Mindfulness and its applications in overall well-being and education

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To my parents,

"*Education must be designed so that it can serve two purposes. Firstly, to enlighten the intellect, to purify the emotions and to improve the quality of social awareness, and secondly to awaken and express the inner knowledge"*

Sw. Sivananda

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PUBLICATIONS

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2. **Lazaridou A**. Why Health psychology should be mindful of mindfulness? (2011). *European Health Psychologist Bulletin, 13*(2), 30-32.

3. **Lazaridou A**., Mintzopoulos D., Astrakas, Khanicheh A., Singhal A.,Moskowitz M., L., Bruce R., Tzika A. fMRI as a molecular imaging procedure for the functional reorganization of motor systems in chronic stroke. *Molecular Medicine Reports, 8*(3), 775-9.

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*****Publications 1, 2 & 3 are relative to the present Thesis and particularly Part A.

Abstract

The present dissertation aims at examining the literature concerning mindfulness as it relates to educational psychology and overviews three research studies conducted to add empirical research on mindfulness, well-being and learning. The contribution of the Thesis is that different theories and methods of mindfulness application are demonstrated and discussed, offering an important tool for modern educational syllabi. In part A, the present Thesis examines the theoretical background regarding mindfulness as it relates to education and well-being and learning. In part A, The theoretical background is divided into three main chapters: Chapter 1) discusses Well-being, learning and education, Chapter 2) explores mindfulness, definitions, implications and Chapter 3) examines mindfulness as a disposition in educational settings. The main aim of the theoretical background is to critically evaluate the concept and attributes of mindfulness, well-being and promote mindfulness as a dispositional way of thinking and antidote to stress incorporated in educational settings. Contrasting definitions, views and evidence of mindfulness are provided as well as potential links to philosophy, well-being, stress, emotional burdens, cognition, neuroscience and education. Results of the analyses for this study suggest that mindfulness is dispositional (trait-like) and could affect burnout and stress levels in students. Limitations in the current study are discussed. The findings implicate (a) the role and influence of mindfulness as a behavior trait and (b) the effect of previous knowledge on a student's propensity for mindfulness. The positive implications of mindfulness suggest a need for further research (a) on long-term applied mindfulness program in actual classrooms and (b) on a combined Kabat-Zinn (1989) and Langer (1989) form of mindfulness instruction.

Keywords: mindfulness, education, well-being, stress, resilience, learning

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INTRODUCTION

The aim of the current Thesis is to explore mindfulness applied in educational settings and provide tools for holistic ways of approaching and understanding learning. The Thesis aims to show that mindfulness could be a vital tool for improving learning and well-being as well as reducing stress in educational settings. This Thesis has been divided into two main sections: a theoretical (Part A) and an applied research section (Part B). In the first part, the theoretical framework around well-being, education and the role of mindfulness as an antidote to stress is discussed and a critical evaluation is presented. In the second part, three studies that are based on the theoretical framework are demonstrated and discussed.

Several efforts have been made to define education more broadly to include formal education and non-formal education of the sort that might involve learning through course-work not connected to any diplomas or degrees, and informal education of the sort that might involve learning outside of any course-work, from news media, works of art and culture, work-related training and experiences, social interaction and routine as well as extra-ordinary life experiences. Since well-being could not be separated from education, education and well-being have been studied together (Salmela-Aro, 2009). There is a lot of literature investigating whether education and schools obtain their primary role to facilitate learning. Moreover, there is also a plethora of papers and studies exploring students' well-being both on a physical and mental level and the role of stress as a central inhibitor to learning (Parker & Salmela-Aro, 2011; Salmela-Aro et al., 2008; Schaufeli et al., 2002). Younger researchers tend to search for alternative ways in answering those questions. One of the main aims of the current Thesis is to promote learner centered schools that are becoming more and more popular as a more genuine approach of learning. In general, the main research questions that focus concentration are school climate and culture, aggression, developing creativity, fostering resolution skills, increased

calm, skillful abilities to respond to difficult emotions, increased empathy and understanding of others, better focus and concentration, self-awareness and stress reduction.

Because every day is unpredictable and full of new demands and challenges, many teachers experience ongoing stress following a range of negative health outcomes affecting teachers' motivation, well-being and performance. When teachers are overwhelmed by extreme stress and burnout arises. One of the reasons that I am writing this Thesis is that it is important that teachers develop the tools necessary to preserve their well-being, in order to keep themselves from falling prey to burnout. On the other hand, students absorb a lot of stress and anxiety due to current demands making the learning process difficult. The combination of a burnt out teacher and stressed students forms a hectic classroom environment (Salmela-Aro, 2008). Therefore, the need for developing effective solutions and practices is crucial.

A representative and popular example of such a practice is "mindfulness" which has been used as an intervention for stress reduction and improvement in overall well-being in both students and teachers (Baer, 2003; Carlson et al 2003; Shapiro et al., 1998). The present Thesis is primarily based on Langer's mindfulness theory, which illuminates how mindful awareness can break habitual cycles of thought and action, remove one dimensional mindsets, and open up new perspectives and possibilities for creative choice and positive development (Langer, 1989). In this respect, her most famous study and book called "Counterclockwise" overrules the stereotypes of old age. After noticing how rarely the term "development is used in relation to the later stages of life, she remarks that: "despite current emphasis on a lifespan perspective, change in later years is still typically described as aging. In the same way, although the word 'day' can refer to the twenty- four hours span, we normally refer only to the brighter hours. Ageing has come to refer to the darker side of growing older. To make changes in later life one must fight against all sorts of popular mindsets". (Langer

1989, p.96). This socio-cognitive perspective of mindfulness directly leads to a non- judgmental state. By “non-judgmental”, this perspective refers to accepting all possible perspectives and keeping an open mind. The main educational potential of mindfulness lies not in raising evaluative tests but in addressing some of the other intractable problems of education such as the difficulty in obtaining flexible transfer of skills and knowledge to new contexts, the development of deep understanding in student motivation and engagement, in the ability to think creatively and critically, and the development of more self-directed learners (Hyland, 2011). Mindfulness is generally defined as bringing one’s attention to “a moment to moment” basis without judgment (Kabat-Zinn, 1987) but recently different approaches have given various definitions which are discussed later in this Thesis. A representative example of mindfulness applications is a mindfulness stress reduction program (MBSR) that was taught with success in forty two adolescent boys residing in a camp for juvenile delinquents. The participants were separated into two groups; the experimental group followed an eight-week meditation program, where students were taught progressive relaxation, concentration techniques and mindfulness meditation and the control group an eight-week video/discussion group. There was a significant reduction in anxiety and an increase in internal locus of control after participation in the meditation program, with no changes in the control condition (Flinton, 1998).

Mindfulness is being investigated in education as a unique and creative way which almost fosters letting children and learners being active in the learning process. Over the past four decades, a wealth of experimental research has accumulated to provide the foundation for the theory of mindfulness (Langer, 1989). Ellen Langer and her colleagues have been particularly inventive at designing studies that demonstrate the conditions under which mindfulness is more likely to develop. These experiments indicate that often rather easily applied attributes in a situation can be altered to produce greater mindfulness. In an experiment they conducted, after reading a text from different perspectives,

individuals had greater recall of subtle details (Lieberman & Langer, 1995). Moreover, after being given choices in a nursing home, patients experience increased physical and mental engagement (Langer & Rodin, 1976); after exploring different possibilities for handicapped individuals, children are more open and less prejudiced (Langer, Bashner, & Chanowitz, 1985). As a result, the educational aim of mindfulness is not to increase effectiveness of test assessments but to address some of the other disputable problems of education such as the flexible transfer of skills and knowledge to new contexts, the development of compassionate listening and understanding, student engagement and the ability to think creatively and critically as well as the evolution of more independent learners. In this process of learning, emotions and empathetic understanding play a vital role in students' holistic evolution (Arch & Craske, 2006; Barrett & Gross, 2001). There could not be empathic understanding without the exploration of various ideas from different perspectives.

There could be no transfer without the constant re-organization and refinement of one's categories. Creative and critical thinking depend on openness to new ideas and flexibility to break out of one's mind-set. Internal motivation to acquire new knowledge and the ability to be self-directed are both prominent to a sense of personal control and investment. In order for mindfulness to be adapted to the educational system as a main goal, these practices must have a long-term and comprehensive effect on students' learning.

Apart from perceiving mindfulness as a trait, a dispositional view needs to be stressed as well. By the term "dispositional view", I mean to addresses the gap between one's abilities and one's actions, between a temporary facilitative state and a consistently enabling trait. The notion of dispositions refers to the gap between one's skills and actions. According to Dewey (2009) knowledge of methods alone will not be sufficient: there must be the desire, the will, to employ these values, thoughts and beliefs. With the help of our dispositions we reinforce our abilities and guide our mental resources.

According to these dispositions behavior follows accordingly. In order to perceive mindfulness from a dispositional perspective in schools requires attention to the elaboration of students' abilities, sensitivities, emotions and inclinations.

This could take place by developing certain abilities such as the ability to perceive the world from a different perspective and developing a critical mind. In his book *The Unschooled Mind*, Howard Gardner (1991) stressed the failure of even "good" schools to go beyond the superficial teaching of knowledge which might lead to mindless learning. In the current Thesis I explore the appropriateness of "mindfulness" as an educational goal and elaborate what it means to cultivate mindfulness as a disposition, that is, as an enduring trait, rather than a temporary state. Moreover, the Thesis makes an effort to present mindfulness as a new tool for bringing well-being and eliminating stress in educational settings. According to Langer (1989) in order to cultivate mindfulness in education, we should identify the following different qualities: looking in detail, exploring possibilities and other perspectives and questioning given facts. The Thesis concludes by exploring what it might look like to cultivate the trait of mindfulness within individual classrooms.

This Thesis includes a theoretical framework including different studies on mindfulness applications in education which explore mindfulness both as a state and trait. The Thesis is divided into two main parts: Part A presents the theoretical underpinnings of mindfulness and explores as well as its links with well-being, stress with the philosophy of education. More specifically Chapter 1 explores well-being as a prerequisite for effective learning. This initial exploration constitutes a useful background upon which subsequent discussions and explorations will rest. In Chapter 2, the role of stress is explained as an inhibitor to well-being and learning. The analysis shows that stress plays indeed a highly damaging role in the learning process and students' well-being. Moreover, this chapter shows the necessity that educators understand the damaging effects of stress on student's

health, behavior and learning and in turn, value the benefits of a calm, relaxed state. In Chapter 3, mindfulness theory and techniques are explored as a remedy to stress. In addition, in this part, different approaches and definitions on mindfulness are being suggested. The two main streams of mindfulness are presented and discussed: the socio-cognitive and meditative perspectives. Finally, Chapter 4 presents the literature related to mindfulness applications in educational settings. Moreover the dispositional view of mindfulness applied in educational settings is explored and discussed.

Part B presents three studies on the effectiveness of the principles of mindfulness theory and practice in education. The first study investigates learning and performance in medical students through a mindfulness intervention. It explores whether a five week intervention could ameliorate performance in clinical skills. The study shows that mindful awareness improves clinical practice and especially hygiene.

The second study explores whether mindfulness could be contagious from teachers to students. In this light, the study investigates whether mindfulness improves performance. The study shows that in the classes where mindful teachers teach, students perform better.

The third study tests two different types of mindfulness training in college students. The one group performed a traditional breathing meditation exercise whereas the other group practiced exactly the same practice with additional instructions on novelty seeking as well as attention to variability. Mindfulness seems to impact on heart rate variability in stressed students and reduce stress. This physiological effect might be a demonstration of mindfulness impact on stress and anxiety levels. Master teachers are mindful teachers, aware of themselves and attuned to their students. Mindful teaching nurtures a learning community in which students flourish academically, emotionally and socially as well as teachers thrive professionally and personally. School-based learning is complex, in part because teachers and students carry individual webs of knowledge, skills, belied into an

interactive classroom. Mindfulness is a conscious and purposeful way of tuning by being effective tool for well-being in educational settings.

PART A

CHAPTER 1

WELL-BEING AS A PREREQUISITE FOR LEARNING AND EDUCATION

"Education: the path from cocky ignorance to miserable uncertainty." (Mark Twain)

1.1. Introduction

This chapter aims to provide the reader with information regarding the context and background in which this Thesis took place as well as links between well-being and education. It also summarizes the negative effects of stress on well-being. Therefore, this chapter aims at offering a theoretical framework on well-being and stress and understanding the need for a novel "remedy" in treating anxiety and stress in education. In other words, in this chapter I am making an attempt to describe stress as an inhibitor in learning and as a main problem in educational setting as well as the importance of action taken to reduce its expressions. A mind without stress and anxiety is more receptive to new information and is more conducive. Two perspectives of stress are presented and discussed: the physiological and psychological. Most importantly, considering the educational process in relation to the theoretical background presented, suggests that we need to maintain awareness of every stage of learning in education by focusing on a holistic education. Mindfulness could be a therapeutic key to holistic education and stress release. Before I proceed to the discussion of the two perspectives of stress, I would like to provide a reason as to why current educational systems need to be reconstructed. Therefore, this chapter main aim is to address the importance of mindfulness as a novel tool in modern educational psychology.

