	8	8	8
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	1.63	4.13	2.57	1.71	1.00	2.25	1.50	1.25	2.50	3.50
Mdn	2.00	4.00	2.00	1.00	1.00	2.00	1.50	1.00	3.00	3.50
Error standard mean	0.183	0.125	0.297	0.360	0.000	0.250	0.189	0.250	0.378	0.189
Variance	0.268	0.125	0.619	0.905	0.000	0.500	0.286	0.500	1.143	0.286
SD	0.518	0.354	0.787	0.951	0.000	0.707	0.535	0.707	1.069	0.535
Kurtosis	–2.240	8.000	0.273	–1.687	—	–0.229	–2.800	8.000	–0.831	–2.800

Note. M = male; F = female.

Appendix E

Non-reactivity on the Internal Experience Questions Test 1 Before

Look	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	7	7	7	7	7	7	7	7	7	7
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	4.14	3.14	2.86	4.29	2.43	2.57	2.71	2.57	2.43	3.29
Mdn	4.00	3.00	3.00	5.00	2.00	3.00	2.00	3.00	2.00	3.00
Error standard mean	0.143	0.340	0.143	0.421	0.202	0.202	0.360	0.369	0.571	0.184
Variance	0.143	0.810	0.143	1.238	0.286	0.286	0.905	0.952	2.286	0.238
SD	0.378	0.900	0.378	1.113	0.535	0.535	0.951	0.976	1.512	0.488
Kurtosis	7.000	–1.817	7.000	3.231	–2.800	–2.800	–1.687	0.042	–0.197	–0,840

Note. M = male; F = female.

Non-reactivity on the Internal Experience Questions Test 2 After

Look	User 1	User 2	User 3	User 4	User 5	User 6	User 7	User 8	User 9	User 10
N	7	7	7	7	7	7	7	7	7	7
Age	46–60	30–45	46–60	46–60	30–45	30–45	30–45	46–60	46–60	46–60
Gender	M	F	M	M	F	F	F	F	F	F
M	4.14	3.57	3.14	4.43	2.71	3.29	3.00	3.29	2.86	3.43
Mdn	4.00	4.00	3.00	5.00	3.00	4.00	3.00	3.00	3.00	3.00
Error standard mean	0.143	0.202	0.143	0.297	0.218	0.360	0.218	0.360	0.404	0.202
Variance	0.143	0.286	0.143	0.619	0.333	0.905	0.333	0.905	1.143	0.286

SD	0.378	0.535	0.378	0.787	0.577	0.951	0.577	0.951	1.069	0.535
Kurtosis	7.000	–2.800	7.000	0.273	3.000	–1.687	3.000	1.245	0.263	–2.800

Note. M = male; F = female.