1.2. Reconstructing Education

A main step forward in the early twentieth century was the movement of treating children as humans and not as objects. The *Plowden Report* published by the department of Education and

Science (DES) in 1967 described the ideal school context where ‘children live first and foremost as children and not as adults’. After that, modern views by Dalton and Dewey were implemented in modern times. In his book *Democracy in Education*, Dewey (1916) initially stress that schools should protect their subject matter, creating material that is easily comprehensible for students over many years of formal schooling. Secondly, Dewey suggests that schools should choose which existing mental attitudes should be passed onto the next generation. Last but not least, he insists that it is the purpose of schools to ensure that every student has the opportunity to literal escape the restrictions of whatever social situation he or she was circumstantially born into and experience a broader existence. Therefore, there was a therapeutic turn towards a liberal and holistic education. In this therapeutic turn, education is suggested to play a vital role in personal development by providing learner the opportunity to acquire new skills. Every person involved in learning needs to contribute into the well-being and learning through morality and respect to individuality. In this way each and everyone in the learning community contributes positively to progress equally. Each practitioner shares the responsibility for building open, positive, trustworthy and compassionate relationships. These characteristics are also of importance in mindfulness applied in educational settings. Mindfulness offers the tools for improving well-being and learning at schools through a trustworthy and compassionate environment. Ecclestone and Hayes (2009) discuss the need for a therapeutic practice in the school sector. Hyland and Merill (2003) suggest that learning does not connect or engage sufficiently with the students’ emotions, values and their wider interests. Learning and well-being are two concepts that complement each other. Well-being is central to effective learning and preparation for happy independent living. As Dearden (1972) suggested, the question is not whether happiness is important or not, the real question that needs to be answered is how important happiness is for the given educational context. There is a need for an affective education where stimulation of learner’s

interests and motivation are linked to student's values and emotions (Hyland, 2011). Even if well-being is believed to be the opposite of stress, it might not be. Well-being encompasses various attributes such as physical health, psychological balance, emotional equanimity and mental clarity. However, stress is supposed to be a state where specific symptoms occur both physically and psychologically.

Of note, we need to acknowledge the therapeutic change that has being made in education recently. This therapeutic change often results in surface learning—the ability to produce the "right" answer when tested but with little or no "depth" learning, that is, transformational learning is not necessarily achieved. Noddings (1995) stressed that the main focus of education is on achievement rather than producing moral and compassionate people. Schools nowadays leave very little time in classrooms for wonder, stillness, silence and inner reflection and imagination. Very few teachers struggle to devote time to continually developing up-to-date relevant materials which make students engaged. If the spiritual dimension of learning is considered and consequently its contribution to the well-being of the individual, this needs to be applied in the school curriculum planning and adjustment of relevant policies. As a result, the individual will be able to contribute to the community's well-being. In this community, the reality for all learners is inclusiveness which allows them to move along a path of belonging and understanding. As a result, mindful communities are being constructed in a climate of compassion, mutual understanding and liberal, critical minds. In this environment awareness plays a central role in every action, behavior and decision making. Awareness not only in the perspective of the individual while performing or learning but also in understanding individual's deeper initiatives (Hyland, 2011).

This type of classrooms and educational institutions could foster sensitivity and inclination and therefore build mindfulness not only as a state but also as a trait. There are certain abilities that are

vital to be nurtured, such as different perspective taking and risk choice. By introducing ambiguity, a form of "conditional instruction" can be applied which extends beyond the narrow presentation of material to the broader exploration of beliefs and problem solving. Learners are considered active agents of knowledge and social understanding. In a deeper level, mindfulness acts in a deeper level improving emotional well-being. It helps learners to observe negative thoughts, fears, and sensations in a non-judgmental way and accept them as part of the self. In this learning environment of high security, responsibility, creativity, critical thinking, connectedness within the community, individuals learn to be respectful, accepting and inclusive of difference and understanding the value of diversity. Michalos (1985) suggested a theory of satisfaction involving direct and indirect effects of education as predictors and tested this theory in undergraduate students by reviewing evidence suggesting that college students are often representative of the well-being level of their country. Public policies is important to address adopting and implementing happiness in education which depends minimally on which of the great variety of research scenarios one adopts and on lots of other things as well. Another thing that needs to be considered is that it provides information about flexible learning options in school and community settings that support those children and young people at risk of disengaging or already disengaged from education to re-engage in school. As a result, schools are being re-imagined in the same context but with various flexible perspectives. This comes in congruency and support towards the multiculturalism that characterizes contemporary educational settings. Multicultural education relates to education and instruction designed for the cultures of several different races in an educational system. This approach to teaching and learning is based upon consensus building, respect, and fostering cultural pluralism within multiracial societies. Multicultural education acknowledges and incorporates positive racial idiosyncrasies into classroom atmospheres.

A significant demographic transformation is observed throughout different countries in schools. Bennett (1995) estimates that "by the year 2000, over 30 percent of our school age population will be children of color" in the US (Bennett 1995, p.18). Various people's perceptions, thoughts, feelings and behaviors have an impact on their own and others' living conditions. Therefore, a universal way of teaching new learners should be adopted and acceptance of all different perspectives should be taken into serious consideration. In those learner centered institutes teachers and students would be able to form their own knowledge foundations, determine what describes a confirming and disconfirming evidence of "reality," and how information and experience create meanings in their lives.

Mindfulness main qualities are curiosity, openness and acceptance which are directly linked to educational contexts. Therefore, mindful practice could be the remedy to rumination (self-critical negative thinking) and experiential avoidance (out of contact with direct experience) as well as stress that are central inhibitors in the learning process.

1.3. Stress as an inhibitor of well-being

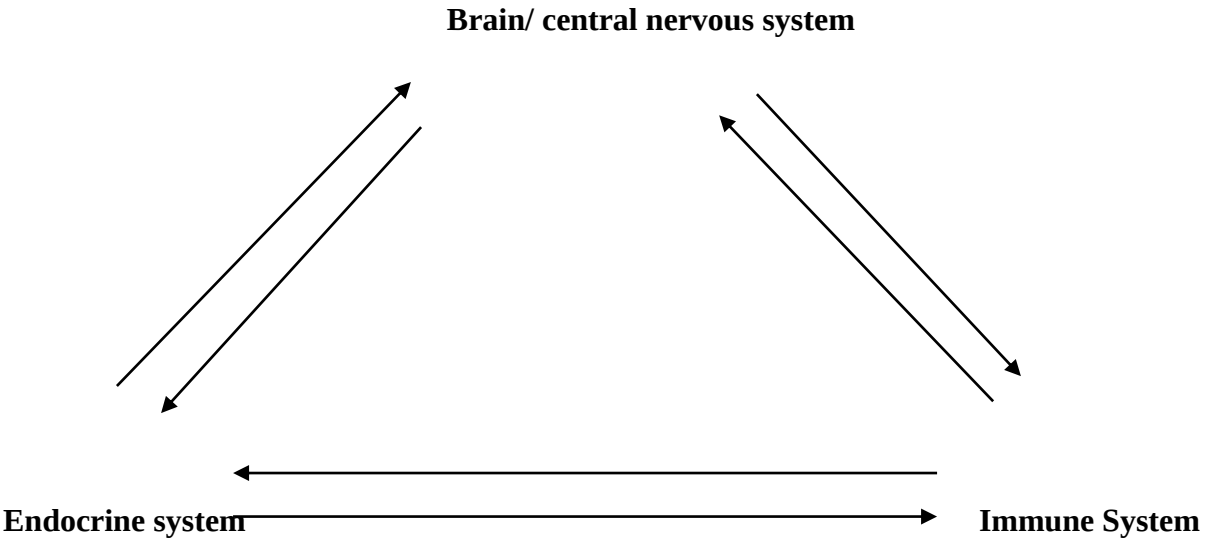
Before I explain how mindfulness could lead to well-being, it is important to explain the two main perspectives that stress has: the physiological and the psychological. The physiological perspective refers to the physical responses that occur as a direct effect of a stressor causing an upset in the homeostasis of the body. Whereas, the psychological perspective refers to a secondary level where the stressor threatens one's well-being and thereby burdens one's coping abilities.

1.3.1 A physiological perspective

The immune system is a complex network of cells and chemicals. Its mission is to protect us against foreign organisms and substances. The cells in the immune system have the ability to recognize something as either "self" or "non-self," and they try to get rid of anything that is an invader. Many different kinds of cells, and hundreds of different chemicals, must be coordinated for the immune system to function smoothly. The immune system can mount a variety of responses to attack specific invader organisms. This defend system involves 3 levels. In the first level of defense, there is the skin and hypophysis in the endocrine system. Therefore, hygiene plays an important role in this level. In the second level, macrophages are the body's first line of defense and have many roles. A macrophage is the first cell to recognize and engulf foreign substances (antigens). Macrophages break down these substances and present the smaller proteins to the T lymphocytes. In the third level of the body defense system, the lymphocytes exist. One of these responses is coordinated by T-helper cells (also known as T cells, T4 cells, or CD4 cells), which act as a kind of orchestra conductor. The T-helper cells tell other cells what to do when this response is triggered. We are interested in this immune response because it is the one that is most disrupted by HIV infection. Since HIV succeeds in destroying more and more of these important cells, the ability to fight off other infections gradually declines. If the "coordinator" of the process, the T-helper cell, is no longer functioning, other cells in the immune system cannot perform their functions, leaving the body open to attack by opportunistic infections. The cells of immune system could be characterized as soldiers in the middle of a battle that each and everyone know his position and are ready to cope with the enemy. Except for the cells that destroy, there are cells that balance the function of the immune system and deactivate the first when the body is not “in battle”. In this way, the immune system replies. Recent studies in the last century paid

attention to stabilize the idea that was already known as “spirit” in the ancient philosophers and great spirits of Ancient, Egypt, Greece, China and India as well as other civilizations that participate in the defense against the diseases. Therefore, some variables that affect stress and dwell in the brain (central nervous system) were found to affect two other systems: the immune system and the endocrine system. As a result, a triangle is formed that shows the interaction of these three systems. (see figure).

Figure 1. Brain, Hormone, Immune system connection



The arrows show two directions, depicting the interaction of the three systems. For this scope special disciplines has been formed and developed such as neuroimmunology and psychoneuroimmunology (Ader et al., 1995; Carr & Blalock, 1991). The cells of these three systems produce a huge series of substances that permit them to communicate and exchange information with each other and act accordingly. Everything that is carried in our bodies affects our psychological well-being and in reverse our feelings affect our physical functions. The person who feels cornered by stress is not only psychologically suppressed but also prominent sick. There are several of scientific indications that people with stress get sick most frequently or develop a personality that indirectly leads to further

decay of their health such as smoking, binge drinking, insomnia etc. Physiology is affected by psychological factors as well as psychological factor could affect physiology. Therefore, mindfulness as a psychological therapeutic tool could have a huge impact on sensational immune system. The immune system could be characterized as a complex sensory organ that recognizes what happens inside and replicated the information in the nervous and endocrine systems via special neurotransmitters.

The most important function of the brain is that it could function in multiple levels and with different ways editing numerous diverse stimuli simultaneously. The final lesson of neural plasticity is that a human brain, given good foundations, can continue to adapt and expand over a lifetime. Its vast synaptic potential at birth can bend itself around what is important of the 'old' and still have room for new skills demanded. A well-nourished mind will continue to grow, learn and develop, as long as it responds to the pricking of curiosity. Perhaps this quality, above all, is the one we should strive to preserve in our children. With it, supported by language, thought and imagination, minds of the future will shape themselves around new challenges. But, if we continue to neglect either these foundations or the curiosity that sets them in motion, we may be endangered. There's a complex interaction between health and our attitude towards life, situations and our ability to learn. We usually use our body in order to construct knowledge. Our senses are important components of learning. Hope, goals and determination, for example, are not just situations of the mind. They include electrochemical connections that play an important role in the immune system and the balance of the organism. In general, all of the variables in our physiology affect our well-being and learning (e.g diet, sleep, exercise, low self-esteem). Our self is being cultivated as our brain becomes more receptive and starts to interact from the first days of our lives with our environment. Our brain, which is the center of our emotional life, changes morphologically and functionally since it interacts with the environment

(McEwen, 2001). The brain receives only single information at the conscious level with the awareness alert. Simultaneously, it receives and expands different information which is not in the concentration level. In addition, other processes take place at the unconscious level. Therefore, working in two levels at the same time, a lot of different sensual stimuli are functioning at the same time where teaching takes place and the conscious communication happens at that time.

In recent years, researchers have explored the idea of rest by looking at the so-called 'default mode' network of the brain, a network that is noticeably active when we are resting and focused inward. Immordino-Yang and her colleagues (2011) believe that research on the brain at rest could bring important insights into the importance of reflection and quiet time for learning. Findings from these studies suggest that individual differences in brain activity during rest are correlated with components of socio-emotional functioning, such as self-awareness and moral judgment, as well as different aspects of learning and memory. One of the most important facets of mindfulness is awareness and self-awareness which is a prerequisite for all the other attributes above.

1.3.2. A psychosocial perspective

Psychological stress could be the result of a cognitive assessment of what is stressful and what can be done about it. Psychosocial stress results when we look at a perceived noticeable threat in our lives and discern that it may require resources to cope with that we don't have. Nowadays, life has become very complex asking from us to cope with a lot of different challenges. However, there is a kind of stress that is beneficial when it is moderate. A lot of interesting activities in our lives are accompanied by stress. Without this “good” stress, life would be dull. On the other side, the negative events in life take place in everyone’s life. When the stress is supported by negative thoughts and takes place with anxiety, a lot of stress and desperation we need to start worrying. The way we cope

with stress plays an important role and often people are divided into groups depending on how they cope with stress. At this point I would like to differentiate stress used by physiologists as stimulus inducing anxiety. Stress as used in the present Thesis can potentially arise from any situation or thought that induces frustration, anger, worries, or even anxiety. What is stressful to one person may not be stressful to another. Anxiety is a feeling of apprehension or fear. Of note, individuals may not know the source of this uneasiness, which can add to this distress they feel. Various physiological processes in the body immediately take place automatically after the initial trigger. It is a state of physiological and psychological hyper-arousal. A cascade of nervous system firings and release of stress hormones lead to immediate responses that help the person deal with danger either by fighting or running (fight or flight response). Of note, the orchestrated sequence of hormonal changes and physiological responses helps someone to fight the threat off or flee to safety. However, the body can also overreact to stressors that are not life-threatening, work or family pressure, exams, studies. The reactions to stress vary as well as the stimuli by themselves differ from person to person. Something that is stressful for one person might be only a disturbance for someone else. In general, people are divided into a) those that look for actions with stress (e.g competitive characters) b) those who are afraid of coping with stressful situations and c) people who could handle stress effectively without losing their balance (Lecic-Tosevski et al., 2011). Chronic stress is a well-known risk factor for several major neuropsychiatric conditions that affect well-being, including depression, bipolar disorder, schizophrenia, and anxiety disorders. In healthy subjects, it disrupts creativity, flexible problem solving, working memory, and other learning processes. In most general terms, social stress refers to the immediate response to a change in the social life of an individual, either in response to separation or confrontation. If the social stress persists, pathological consequences become evident in suppressed reproductive, immune, and metabolic functions and in social intercourse; many cardinal symptoms of

psychosis, depression, and drug abuse, such as anhedonia-like responses emerge in vulnerable individuals (Bremner, 1999). Many people experiencing negative stress simply do not have adequate forms of self-efficacy and social support available. They may not have the assertiveness skills necessary to feel comfortable asking for help from others. They may feel depressed enough to start to withdraw from others, further decreasing the amount of social support available. This social support deficit is both a vulnerability factor for further stress problems, and also a self-fulfilling prophecy. The present Thesis will facilitate investigation of multiple and potentially bidirectional pathways underlying the link between psychosocial stressors and behaviors that may ultimately impact biological function, health, and disease. One the most important fields where stress play a vital role is workplace. Research shows that job stress and burnout are very prevalent in healthcare settings and especially doctors (Ghodse & Galea, 2006).

1.3.3 Job stress and burnout among healthcare settings

Taking into account that stress has two correlated dimensions, the psychological and physiological, it is easier to understand the mechanisms and consequences that it has on individual's well-being. One of the most common populations that stress and burnout is very prevalent is healthcare providers and medical students. The demanding and emotional nature of healthcare settings means that work-related stress, anxiety and burnout are reported at higher levels for physicians in comparison to related occupations and the general population (Ghodse & Galea, 2009). We conducted a systematic review on job burnout that has been extensively studied among physicians. However, no review to date has attempted to contextualize burnout within hospitals. There is considerable evidence to indicate that physicians are an occupational group who are at particular risk for ill-health. For example, UK mortality data (Baldwin et al., 1997) show that, compared with the general male population, male

doctors (aged 20-74) have a significantly higher proportional mortality ratio for viral hepatitis, liver cancer, and cirrhosis and women doctors (aged 20-74) have a higher ratio for cancer of the pancreas. According to research conducted across the European Union, 40% of employees in the healthcare sector report constant health problems (Parent-Thirion et al., 2007). Moreover, stress, anxiety and burnout play an etiological role in maladaptive coping (e.g., substance misuse) and can decrease performance in physicians (Firth-Cozens, 2000). For physicians especially, the nature of working life is changing by demanding more emotional effort, rather than physical effort alone. Hospitals are unique organizations, which by their very design contribute to burnout among physicians and reduce quality of care. A 20 year (1990-2010) systematic review of job burnout among physicians working in hospitals was conducted. The relevant databases were searched using the appropriate key words and inclusion/exclusion criteria. The following key words were used to in the electronic databases search engines: job burnout, doctors, work stress, job stress, job strain, job demands, job resources, physicians, healthcare professionals, hospital, Maslach Burnout Inventory (MBI). Searched databases included; PubMed, PsychInfo, Scopus, Google scholar, Medline and Science Direct.

Studies **included**: (1) were written in English; (2) were conducted after 2000; (3) drawn from both published and/or unpublished research; (4) focused on job stress and/or job burnout among healthcare professionals; (5) concerned only with studies where healthcare professionals provided data related specifically to working in a hospital; (6) reported quantitative statistics that provided information on sample sizes, response rates, methodology used and statistical data. Studies **excluded**: (1) were not written in English; (2) were conducted before 2000; (3) were not based on empirical research; (4) were based on single person opinion; (5) were concerned with healthcare professionals working outside of a hospital (e.g., primary health care center, outreach clinic), (6) psychiatrists. In total, 88 studies were

located that fit the inclusion criteria. The majority of studies (n=76) positioned burnout as a dependent variable, and only 1 study positioned it as an independent variable. Within, the 88 studies, 11 positioned burnout as both an independent and dependent variable. The measures that were mostly frequently associated with burnout were: objective job characteristics (salary, night shifts, free time etc.) (19.3%), support from colleagues, family and supervisors (8%), age (13.6%), gender (6.8%), quality of care (7.9%), job satisfaction (6.8%), general health (5.6%), depression/suicidal thoughts (5.6%), job demands (3.4%) and traits (4.5%). The average sample size was 592.8 (range: 21-7905, SD= 1132.39) and the average response rate was 64.4% (range: 1.4-98.4, SD =18.8). The sample in all studies consisted of doctors of various specialties. Out of 88, 9 studies were longitudinal and 2 were intervention studies (Figure 1). Most of the studies included in the review were conducted in Europe (29%) and the USA (29%). In Europe, most studies were located in the UK (8%). A considerable number of studies (11%) were also conducted in Asia (Japan, Yemen, China). Only 7 (8%) of the studies explored quality of care (i.e., communication, errors, deaths etc.). Only 34 studies employed (reported) a theoretical model to support their research. The most widely used was the ―Demand Control Support Model of Karasek (1979), which was employed by 5 studies (Figure 2). Results showed that in total, 88 studies were located that fit the inclusion criteria. The accumulated studies represent a total sample size of 52174 physicians (mean = 592.8 range: 21-7905, SD= 1132.39) and the average response rate was 64.3% (range: 1.4- 98.4, SD=18.8). Effect size analyses of the most salient variables associated with burnout were: job demands (.57), job satisfaction (.34), social support (.26), age (.15) work conditions (objective; .23) and general health (.37). Only a small percentage of studies provided a theoretical rationale regarding their approach to job burnout. (Table 1).

Figure 2. Flow of information through the different phases of a systematic review

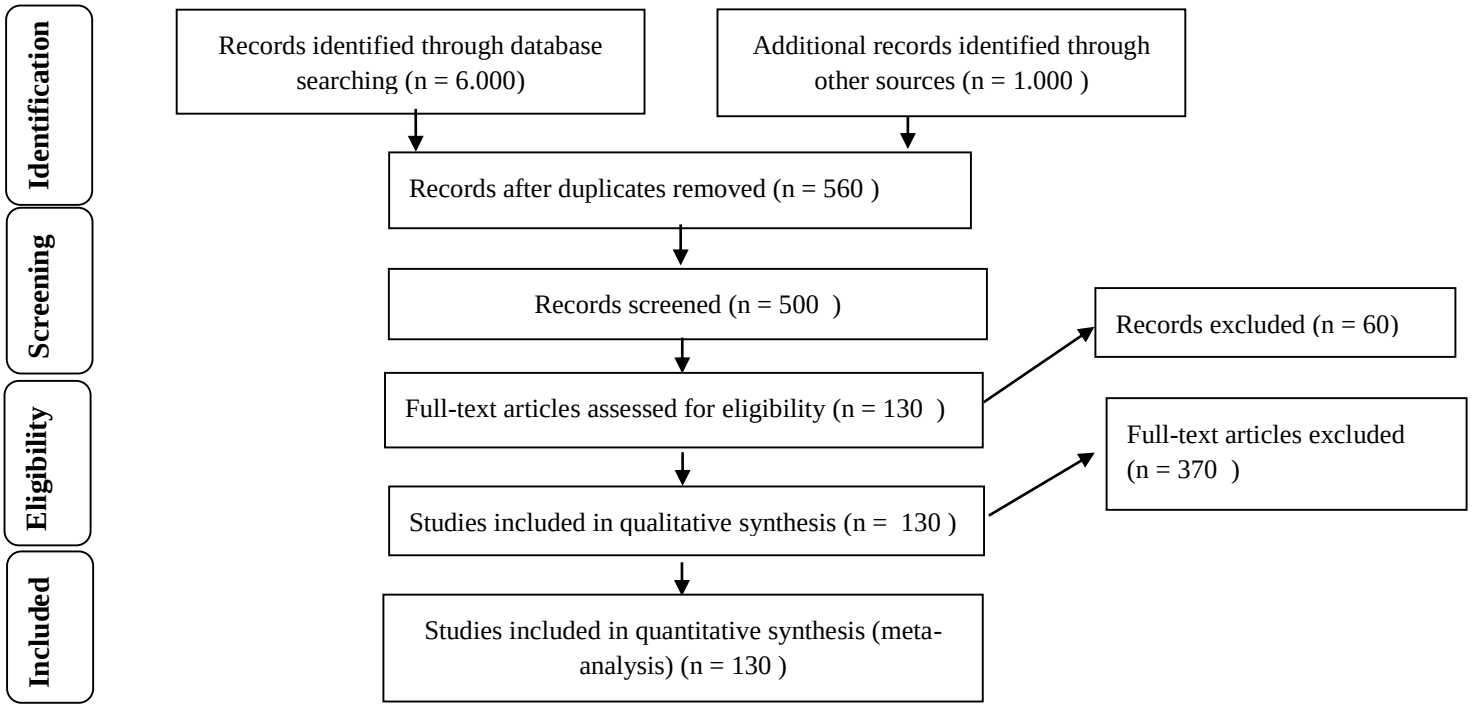
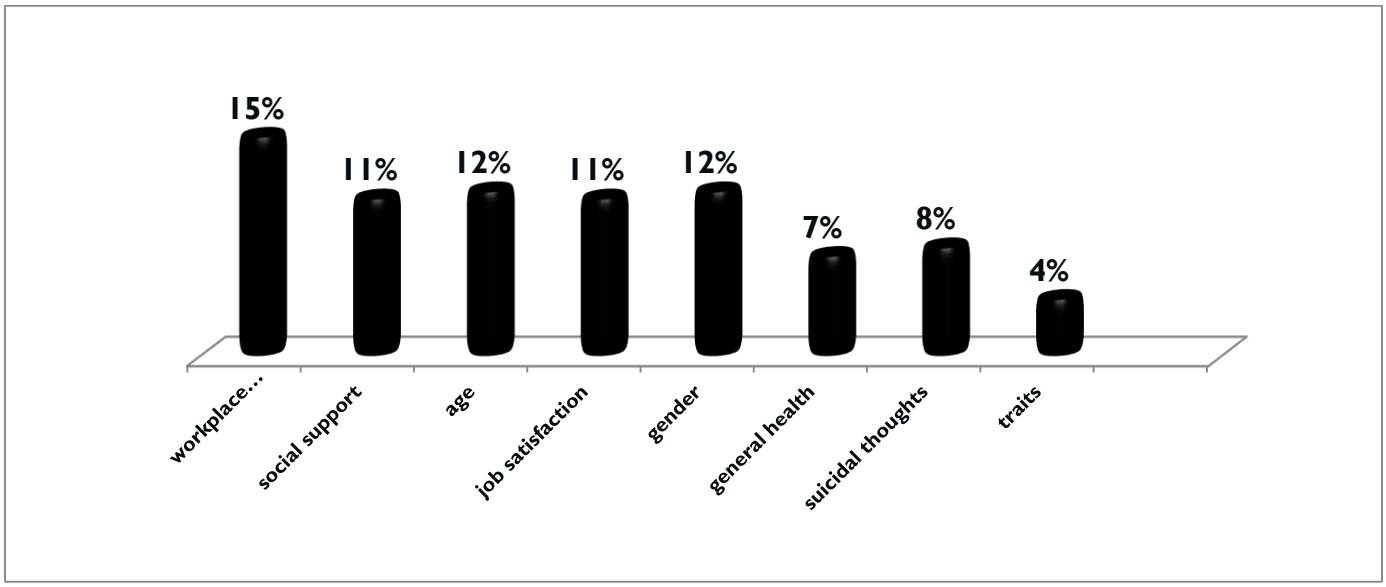


Figure 3. Associated variables with burnout (MBI) and job stress



*20% of the studies did not explore any of the variables mentioned above
MBI (EE) 53%
Job stress measurements 28%
Total MBI 19%

Table 1. Mean Effect sizes (Cohen d) for Associated Variables

Variable	Mean ES (SE)	k	n	95% CI
Age	.15 (.08)	10	15678	.05 - .17
General Health	.37 (.08)	5	335	.21 - .53
Job Satisfaction	.34 (.10)	10	6829	.21 - .46
Job demands	.57 (.18)	3	710	.21 - .92
Social Support	.23 (.05)	11	3170	.23 - .49
Work Conditions (obj .)	.23 (.05)	12	20044	.13- .33

Note. ES = effect size, k = number of studies, n = total sample size, SE = standard error

Physicians experience significant levels of job burnout, but there is a significant gap in the literature concerning the mechanisms by which hospitals contribute to burnout. Workplace stress and burnout are often unavoidable, and young professionals are feeling more of them as shrinking staff numbers tackle overwhelming workloads in companies. The financial and economic crisis that presently afflicts the world means that there will be new societal challenges and society will need to adapt to these changes. For example, the future of the world is one in which the demographic picture will change dramatically with the proportion of the older population increasing significantly, while the economic conditions will probably lead to higher unemployment levels in specific sectors.

More recently, medical educators are seeking alternative ways to cope with chronic stress and

burnout. One of the most popular alternative ways is meditative based interventions such as Yoga and mindfulness. Mindfulness has the potential to contribute positively to the performance of healthcare professionals and improve the overall functioning of an organization. It can provide a higher standard of patient care by equipping staff with the skills to respond more appropriately to challenges. Mindfulness is an important resource, and can help healthcare professionals respond more appropriately to their supervisors and colleagues that they have previously found difficult. A few minutes of mindfulness at the start of a meeting usually leads to improved focus, clearer communication and improved decision making. Teams who practice mindfulness, even for a few minutes a day report improved team working and team relations (Chambers et al. 2008). Segal et al. (2008) suggest that a practical advantage of mindfulness skills in encouraging cognitive change is that they can be practiced at any time, including during periods of remission, when depressed thinking may be occurring too rarely to permit regular practice of traditional cognitive therapy exercises, such as identification and disputing of cognitive distortions. Mindfulness could be extremely useful in all occupations who suffer from severe emotional and mental burdens as well as intangible work stress and burnout. The two occupations that usually suffer from high work stress and burnout are teachers and healthcare professionals. Without a doubt, the changes in society and work have led not only to changed demands in the workplace but also place people incapable to cope with them. Therefore, practical solutions, such as mindfulness, are needed for enhancing well-being and reducing stress and burnout.

1.4.Cognition and awareness

It has been argued that focused attention is necessary for awareness. Mindfulness can plausibly be related to distributed attention and phenomenal consciousness as well as to self-awareness. Conscious

experience is of great importance in mindfulness practice since the individual is aware of every action, behavior, thought and feeling that takes place in the present.

This section aims at providing considerable evidence that cognition with awareness is a valid or useful concept in the sense that it leads to predictions regarding how people perceive the world. I consider how information perceived without awareness influences conscious experience. The goal of the vast majority of studies to date has been simply to show that information is perceived without awareness. However, a potentially more interesting and important issue concerns how information perceived without awareness, or in other words unconsciously perceived information, influences conscious experience.

Awareness has been defined and explored by neuroscience from its perspective with different studies. The serial reaction time task (SRT) is used to assess implicit sequence learning in neuroscience. In several studies, the role of awareness in the serial reaction time (SRT) task (Nissen & Bullemer, 1987) has being investigated in order to further explore the processes involved in sequence learning. After completing the SRT task, Curran and Keele (1993) asked participants whether they thought the stimulus order followed any planned rule. Those with positive responses were asked to describe this rule. Participants who were able to describe the sequence were considered "the most aware participants", while participants who did not report any pattern or those that mentioned the presence of a repeated sequence but were unable to describe the repeated pattern were classified as "the least aware participants". Curran and Keele (1993) showed stronger learning effects for participants who were more aware. Therefore, reaction time decreased across significantly for more aware participants. Such results have been replicated in several studies (Hoffman & Koch, 1997; Koch, 2007; Tubau & López- Moliner, 2003; Willingham et al., 1989).

Many researchers attribute decreased reaction time for the repeated sequence in the SRT task

to learning that leads to anticipation of the location of the next stimulus (Nissen & Bullemer, 1987; Remillard, 2003). Remillard (2003) suggested that in a block of random stimuli, attention can be directed to the correct location only upon presentation of the stimulus, whereas in a block of repeated sequences, participants can orient their attention toward the stimulus before it is presented. According to the classic view of attention, when the stimulus is presented in the attended location, a response can be executed more quickly (Posner, 1980).

In order to account for the role of awareness in anticipation, it has been proposed that only aware participants can anticipate the location of the next stimulus. As it was suggested by Willingham et al. (1989) "when subjects develop explicit declarative knowledge of the sequence, they can use this knowledge to form attention expectancies regarding the next item in the sequence". Such an idea, however, is difficult to test using the SRT procedure, because anticipation is usually defined as a very rapid response that is faster than predetermined threshold. Consequently, anticipation and responses are confounded.

When using the simplest practice of awareness by sitting with the breath or walking mindfully to help us become more aware, it is not a strategy to clear the mind of thought or anything else. Therefore, clarity and calmness of the mind may follow as by-products of such awareness and from allowing things to be as they are. Self-awareness is a mediator to reach the mindfulness state. However, it is important to clarify that mindfulness practice is not to forcibly control the mind but to perceive clearly its healthy and harmful patterns. In this way, we begin to know directly what we are doing as we are doing it via awareness of every single moment and action we are performing. Self-awareness or self-consciousness is the most important ingredients in experiencing individuality in tis full. Mindfulness is noticing what is present, including noticing that one is no longer present. Reflecting that one is not being attentive and aware is itself an instance of mindfulness.

This chapter critically explored the role of physical well-being in education and learning as well as its links to psychological well-being. The main argument in the chapter is that well-being concept is multidimensional and cannot be interpreted in a narrow sense. With regard to educational psychology, approaches that combine social and psychological factors are more favorably used. Considering the educational process in relation to the above theoretical background suggests that we need to maintain awareness of every stage of learning in education by focusing to the student's whole experience in education. It also suggests that we need to recognize that well-being in education is necessarily proactive and that well-being extends beyond traditional education settings.

CHAPTER 2

MINDFULNESS: DEFINITIONS AND IMPLICATIONS

"Without mindful awareness, the shadows of your past may haunt your present."(Reuben Lowe)

2.1. Introduction

Having already explored the negative consequences of stress on well-being and overall health, this chapter discusses the theoretical framework of mindfulness and presents the two main traditions regarding this concept. There are four main sections of the present chapter**.** The first section discusses how mindfulness could be applied as a remedy to stress and anxiety and critically evaluates different perspectives of this concept. The second section presents an argument between two main streams of mindfulness: the meditative and socio-cognitive perspective**.** In the third section the link between mindfulness and emotions producing a long-term resilience of emotional states is discussed. In the last section, the link between philosophical concepts and perspectives with mindfulness is discussed by critically evaluating different approaches.

2.2.1. Mindfulness as a therapeutic response to stress and general definitions

In the following two sections, a comparison between the meditative and socio-cognitive theories of mindfulness is presented. Moreover, a critical evaluation of each theory's attributes is presented giving a comprehensive overview to the reader. Different attributes and qualities are presented and analyzed irrespectively for both mindfulness streams.

Socio-cognitive perspective is referred to openness in new things that come into consciousness. Noticing new things and being flexible to the environment are crucial in this stream. Whereas, the meditative perspective refers to a state of 'a moment to moment basis' without judgment by being aware of the present moment. Before explaining the two main streams of mindfulness, I would like to give an extensive definition. Mindfulness has is roots in Buddhist traditions. Mindfulness occupies a

central role in a system that was developed as a path leading to the cessation of personal suffering (Thera, 1962; Silananda, 1990). Mindfulness in western psychology has been used as an approach for increasing awareness and responding skillfully to mental processes that contribute to emotional distress and maladaptive behavior. However, there have been recently a disagreement one a specific definition that encompasses all traditions. 'Mindfulness' is the translation of the "Pali" term sati, which also conveys the meaning 'to remember,' possibly as to remember to maintain awareness (Batchelor 1997). The term sati is, perhaps, best translated 'to be mindful,' in stark to the use of the word 'mindfulness,' which is, of course, a noun and depicts a fixed trait. Simple as this distinction may seem, it may have substantial implications for conceptualizations of the term mindfulness. In the present Thesis. Broadly conceptualized, mindfulness being described as a kind of nonelaborative, non-judgmental, present-centered awareness in which thought, feeling or sensation that arises in the attentional field is acknowledged and accepted as it is (Bishop et al., 2004, p.234). Mindfulness was examined both as a trait and state. Brown & Ryan (2003) suggest that the capacity that someone could attend is universal, although differs in extent between people, as it can be enhanced or compromised by a variety of factors. Attending and becoming aware of the differences is the first level of mindfulness. They thus distinguish between trait (dispositional) and state mindfulness, suggesting that trait mindfulness predicts autonomous activity in everyday life, while state mindfulness is associated with momentary positive affect and experience. The effects of each are proposed to be independent, although they suggest that state mindfulness is more likely among those who exhibit the trait. Mindfulness as a disposition is being described more thoroughly in chapter 3 where an argument between state and trait mindfulness is presented and evaluated critically.

In the following sections, I am going to elaborate on the two most popular theories of mindfulness, their attributes as well as comment on their similarities and differences.

In Western psychology mindfulness is defined as a constant trait in a manner that it does not include the developmental and contextual aspects inherent in the Buddhist formulation (Mindfulness Attention Awareness Scale, Brown and Ryan 2003). The range of definitions of mindfulness varies widely between different questionnaires, from how commonly individuals think they experience deficits of attention (Brown and Ryan 2003) to how well they believe they can express themselves (Five-Facet Mindfulness Questionnaire, Baer et al. 2006), but also includes self-attributions of nonjudgmental attitudes, openness to new experience and being aware of the present moment (Freiburg Mindfulness Inventory, Buchheld, Grossman and Walach 2001). Trait mindfulness in psychological research has associated with people's descriptions of themselves, based on individuals' questionnaire responses. This appears to be problematic, because a substantial body of evidence documents that perceptions of one's own behavior are often dramatically at odds with documented actions (Baumeister, Vohs and Funder 2007), perhaps especially in regards with desirable behaviors. Therefore, definitions of mindfulness in the current literature, on the one hand, often rely upon self-description of a supposedly stable trait rather than upon concrete evidence that one is actively engaged in mindfulness practice. I will devote more time on expanding upon dispositional mindfulness on Chapter 3 where I elaborate more thoroughly on how trait mindfulness has been used in educational settings.

2.2.1.1 The meditative perspective

Meditation is an ancient spiritual practice, which aims to still the mind by eliminating negative thoughts, inducing a state of relaxation. Although there are many different schools and types of meditation connected to formal philosophical systems and/or religious practices (e.g., Hinduism, Buddhist, Islam, Christianity, etc.) the various forms and practices can be seen as variations of concrete

operationalization of meditation and its philosophy. Given a simpler definition meditation is being concentrated on a fixed point. Therefore, when compared to other states and processes of the mind, these differences may be disregarded as inessential in comparison with the common nucleus that characterizes meditation in general (Baerentsen et al. 2010). In terms of the larger topic of meditation, the most common other type involves purposeful attention on a particular object, image, phrase, or word. This form of meditation is designed to lead to a subjective experience of absorption with the object of focus – dissolution of the differentiation of self and other. There is another distinction in which meditation is guided by following along with a leader who verbally directs the practitioner, either in person or on tape. Others merely practice meditation on their own volition.

The applications and use of mindfulness-based interventions in medicine, mental health care, and education have been expanding as rapidly as the empirical evidence base that is validating and recommending them. This growth has created a powerful demand for educators who can effectively deliver these interventions, and for the training of new professionals who can enter hidden paths. Ironically, while the scientific literature on mindfulness has surged, little attention has been paid to the critical question of who and how should enhance mindfulness pedagogy. Contemplative knowing might be the missing link, the one that affects student performance, character, and depth of understanding. Therefore, a common ground and concern in modern philosophy of education and educational thought and practice in general is to abandon all old conceptions of learning that treat the human mind as an empty container and the individual learner as an uncritical subject that simply accumulates information. Mindfulness is more than a cognitive, perceptual function; it is "awareness of present experience with acceptance" (Germer et al., 2005). Kabat-Zinn (1990) and Shapiro, Schwartz, and Bonner (1998) list different qualities that support the practice of mindfulness and relate to therapy including non-judging, non-striving, acceptance, letting go, gentleness, patience, trust,

openness, compassion, understanding, gratitude, and loving kindness.

In mindfulness practice, vipassana meditation is applied. Vipassana is a way of self-transformation through self-observation. It focuses on the deep interconnection between mind and body, which could be experienced by disciplined attention to the physical sensations that form the life of the body, and that continuously interconnect and condition the life of the mind. It is this observation-based, self-exploratory journey to the common root of mind and body that dissolves mental impurity, resulting in a balanced mind full of love and compassion. It is rather awareness of the present moment. Mindfulness lies at the very core of Buddhism in all its forms. Yet its essence is universal in that it is about refining attention and awareness. It is a powerful vehicle for cultivating deep insight into the ultimate causes of suffering and the possibility of liberation from that suffering. Some of the main values of mindfulness are the following non-attachment, non-judgment, awareness and non-ego.

a. *Non-attachment*: Learning to let go of the many attachments, aversions, fears, and false identities that are clouding the true self. Moreover, it is important not to get attached to people, incidents, facts that take place. By being detached someone learns to cope effectively with different situations and evaluating them critically.

b. *Non judgment*: Accepting all experience as it comes in the consciousness without criticizing it. Mindfulness means non-judgmental observation. It is the ability of the mind to observe without criticism. With this ability, one perceives things that come to the experience without condemnation. One simply takes a balanced interest in things exactly as they are in their natural states. One does not decide and does not judge. One just observes with awareness.

c. *Awareness: here we mean* each moment and experience that takes place. Awareness is the purpose of the Vipassana (or insight) meditation to train someone to prolong that moment of awareness.

Awareness of the present moment and experience is of vital role in mindfulness practice. By teaching someone to be aware, mistakes are reduced and hurting others fails. A breath-watching technique can be a helpful introduction to the state of awareness, because breathing is a physical activity and a felt experience (third experiment described in Part B).

d. *Non-ego*: it is the ego that is trying to focus, trying to achieve its wants. When the intention going into mindfulness is not a pure, selfless, compassionate practice, injury to the body and mind can easily occur. Forcing the body to go into extreme postures when it is not ready, this is a classic example. A lot of practitioners during meditation force their body to perform practices that the body is not ready for. As a result, injuries could take place. In real meditative mindfulness, practices are not an action of show off but a state of relaxation where the body and mind are comfortable.

2.2.1.2 The socio-cognitive perspective

A more socially psychologically oriented description defines mindfulness as a "limber state of mind" (Langer, 1989). Mindfulness is defined as a cognitive process that employs the creation of new categories, openness to new information, and awareness of more than one perspective. Hirst (2003) suggests that being mindful requires the person to attend, to be consciously aware of, the emergent nature of phenomena in consciousness, and to recognize the nature of attachments made to these phenomena as they occur". Langer (1989) discussed the cognitive model of mindfulness without emphasis on the meditative part. Mindfulness could be easier understood with the opposite concept: mindlessness, a state of being as if on automatic pilot, involving preoccupation, absent mindlessness, carelessness, non-attention, disassociation from feelings, thoughts and actions, and habitual response (Brown & Ryan, 2003). As a result, mindfulness is a state which comes naturally without requiring extra effort. Moreover, Langer (1989) suggests that mindlessness is distinguished from mindfulness

by behaviors that are guided by habit, trapped by rigid mind sets, and oblivious to time, context, or novel perspective. Langer (1989) defines this concept from a different perspective. According to this more socio-psychological perspective, mindfulness is the process of actively engaged in differences taking place in the environment. By noticing new things and creating novel distinctions performance, health, well-being and mood are improved (Langer and Piper, 1987; Langer and Rodin, 1976). Socio-cognitive mindfulness authors contrast mindfulness with mindlessness, which is described as automatic behavior. When mindless, "we act like auto pilots who have been programmed to act according to the sense our behavior made in the past, rather than the present." (Langer & Moldoveanu, 2000). Mindfulness from this perspective requires expanding ones alternatives of cognitive categories. The idea of creating new categories was influenced by Langer's earlier studies in bias and prejudice. Explaining the practical benefits she illustrates that "If we describe someone we dislike intensely, a single statement usually does it. But if, instead, we are forced to describe the person in great detail, eventually there will be some quality we appreciate" (Langer, 1989). One of the reasons Langer's work is so appealing is that it thoroughly supports the notion that simple labels do not accurately reflect the complexity of the world. Instead mindless rationalizations are produced that justify a broad range of dysfunctional behaviors, from ineffective to criminal.

The main attributes of mindfulness defined by Langer are the following:

a. Ability to create new categories; In everyday life, we are given a level of psychological certainty that saves us from the effort of constantly challenge our own beliefs. Mindlessness, the opposite concept of mindfulness, results when we do not know that the categories we subscribe to are categories which we have accepted as our own without real critical thinking. The creation new categories, and reassessment old ones, brings a state of mindfulness.

b. Openness to new information; Langer talks about "premature cognitive commitments". Information initially perceived as irrelevant may be accepted without critically evaluated. If that information later becomes relevant, individuals become victims of their premature cognitive commitments. This is what Langer calls 'the mindless mindset formed upon first encounter with a stimulus'. Attention to novelty is one of the main components of Langer's mindfulness as above (1989). By attending differences in our mood and thoughts, we could enhance control over them and change them into positive when negative.

c. Awareness of more than one perspective; we can put up with anything as long as it is within a positive context. Without a defined personal vision, life might seem like a mass of constant anxieties and disturbances; avoiding the stereotypes and adopting a critical view, enhances consciousness of various perspectives giving a control over thoughts and emotions.

d. *Attention to process (doing) rather than outcome;* another key characteristic of mindfulness is focus on process before outcome, or 'doing rather than achieving'. This process orientation requires us not to ask, "can I do it"? But "how can I do it"? This "not only sharpens our judgment, it makes us feel better about ourselves" (Langer 1989, p. 78).

e. *Trust of intuition;* the amazing thing about mindfulness and intuition is that they are both reached without effort. 'Both are reached by escaping the heavy, single-minded striving of most ordinary life. Intuition could give us valuable information about our survival and success.

In Langer's various studies individuals are asked to pay attention to contextual differences in the context and pay attention to subtle changes which lead to more effective problem solving and improvement in both individual physiology and psychology. In Langer's mindfulness paradigm, mindfulness requires a switch from general cognition into noticing changes in the environment.

Mindfulness is slight alertness. It doesn't require any special effort or energy to act, think, behave and that's the beautiful thing about this state. By noticing one's mood and perceiving the differences in each moment, natural change is achieved. Mindfulness comes up naturally as a natural consequence of noticing novelty. A lot of people confuse mindfulness with concentration. Concentration most of the time makes one absorbed into the action whereas mindful practice engages the person into the action but same time one is aware of what takes place in the context. As a result, the person is aware of all subtle changes that might take place in the environment. By noticing the differences while performing each action, one becomes mindful and conscious of each moment that takes place. Perceiving the difference between going through the motions and moving one's body in awareness brings us into the stage of mindfulness. In a study that Langer and her colleagues conducted on piano playing taped differences were found between mindless playing and mindful playing. Two experienced graduate students in music rated in piano playing. The finding suggested that subjects given a mindful instruction in the early steps of piano playing were rated as more competent and creative and enjoying the performance more. The mindful performers were rated as better because of the fact that they were creative; they were changing their approach every few minutes and were not attached to a typical and stable type or pattern. By not accepting everything as given, creativity is produced and novelty takes place.

Across the same lines, similar results are producing by mindlessly memorizing something that we would like to learn and mindfully reading the same thing. Meditative mindfulness authors offer a technique in practicing mindfulness through breathing, acceptance and present centered awareness. Socio-cognitive mindfulness does not focus on meditation but suggests supplemental practices such as placing a value on doubt, looking for disconfirming data, and producing new ways of thinking and

behaving. Both of these approaches offer research streams in which a person's degree of mindfulness is measured through statistically validated self-report assessments. According to Langer, (1989) behavior makes sense from the actor's perspective; otherwise the actor would not do it. When we start realizing this, we become less judgmental and accept events that take place.

On the one hand, mindfulness according to Dr. Kabat-Zinn (Kabat-Zinn, Lipworth, & Burney, 1985), is based on the eastern contemplative tradition and involves "bringing one's attention to the

Table 1. Similarities and Differences between Meditative and Socio-Cognitive Mindfulness

Meditative mindfulness	**Socio-cognitive mindfulness**	**Differences**	**Similarities**
1. Focused on present moment 2. Non-judgmental 3. On purpose	1. Novel Seeking/ Producing 2. Flexible to new changes in the context 3. Acknowledge multiple perspectives 4. Sensitivity to context	In the Socio-cognitive perspective, no meditative practices/physical exercises	1. They both highlight the importance of awareness 2. Engagement in the present action 3. Novel seeking and Producing as well as acknowledging different perspectives, leads to be focused in the present on purpose and being non-judgmental. 4. Mindfulness perceived as a natural effortless state
Meditative Mindlessness	**Socio-Cognitive Mindlessness**	**Differences**	**Similarities**
1. Autopilot 2. Worrying about future/past 3. Attachments 4. Individual/Social Criticism	1. Following bias and rules 2. Lack of critical thinking 3. Routine 4. No variation in actions	1.In the Socio-cognitive mindfulness, habitual actions 2. In meditative mindfulness, lack of awareness	1. Autopilot 2. Prejudice 3. Lack of critical thinking

present experience on a moment-by-moment basis" (Carmody, Reed, Kristeller, & Merriam, 2008; Ludwig & Kabat-Zinn, 2008). There is now considerable evidence of the effectiveness of mindfulness-

based interventions at reducing distress (Baer, 2006; Grossman, Niemann, Schmidt, & Walach, 2004). The central role this kind of mindfulness plays is alleviating stress (Bishop, 2002; Blom et al., 2012; Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Branstrom, Kvillemo, Brandberg, & Moskowitz, 2010; Chiesa & Serretti, 2009; Kearney, McDermott, Malte, Martinez, & Simpson, 2012), which is linked to poor brain function (Bremner, 2005; Custodis et al., 2011; Gong, Chai, Ding, Sun, & Hu, 2011). Scientific evidence shows that cortisol released during stress may damage the brain (McEwen, 2007). More specifically, studies in animals showed that stress results in damage to the hippocampus, a brain area involved in learning and memory leading to associated memory deficits (Cabeza & Nyberg, 2000; Gelperin, 1996; Hermundstad, Brown, Bassett, & Carlson, 2011). The mechanism involves glucocorticoids and possibly serotonin acting through excitatory amino acids to mediate hippocampal atrophy. Therefore, stress has important effects on impairing memory—an important function of the hippocampus (Davidson et al., 2003; Feng et al., 2012). Interestingly, four case–control studies recently showed significantly higher levels of selective attention in meditators as compared with controls, although with some specific differences across trials (Chan & Woollacott, 2007; Hodgins & Adair, 2010; Moore & Malinowski, 2009; van den Hurk, Janssen, Giommi, Barendregt, & Gielen, 2010).

All of the studies above discuss the importance of mindfulness as a practice for well-being, stress alleviation and health improvement. Although mindfulness is an inherent human capacity that has been examined introspectively for millennia, scientific interest in mindfulness is burgeoning in the fields of medicine, psychology, social work, and business, as well as other areas. Here, mindfulness is could play a vital role in well-being and stress reduction in educational settings.

On the other hand, Langer's (1989) definition of mindfulness comes from a western perspective and is based on social psychology. For Langer, mindfulness involves engagement with the

environment, but it also includes complexity, flexibility of thought and the ability to take into consideration multiple perspectives. Individuals who learn the practice of mindfulness learn to become open to new ideas while simultaneously developing their ability to focus, learn, and manage an improved and increased sense of presence and situational awareness (Langer, Janis, and Wulfer, 1975; Langer, 1989). This socio-cognitive perspective has many positive cognitive benefits for creativity, health, well-being, stress and cognitive skills and this research extend beyond stress reduction (Carson, Carson, Gil, & Baucom, 2007; Langer, 1997, 2005, 2009). Of note, noticing different contexts is likely also to result in people realizing that what they took as real is simply their thoughts. Once people become more context and perspective sensitive, they come to realize that "behavior makes sense from the actor's perspective and become less evaluative and self-judgmental". Some of the most common and disabling consequences of brain injury are deficits in cognition, such as difficulty with sustained attention, memory, organization, and goal management. The two approaches differ in terms of the causal mechanisms of psychopathology and the extent to which the methods of remedy can be generalized. In the meditative mindfulness approach, the emphasis is on meditation as a way of being and living one's life, as well as a way to develop alternative, "generic" strategies for coping with stress, sadness, and pain, rather than as a technique for coping with a specific problem such as depression. The formal and informal meditation practices are meant to be applied daily regardless of one's state of anxiety or affect.

The mindfulness approach used in Kabat-Zinn's stress and relaxation program shares some attributes with both cognitive and behavioral therapeutic approaches used primarily to treat anxiety and mood disorders. There are also some structural and theoretical critical differences (Hyland, 2011). Theoretically these two concepts are both based on an openness in what happened in the present. However, structurally there are a lot of difference in consciousness and experience. In meditative

mindfulness, open awareness on what takes place is cultivated as well as acceptance either negative or positive. Whereas, in socio-cognitive mindfulness noticing new things is the key that leads to mindfulness.

Another important distinction apart from meditative mindfulness and socio-cognitive mindfulness comparison is cognitive behavioral therapy compared and mindfulness based cognitive behavioral therapy (MBCT). Mindfulness meditation and cognitive-behavioral therapy share skepticism in terms of relying on one's thoughts as truths and proofs of reality, and encourage examination of thoughts, sensations, perceptions, and behavior. They emphasize noting sensations and thoughts without viewing them as catastrophic or depressive, and a stress-inducing situation is often considered a cue to engage in new behaviors. Mindfulness meditation and cognitive-behavioral therapy both accentuate cognitions as mediators of emotion, namely, emotional disturbance is caused by thoughts and cognitions that are "mental events" and not "realities." Both approaches also subscribe to methods of cognitive restructuring (although of different kind) and homework assignments as an important aspect of the therapeutic work, and they encourage active, collaborative involvement from the client on the path toward recovery.

Of note, cognitive behavioral therapy (CBT), emphasis is placed on positive, negative, or faulty thoughts. In mindfulness meditation, however, the emphasis is on identifying thoughts as mere thoughts whether they are positive or negative, while acknowledging the potential inaccuracy and limits of all thoughts and not just thoughts that cause anxiety and depression. In mindfulness, negative and positive thoughts are accepted and the subject is encouraged to let them go. This attitude is cultivated both during formal meditation sessions and in the informal practices throughout the day. Philosophically, there is a major difference between the two traditions. An individual does not need to meet criteria for a specific disorder or disease in order to benefit from mindfulness meditation. From

a spiritual point of view, mindfulness meditation is considered to be a therapeutic tool within a larger program aimed at eliminating all suffering in life, and, thus, whether psychologically healthy or not, every human being is hypothesized to gain from practicing mindfulness meditation. Cognitive-behavioral therapy, on the other hand, was developed as a treatment for individuals with psychopathology, and does not make any claims to be beneficial for human beings in any psychological conditions. It is important to mention, however, that Kabat-Zinn's mindfulness meditation program is not affiliated with any religious order, even though it originates from a spiritual tradition (vipassana) which in turn emanates from teachings of oriental philosophy.

2.3. Mindfulness, self-consciousness and subjectivity

In the theoretical context of mindfulness self-awareness has been traditionally understood as a key component for self-growth. In philosophy self-awareness (or self-consciousness as these two terms are often used interchangeably) is used as a central term referring to a state always present in the mind and constitutive of personal identity. As early as in the ancient Greek philosophical tradition we see that for Plato, for example, human beings should strive for self-mastery. This is attained when the "good", i.e. the rational part of the soul is in command and enforces a state of order, concord and harmony. In the platonic Republic self-constitution in and through rational self-mastery, it guarantees both mental and psychological integrity on the individual level and the well-being and prosperity of the entire political community. According to the philosopher, the mastery of the self-thought reason brings with it the following virtues: unity of oneself, collected self-possession and calmness. To be rational means to be the master of one's true self.

In addition, while the concept of mindfulness appears to have been first described in Asia, as we have already indicated at the beginning of Chapter 2, its phenomenological nature is strikingly

familiar to different Western philosophical and psychological schools of thought. Mindfulness creates the chance to explore the specific role of this quality in subjective experience and behavior through methodologies derived from basic science that can complement applied intervention research. Self-knowledge and self-awareness are central to many world religions. In Buddhism, self-awareness and awareness of others and of the world are identical. It is the philosopher Socrates who, millennia ago, said, "Know thyself" and it was Shakespeare who said, "To thine own self be true." This quote speaks about the distinction between the false and true within. There is no philosophy of self-awareness but many philosophies that deal with this important issue.

Hegel (1982) believed in the in depth awareness of the self by 'seeing with the eyes of the other'. For Hegel, self- awareness is the realization of somebody else's self-awareness. In his book 'phenomenology of spirit' otherness and pure self-consciousness are mutually contradictive moments in a life and death struggle. What is more, the conflict between self- identity and otherness between mutual identification and alienation is the core of social relations. The universal self-consciousness is the intuition of itself, not as a special existence distinct from others, but an intuition of the self-existence. This self-consciousness recognizes itself and the other self-consciousness in itself, and is in turn recognized by them.

In mindfulness when someone is present, one is also self-aware and aware of the feelings, thoughts, and actions of others. Self- awareness has a social impact since it implies ones being of the task that you are performing but also of behaviors that could hurt other people. Of note, self-awareness of negative qualities within us is the first step to gain control over them and change them into positive.

Phenomenology, particularly in the Husserlian school (1999) has a considerable literature of relevance to the experiential nature of mindfulness. Oriental philosophy and phenomenology naturally depend on their interest in discovering the operation of the mind through first-person experience,

specifically by closely observing our subjective and sensory experiences (Dreyfus & Thompson, 2007). Dreyfus seems to be equating mindedness, mindfulness and the mental with a form of reflective or self-monitoring rationality (Dreyfus 1982, p.373), and to distinguish this from a kind of mindless experiencing (Dreyfus 1982, p.364).

Phenomenology and more recently cognitive psychology suggest that there are two main components of conscious processing. Husserl called these the natural attitude and the phenomenological attitude. The natural attitude is the default mode of processing and it is an orientation toward us, others, and the world in which events and experiences are treated as objects upon which cognitive operations take place. In this state, what comes into awareness through the sense is subjectively experienced as an impression, feeling, image, and filtered through habitual cognitive operations - evaluation of it, rumination about it, for example - all designed to disclose the content of what we experience, and in particular what it represents (or could represent) to us or for us. Husserl defined the second mode of processing the “phenomenological attitude” where our attention is turned toward reality simply as it appears or as it is given to us, that is, simply as a flow of phenomena or appearances. Husserl termed the means to do so phenomenological reduction. This does not mean a replacement or elimination of our typical cognitive operations upon reality but rather than stepping back" from our usual way of processing in order to receive experience as it manifests itself to us. In this way, everything - sense impressions, feelings, images and thoughts remain but are perceived in a different way, that is, strictly as they appear (Thompson & Zahavi, 2007). In this observation natural attitude, through a “bracketing" of our habitually conceptual mode of processing, the mind discloses how reality is created in a conscious state in the present moment. Husserl referred to the relation between reflective and pre-reflective self-awareness which is the relation between the kind of self-awareness that comes about as a result of an explicit, thematic, objectifying reflection, and the kind of

implicit self-awareness that characterizes all of our conscious behavior. Thus kind of self-awareness is a condition of the possibility for reflective self-awareness. This Reflective thinking and awareness could act as moderators in mindfulness practice (Zahavi, 2003). To speak of being an active recipient of experience is to suggest that the phenomenological attitude has both active and passive aspects. Husserl suggested that consciousness is intentional, in that it aims toward and it is not self-enclosed ('Ihompson & Zahavi, 2007). For Husserl, our most fundamental intentional activity is to be actively receptive to reality, to take notice by giving attention to that which affects us. By speaking of "that which affects us· is to recognize that attention is subject to influence; it tends to turn toward what is salient at a given time This attitude is very close to Langer's perspective on being flexible to the context and not acting as an automatic pilot. Of note, this mode of processing has a variety of expressions. A common one is a rapid presumption of truth about some phenomenon in which the discursive mind makes cognitive commitments that say, in effect, "I know what this is" or "1 know what's going on" without careful observation, or sometimes without more than a glance (Langer, 1989, p 78). In this conceptual mode or attitude, similar to what has been called second-order processing (Lambie & Marcel, 2002) and propositional processing (Teasdale, 1999), our reality takes mental representational form. Even though mindfulness meditative perspective agrees with Merleau-Ponty (1996) on the primacy of sense perception in the constitution of perceptual cognition, it elicits how the cause of human affliction arises in this psychological phenomenology due to the habitual and emotional reaction towards conceptual values as real. After all, how individuals could gradually alter the inner perspective towards the world is initially stationed by mindful breathing on the physical body. To meditate as such is to cultivate the constructive energy of attention interrelated to the ethical intention applied on the body in dissolving the dualistic concepts of the "I" and its contrived objects. Moreover, the mindfulness approach agrees with Merleau-Ponty (1962) that sensory input through

sense object contact is the primary data in designing the world of inner experience. Contact makes sense only when consciousness exists. In Satrean existentialism “this self-consciousness we ought to consider not as a new consciousness, but as the only mode of existence which is possible for a consciousness of something” (Sartre, 1956, p. 9). As Sartre suggests, “consciousness is self-consciousness. It is the same notion of self which must be studied that defines the being of consciousness” (Sartre 1956, p.100). It is consequently important not to conflate the self, which Sartre claims is present in pre-reflective experience, with the ego, which he takes to be a product of reflection. In this state, our experience becomes what we perceive that it is.

Cognitive science has supported the phenomenological claim that the natural attitude can be considered a default mode of conscious processing because what comes into awareness is often held in focal attention only briefly. There were a lot of studies being done recently on mindfulness and the default mode network (DMN). The DMN has been shown to be important in self-referencing (helping us to shape our view of ‘who we are') and in mind-wandering. This in effect means we are not present with what we are doing for half our lives. Instead, our minds are wandering to other sorts of thoughts - worries, ruminations, thoughts of the past or future. These rapid perceptual reactions have several characteristics of relevance to subjective experience and functioning. The psychological consequence of such processing is that ideas, concepts, labels, impressions and judgments are often imposed, often automatically, on every-thing that is encountered (Bargh & Chartrand, 1999). Importantly, our cognitive bias and schemas, beliefs, and opinions also coordinate our attention and subsequent cognitive processing of what is attended to (Leary, 2004; 2005). This mode of processing does have adaptive benefits, including the establishment and maintenance of order upon events and experience of relevance to the self, and the facilitation of goal pursuit and attainment. However, it also means that we do not experience reality as it truly is, but rather through cognitive filters that are frequently

of a habitual, conditioned nature.

In the same way humanists like Carl Rogers, Young and Deci (cited in Snygg et al., 1949) would also argue against materialism monism. They believe that subjective experiences are the only way to study human behavior. Humanists are not denying that the real world exists. They rather believe that it is each human being unique subjective experience in perceiving reality.

In the area of mental illness a schizophrenic might not define their actions as ill, rather they would believe they had insight into some occurrence that no one else had. This is why humanists believe the study of how each person views themselves is essential. However the problem of the relationship between consciousness and reality from a subjective view could be problematic. A schizophrenic person who feels that everyone chases him is mentally ill and needs treatment only if he is not to be a danger to himself or the public. It is clear that Jung's work anticipated all of the major themes of the humanistic-existential approach, especially his concepts of "Self" (an integrating principle of the human psyche), active imagination and human consciousness. Carl Jung supported the idea that something suppressed persists. According to Yung (1964) the self, as the deeper, inner, guiding factor, seems to be differentiated from consciousness and the emergence of the ego. The ego is situated in the center and included the subconscious and conscious mind. The self is in the center of one's existence, just as the ego is in the center of consciousness. The growth of the self does not depower the ego. The 'true self' exists despite all of the thinking that is going on. The 'false self', or ego, exists thanks to all of the thinking that is going on. Mindful meditation helps individual to see both the true and false selves within us. The ego remains in the center of consciousness, an important component in the psyche. According to Yung's theory, the ego is connecting the self as the result of a long, arduous effort in perceiving the unconscious processes.

Mindfulness is the state where natural awareness takes place and spontaneous self-realization

is created. Brown and Ryan (2003) consider mindfulness to be an aspect of consciousness. They propose that consciousness encompasses both awareness and attention. When purposefully cultivated, mindfulness results in heightened awareness of inner and outer experiences through open, nonjudgmental, focused attention in the present moment. It is not a series of practices only but an entire way of perception and "philosophy of life". Awareness is the witnessing principle, knowing how to become the observer. This aspect is related to consciousness. This awareness exists in every person. When someone is aware of an action that he is performing he is simultaneously in the present moment. This type of awareness is not found profoundly in animals because it is dormant in their being. When awareness is developed and leaves the portals of body and mind, it becomes pure.

Sometimes, it is easier to start conceptualizing the opposite concept of mindfulness, which is called mindlessness. At this stage, someone is starting understanding the absence of awareness. This is the basic step before developing awareness and reaching the state of mindfulness. Socrates gave us the foundation of modern philosophy when he claimed that his only wisdom was in knowing his own ignorance. To become aware that someone is ignorant is one layer of awareness. By developing awareness of the limits of knowledge, we reach the first step of expanding our understanding through life. It is very common during our everyday life to experience absence mindedness or mindlessness. Mindlessness is an indication that awareness has been lost for some time. If someone regularly "misplaces" things it is because he is not conscious of the actual motion of "placing" an item in a certain place. The attention is not present as well at that time. Ryle (1973) demonstrated that the Cartesian intellectualized myth had resulted in the intellectualist legend which wrongly assumed that there was an antithesis between the physical and the mental. According to mindfulness, whenever you set the mind the body follows. Therefore, mind and body are strongly related and influence on another. There are also a lot of ethical and aesthetic values to be included, in addition to the non-conceptual,

less intellectual emotions such as sympathetic joy, loving kindness and compassion associated with the Buddhist origins of mindfulness.

Gallup et al. (2002) suggest that "the ability to infer the existence of mental states in others (known as mental state attribution or theory of mind,) is a result of being self-aware" and they describe the connection between self-awareness and theory of mind thus: "If you are self-aware then you are in a position to use your experience to model the existence of comparable processes in others." Self-awareness, is defined as the ability to become the object of someone's own attention, has been hypothesized to be a landmark to the development of social intelligence (Gallup, 1982). The success of chimpanzees in the mirror self-recognition experiment, may give some reason to maintain that they are phenomenally conscious according to Carruthers (2000). Therefore, self-awareness could potentially play a vital role in social cognition, emotions identity and learning.

2.4. Mindfulness, awareness, emotions and affective learning

Emotions could play a vital role in emotional intelligence and motivation. Our thoughts and emotions can strongly affect motivation. Motivation is a drive or desire that compels us to do get involved in the learning process easily. What is more, emotions influence how we perceive and react to life, which in turn, determines how content and successful students are.

Awareness enhances positive emotions. Awareness, non-reactivity and non-attachment are the main ways in order to achieve the state of mindfulness. Mindful awareness may directly influence non-reactivity by altering the connections between prefrontal cortex and limbic zones (Davidson et al., 2003). Another key feature of mindfulness training is to reinforce positive effects to produce long-term resilience of emotional states. Steadfast attention cannot be developed immediately. When someone is aware of a feeling, either positive or negative, he may set control on it. A person, who is

aware, respects others' feelings and acts with a compassionate mind. Most studies seek to explore positive emotions, psychological strengths and optimal human functioning, and to use that knowledge to assist people in their quest for joy and fulfillment. Becoming aware of the senses is the basic component in perceiving emotions either pleasant or unpleasant.

There are a lot of different approaches in educating the emotions both philosophical and neurological. However, both are seeking to explore the process which leads to emotional balance and stress management as well as resilience in emotional fluctuations. Our feelings are not separate from our self and taking place outside of us. Therefore, there is no point to be intoxicated by them and rejecting them. Accepting any type of feelings is one of the main practices of mindfulness. If we learn how to accept our feeling as part of our nature without fear, we could transform them into a positive, productive energy in a meaningful life.

Emotion regulation refers to regulatory processes involved in promoting or changing affective experience and expression. Meditative exercises emphasize focus on a target object, such as a body sensation, a visual image, a phrase, or a concept. During a breath-focused practice which was used in one of the current studies, participants are instructed to sit in a relaxed upright posture and direct their full attention to the sensations of breathing (Bishop et al., 2004; Lutz, Slagter, Dunne, & Davidson, 2008). Langer (1989) suggests that emotions are contagious and positive emotion lead to a mindful state. Jung stated: "In psychotherapy, even if the doctor is entirely detached from the emotional contents of the patient, the very fact that the patient has emotions has an effect upon him. And it is a great mistake this doctor thinks he can lift himself above it. He cannot do more than become conscious of the fact that he is affected. If he does not see that, he is too aloof and then misses the point". Emotional contagion presumably acts as an alarm signal, quickly focusing everyone's attention to an imminent danger. Emotions as a signaling system need no words- fact evolutionary theorists see as

one reason emotional may have played such a crucial role in the development of the human brain long before words became a symbolic tool for humans. Accumulated research suggests that the networks that underlie a focus inward versus outward likely are interdependent, and our ability to regulate and move between them probably improves with maturity and practice.

While outward attention is essential for carrying out tasks and learning from classroom lessons, for example, the reflection and consolidation that may accompany mind wandering is equally important, fostering healthy development and learning in the longer term. Mindfulness practitioners are asked to submit voluntarily to threatening emotions while preserving a state of deep relaxation and 'witness awareness' to the whole process. Moreover, this evolutionary legacy means that the radar for emotions attuned us to those around us helping us interact more smoothly and effectively. Mindfulness includes strong emotional response from the practitioner. As a result, mindfulness contagion is prominent to the person's interaction with the context. People who are Mindful affect their environment accordingly. For example, people who act as leaders in a team or instructors could potentially affect trainees' behavior. In a study we conducted in schools and is described in Part B we explored whether teachers' mindfulness affects students' mindfulness and performance. In this regards, mindfulness could be a tool n reconstructing vocational education.

However, we cannot separate education into practical or liberal. Vocational education is of equal importance to liberal education where individual could express ideas openly. Dewey's aesthetic ideas for both vocational and general education come in close contact with the principles of mindfulness. Aristotelian conceptualization of learning as virtuous and individual chief objectives lies upon the idea that by being mindful we manage our mental and emotional burdens and being with the full capacity of our sensations and experiences. People who have developed awareness, they are close to the self and pure mind. Awareness leads to understanding of human nature and feelings of others

as well as respect of others' ideas and actions. Lateral thinking is another attribute to awareness which works proactively in future actions and peoples' behaviors. Mindfulness creates individual connectivity between thinking, acting and feeling. Good teaching is a process of trust and love and always of the benefit of the trainee. By offering trust and compassion the teacher is directed into a hospitable world. The educational process is rather an organic process than static and involves both efforts from the trainer's aspect as well as the trainee's side in order to obtain transformation in both sides.

Sumedho (1992) suggests that the moral aspect of the eightfold pathfold of mindfulness is taking responsibility of our speech and actions and being careful and gentle with our bodies. There is a close inter-connectness of the eight stands and awareness is the maintenance of these connections. According to Rest (1986), when someone lacks awareness and they are facing an ethical issue, they may make a decision on the basis of other factors (e.g., a cost-benefit analysis) without consulting their ethical values. Mindful individuals may feel less compelled to ignore, explain away, or analyze ideas that might be potentially threatening to the self, such as a conflict of interest or a potential bias. For this reason, mindfulness seems to help an individual to be more conscious of ethical considerations within a decision, thus developing moral awareness. Mindfulness promotes self-awareness, and greater self-awareness leads to ethical behavior. Empirical research suggests that when people are more self-aware, they are more honest (Haley and Fessler, 2005).

For instance, Diener and Wallbom (1976) found that participants solving anagrams in front of a mirror cheated much less (7%) than those next to a mirror (71%). Similarly, by being mindful in the present and aware of one's thoughts increases self-awareness. Because mindfulness encourages a greater awareness of one's environment (including ethical issues), and oneself (including biases), we expect a negative relationship between mindfulness and the likelihood of making unethical decisions.

We expect mindfulness to affect not only the extent to which an individual acts ethically but also their philosophical understanding to ethical decision making. Ethical decisions might follow ethical values (formalism) or address possible coincidences of a decision (Hunt and Vitell, 1986).

Mindfulness encourages a focus on each present moment, which shifts attention away from future-oriented concerns about results. Secondly, practices which develop mindfulness (e.g., mindfulness meditation) place an emphasis on "being" rather than "achieving" (Kabat-Zinn, 1991). This perspective is likely to keep a distance from a goal-oriented and instrumental perspective to one which is more process focused. Thirdly, the metacognitive nature of mindfulness brings one's focus on one's thought processes, including one's principles. Therefore, mindfulness is a form of attention-awareness in which thoughts can be observed in non-judging, non-attached, non-centered ways. Recent evidence shows that dispositional mindfulness were negatively correlated with negative thought frequency and perceptions of the ability to let go of negative thoughts in an unselected student sample (Frewen et al., 2008). In this chapter has been discussing the different concepts and theories of mindfulness. As it has been critically evaluated, the concept of mindfulness is most firmly rooted in oriental psychology, but it shares conceptual kinship with ideas advanced by a variety of philosophical and psychological traditions, including ancient Greek philosophy; phenomenology, existentialism, and naturalism in later Western European thought; and transcendentalism and humanism in America. That this mode of being has been commonly described suggests its centrality to the human experience. Indeed, mindfulness is rooted in the fundamental activities of consciousness: attention and awareness.

CHAPTER 3

MINDFULNESS AS A DISPOSITION IN EDUCATIONAL SETTINGS

"Consciousness must always remain the smaller circle within the greater circle of the unconscious, an island surrounded by the sea, an endless and self-replenishing abundance of living creatures, a wealth beyond our fathoming" (Carl Jung)

3.1.Introduction

Having already explored the notion of mindfulness and its theoretical components, this chapter critically discusses the applications of mindfulness as a disposition in educational settings. A mindful mode of processing involves a receptive state of mind; attention is kept to a bare registering of the facts observed. When used in this way to prolong that initial contact with the world, the basic capacities for awareness and attention permit the students to "be present" in reality as it is rather than react to it or habitually process it through conceptual filters. This chapter discusses mindfulness as a disposition in educational settings and potential implications. Possible implications discussed refer to learning, cognitive functions, stress reduction and well-being.

3.2.Socio cognitive mindfulness: its applications in education

The view that high-level thinking is characterized by single overarching thinking dispositions is perhaps most fully defined by Langer. Although she doesn't use the term "thinking dispositions," she advances the view that good thinkers have the tendency towards "mindfulness." When we talk about dispositions, we refer habits or tendency to act in a specified way. It reflects the concept of personality traits. In Bourdieu's theory of fields' dispositions are the natural tendencies of each individual to take on a certain position in any field.

According to Langer, mindful thinkers tend to create new categories seek novelty, "pay attention" to given contexts. They tend to be open to new information and tend to take more than one perspective into account (Langer, 1989). In addition to Langer's theory, Salomon (1994) also recognizes mindfulness as an overarching thinking disposition. Salomon offers his own list of key characterological components of mindfulness. These include a positive attitude toward ambiguous and complex situations, a preference for novelty and incongruity, and an intention to seek out such situations, or even shape situations in a way that makes them fit this preference (Salomon, 1994). Although he doesn't use the term "thinking disposition," philosopher of education Harvey Siegel talks about the "critical-spiritedness" required to engage in reason assessment. Siegel argues someone cannot be a critical thinker without being open-minded. Open-mindedness is the ability and disposition to seek reasons and evidence, and to believe in accordance with their proper evaluation – is a central aspect of the critical spirit component of critical thinking. This tendency, he argues, is composed of objectivity, intellectual honesty, impartiality, a willingness to conform judgment and action to values, and a commitment to seek and critically evaluate reasons (Siegel, 2010).

Similar theories were elaborated by Peter and Noreen Facione speaking of an overarching disposition to think critically, and aim to measure it in their California Critical Thinking Dispositions Inventory (Facione & Facione, 1992). An analysis of their results indicates that this overarching disposition factors into seven sub dispositions: open-mindedness, inquisitiveness, analyticity, truth-seeking, critical thinking self-confidence, and maturity (Facione, Sanchez, Facione, 1994). Therefore, a lot of interest has being placed on mindfulness as a disposition in educational settings. In part B of the present Thesis, mindfulness was explored as a therapeutic intervention in three different educational settings: teaching hospital, school and university. All three studies show the positive impact of mindfulness as a tool for stress reduction and well-being.

Mindfulness programs designed especially for teachers are starting to grow. The Cultivating Awareness and Resilience in Education (CARE) professional development program is intended to help teachers bring a more mindful approach to their teaching and reduce stress. CARE aims at ameliorating teacher well-being, classroom climate and student's pro-social behavior through participation in a series of four day long sessions. Teachers that participated in CARE report increased levels of mindfulness and well-being. They also respond more effectively to challenging student behavior which both increases positive classroom climate and reduce stress (Jennings et al., 2012).

The Inner Resilience program (IRP) is designed to improve the stress management of both teachers and their students. The IRP is an one year program including yoga training and practice, the Nurturing the Inner Life (NTIL) series exploring a variety of reflective approaches for managing stress and a weekend residential retreat offering rejuvenation as well as exploring a variety of reflective approaches for staying calm within the turbulence of teaching. A recent evaluation of IRP showed impressive results, including increased teacher mindfulness and relational trust, greater student autonomy, decreased student anxiousness and pronounced improvement for students identified as at risk for reacting in stressful situations in destructive ways (Lantieri et al., 2011). In this case, student is a critical thinker; one has the critical spirit – which includes a willingness and ability to reconsider one's beliefs in the light of new reasons and evidence – and so is open-minded. A recent study was conducted in the center for mindfulness research and practice in the United Kingdom. The study depended upon primary school teachers (Gold et al., 2010) who followed a mindfulness Based Stress Reduction Program (MBSR). In this study, a MBSR course was delivered immediately following the school day, as eight 2.5- hour weekly sessions and a 'silent day'. Results indicated that 10 of the 11 participants experienced reductions in stress, depression and anxiety. With less intensive training, researchers guided a simple meditation technique to student teachers during forty five minute sessions

and found that participants reduced emotional and physical stress burdens compared to controls (Winzelber & Luskin, 1999). Research is growing on the effectiveness of mindfulness in school-age populations. For example, some of the programs with the research confirming the effectiveness include "A still Quite Place" (Saltzman, in press) for kindergartens, the "Innerkids" (Flook et al., 2010) and the "Mind up Program" (Schonert-Reichl et al., 2009). For elementary and secondary students as well as programs for parents and kids combined (Saltzman & Goldin, 2008). A review of studies on the effectiveness of mindfulness in youth between 6 to 18 years old in school, clinic and community settings from 1982 to 2008 identified 16 empirical studies (Black et al., 2009).

Among these studies, the types of meditation included "vipassana meditation" transcendental meditation, MBSR and mindfulness based cognitive therapy. According to the review, meditation proved to be an effective intervention for the treatment of psychological, physiological and behavioral symptoms in the school-age sample. Researchers found that mindfulness practice taught to early adolescents resulted in less aggressive and oppositional behavior toward teachers, greater attention in class and more positive emotions, including optimism (Schonert-Reichl & Lawlor, 2010). There have also been some promising results with students with a variety of diagnoses. Adolescents with DHD following participation in an 8-week MBSR program reported improvements in ADHD, anxiety and depressive symptoms (Zylowska et al., 2008). Research on 102 adolescents with various psychiatric diagnoses who were taught the MBSR program found that participants reported reduced symptoms of anxiety, depression physical distress and increased self-esteem. Even more notable was the finding that clinicians documented a significant increase over the control group in the number of adolescents who were longer clinically depressed or anxious. (Biegel et al., 2009). Interesting results have also been obtained with relatively short training periods. A study with adolescents diagnosed with learning difficulties, showed that mindfulness significantly reduces anxiety, In addition there was decrease in

teacher ratings of student problem behaviors (Beauchemin et al. 2008). These results were obtained in five to ten minutes sessions, five days per week for five weeks. With school referred students diagnosed with a conduct disorder, researchers found a decrease in aggressive behavior and bullying (Singh, 2007). These results were obtained after fifteen minute sessions, three times per week period, with greater decreases occurring during the twenty-five weeks practice after the practice.

Nowadays, most research being conducted in schools tries to identify and manage mental health problems, bullying and antisocial behavior within the school context. A promising approach to enhancing the well-being of children in school, which may have benefits for many aspects of well-being, is to provide training in mindfulness. As described in the Mental Health Foundation Report (2010) 'mindfulness is a way of paying attention. It means consciously bringing awareness to our experience, in the present moment, without making judgments about it'. Usually, we pay little attention to our experience; rather we are swept away by thoughts and feelings, external events, interactions with others, or memories about the past and hopes and fears about the future. Most of the time, we are on automatic pilot, caught up in our experience and reacting automatically, especially when we are under pressure.

In contrast, staying consciously aware of what is happening allows us to see and experience things 'as they really are' and have choice over how we respond. With mindfulness, we deliberately observe and accept what is happening right now, in our bodies, minds and the world around us, with an attitude of gentle curiosity. In experiential terms, mindfulness has a calming and centering effect. By focusing on an object, such as the breath, the busy, buzzing, sometimes scattered mind becomes clearer. In this state, sensations, thoughts and feelings enter conscious awareness, but their obsessive or 'hooked' quality is reduced when they are observed with interest and curiosity and we let them go afterwards. Reduced anxiety and a sense of calmness arise from not judging what goes on in the mind

or in the external world, but simply accepting the experience as it is. Research on special populations shows that yoga and meditation could decrease school behavior referrals, increase "time-on-task" (Peck et al., 2005), and ameliorate academic performance by reducing stress (Beets & Mitchell, 2010). In a recent meta-analysis of research studies, investigators at the University of Maryland's School of Nursing found that "yoga may be as effective as or better than exercise at improving a variety of health related outcome measures". However, unlike other sports and fitness systems that do improve mental health, the mind-body techniques of yoga, used in schools, have consisted of gentle, non-competitive self-care practices of physical, emotional and psychological wellness. Mindfulness practices could release all emotional, physical and mental burdens. Initially, it works on the physical level by releasing all tension that is concentrated in the joints.

On a secondary level, by continuous meditative practice, emotional tensions are released and awareness is turned inwards. People who practice for years could also benefit in a deeper level, even in the brain. Studies being conducted in advanced practitioners showed differences in the gray matter and amygdala, areas related to positive feelings (Lazar et al., 2005). Mindfulness concept and practices are much along the lines with the theory and practice in positive psychology. Positive psychology is a broader umbrella, that is fundamentally concerned with the scientific understanding and promotion of what makes life go well (Seligman, 2002). A vast body of research regarding positive psychology has focused on evidence for the benefits of positive feelings, qualities and emotions and how to ameliorate them (Fredrickson, 2001). In addition to the cognitive behavioral therapy, where negative thoughts and emotions are initially identified and changed, in mindfulness cognitive therapy after negative thoughts are identified, they need to be accepted as a part of the self. Research indicates that when children are given the abilities and time necessary for reflecting, they often become more motivated, less anxious, perform better on tests, and plan more effectively for the future.

Mindful reflection is not only important in an academic context but it is also essential to individuals' ability to make meaning of the world around them. Inward attention is an important contributor to the development of ethical thinking and reasoning and is linked with overall emotional well-being in relation to the context. Mindfulness has been identified as an important intervention (Irving et al., 2009), which has the potential to significantly improve awareness and concentration and positively improve the optimal functioning of individuals. Baer (2003) suggests that this present-moment awareness may facilitate self-management in that individuals may be more likely to use a range of coping skills as a result of being more self-aware (similar to the rationale commonly given for self-monitoring).

One dimension of burnout is depersonalization which refers to a feeling of "losing the self". Mindfulness reinforces self-concept and self-compassion, and can bring the person closer to their real self and nature (Krasner et al., 2010). Shapiro et al. (2005) conducted a meditation intervention with physicians. Outcome measures included self-report measures of psychological distress and the self-compassion scale. Results indicated that individuals in the experimental condition demonstrated significantly lower levels of perceived stress, and an increase in ratings of self-compassion. Rosenzweig and colleagues (Rosenzweig et al., 2003) concluded that the MBSR program decreased mood disturbance for the experimental group. In particular, they found decreased anxiety and increased vigor in the experimental group while the control group experienced increased anxiety and fatigue and decreased vigor during the same time period, in which the MBSR program concluded as students approached final exams.

Their results support those by Shapiro and colleagues (Shapiro et al., 1998), who also suggested positive results in medical and premedical students' anxiety and psychological distress for those taking part in an MBSR intervention, even during the exam period. However, no studies to date

have examined the effect of mindfulness from a socio-cognitive perspective (Langer, 1989) among healthcare professionals. In the first study described at part B, we conducted a socio-cognitive based mindfulness intervention to improve performance in medical students suggesting promising results particularly on hygiene clinical skills. Therefore, it is of vital importance to nurture mindfulness as a disposition in educational settings. More specifically, nurturing the disposition of mindfulness in schools should involve attention to the development of students' skills, inclinations, and sensitivities with respect to mindfulness.

In other words, this includes developing certain abilities such as the ability to look at the world from more than one perspective. This perspective included approaching things not as they are given, but questioning them and trying to find alternative solutions. In such surrounding, teachers help students to become aware of the value of mindfulness and the consequences of mindlessness. Most importantly, it means helping students to be alert to occasions for mindfulness as well as to occasions when one is likely to engage in mindless behavior. By mindless behavior, I mean acquiring an automatic behavior that is given without critical thinking and mindful decision making. The first important component at developing mindfulness as a disposition is looking closely to new information and details while learning. Through different practices, students could develop sensitivity which means giving students both the time to explore and the assurance that something valuable exists to be found. The second component of dispositional mindfulness is exploring alternative perspectives and possibilities. Exploring the world may be rather natural to children, but this is certainly not the case for perspective taking. Adopting another's perspective and considering different perspectives is a skill that must be explicitly nurtured. The selfishness of human being often makes this a challenging task. The third important component of dispositional mindfulness is enhancing ambiguity. When learners take a single correct answer as the goal, they are likely to narrow quickly their examination of

possibilities, resulting in less flexible use of their knowledge (Langer & Piper, 1987).

Society and school often force people to think of their lives in terms of their accomplishments. A process orientation, "'How do I do it?' instead of 'Can I do it?, directs attention toward defining the steps that are necessary on the way" (Langer, 1987, p. 34). Taking each stage as it comes also allows for making changes and modifications that bring about better results. This kind of focus helps students approach big projects in small pieces by thinking of what step to take next rather than thinking of everything at once. Teachers can help students concentrate on process by pointing out that all outcomes are preceded by processes and that some processes are more effective than others. Providing students with tools to plan and implement processes can help convince them of the value of paying attention to how things are accomplished and spending less time thinking of what the project should look like in the end.

Many people rely on predictability. They like knowing that B follows A and that it always will. They like to be able to plan for things that will happen exactly the way they always have. Mindful people, however, know that the world is a confusing place, unpredictable and often chaotic. Students who are comfortable with uncertainty and ambiguity have a big advantage when it comes to clear thinking. They are less likely to jump to conclusions just so things will be settled, and they are not seduced by simple answers to complex problems.

A willingness to embrace uncertainty may stem partly from personality, but it can be nurtured in everyone. Many children are uncomfortable when they don't receive specific directions, and it is often difficult for teachers to refrain from telling students exactly what to do instead of letting them struggle while making their own decisions. The purpose of allowing students to work through ambiguous problems is to help them become expert problem solvers. The best way to support them in their learning is to provide them general strategies, such as thinking strategies that they can then apply

to the specific problem they are working on and to other similar problems in the future.

Teachers must keep in mind, however, that there is a difference between allowing students to struggle to find their own answers to problems and asking them to guess at an answer without giving them the information they need. If you know exactly what you want students to learn or experience, then asking them to struggle at figuring it out through a lack of directions has the opposite effect of genuine, authentic uncertainty. It makes them suspect that a teacher's motive for not giving them specific instructions is to trick them into failing. The concept of mindfulness can be useful in classrooms. Mindfulness can be an effective way to focus students' attention on paying attention to how they are responding to tasks. "Remember to be mindful while you're planning your experiment" or "Don't forget to be mindful while you're discussing the project" can be a simple reminder to use those habits of mind that contribute to effective thinking. The cumulative effect of such open and active instruction is to make students more aware of or sensitive to the ambiguous or conditional nature of the world— that knowledge and understanding are always changeable. In addition, such instruction draws on our natural inclination to fill in the gaps and make sense of the world. Honoring this natural inclination in the classroom by creating situations that are both engaging and ambiguous helps students develop a sense of their own role as learners. By nurturing mindfulness as an enduring disposition, learners are placed in the center, using creative thinking and being flexible in the changes that take place in the context.

Langer's (1992) early conceptualization included mindfulness as a state of conscious awareness involving openness to novelty in which the individual actively constructs categories and distinctions' (p. 289). From this view mindfulness is a somewhat effortful way of attending to the present moment, in contrast to the automatic, shallow processing of mindlessness. In a later conceptualization, Langer and Moldoveanu (2000) revised the definition of mindfulness to emphasize

that it is a ,process of drawing novel distinctions such that a perceiver experiences a greater sensitivity to one's environment, more openness to new information, the creation of new categories for structuring perception, and enhanced awareness of multiple perspectives in problem solving" (Langer & Moldoveanu, 2000, p. 1). At the first stage this process might be effortful but once it becomes a way of living it changes into an effortless state. Meta-awareness is highly correlated with mindfulness since it works as a mediator. Meta-awareness refers to the simplest being knowledge of the state of the mind at a given moment, including the quality of one's attention (Brown & Cordon, 2009). The combination of attention and meta-awareness also helps to distinguish mindfulness from concentration, which deeply informs the attentional control construct (Derryberry & Reed, 2002). Attention works similarly to concentration, but without meta-awareness, no mindfulness exists (see Brown & Cordon, 2009; Dreyfus, 2011). Mindfulness also involves a capacity to broaden the field of attention, or to develop awareness of an ever-widening domain of internal and external experiences. This process involves the capacity to flexibly change the target of attention, from a penetrative focus to a broad panoramic view of experience (Bodhi, 2004). As a result, mindfulness represents an attention capacity characterized by flexibility and aim that involves qualities distinct from the concentrated nature of attentive control.

It is important to understand the close interrelation between attention and awareness in daily life (Lamme, 2003). More specifically, an integration of attention and meta-awareness helps to distinguish mindfulness from related states. For example, attention may be concentrated, but only when coupled with meta-awareness – an apprehension of the current state of the mind that serves to monitor that focused attentiveness – does it become mindful (Dreyfus, 2011). At a deeper level, mindfulness could be incorporated in educational setting as a disposition by implanting qualities such as novelty seeking,

novelty producing, flexibility, self-awareness and non-judgment in students. Being mindful and attentive are two differences processes that people should be aware. Someone could be attentive but not mindful due to the fact that he is so absorbed to the task that he is not aware of changes that take place in the surroundings. However, someone could be mindful and attentive at the same time simply because they could focus on the specific task and at the same time staying alert of alternations in the context. Mindfulness could be nurtured as an enduring quality of personality when practiced regularly, systematically and adjusted to one's daily lifestyle. It becomes a philosophy in life, attitude, value and need for mental and emotional evolution. My Thesis promotes that experience of open awareness we are suggesting is within both contemplative and creative form of mindfulness, is a state of mind in which an individual learn to live with uncertainty. Beyond merely tolerating a state of not knowing the outcome of thought or action, we are proposing that thriving with uncertainty becomes a way of being for individuals who experience the different approaches to being mindful. While this hypothesis will need focused empirical research to support its possible validity, I hope that by offering this detailed conceptual discussion and evidence in Part B, future investigations may illuminate the core processes connecting contemplative and creative mindfulness with well-being.

Fisher (1988) suggests that a mindset factor as making better use of what is known about differing pathways of perceiving and reasoning because all people do not necessarily adopt the same evidence to the same conclusions. People's assumptions are not matched with each other. Each mindset not only connects with the other but the interdependent nature of dialectic transforms the entire process of thinking, learning, and acting on the world. This is where the complementary of each mindset emerges. A dynamic combination of growth and change is created and lived as the school experience. As a system of mindsets, the concept of learner centered schools creates and recreates the environment. Through the various applications of mindfulness the learner reforms the mindsets in an

organic process. By engaging learners as teachers and teachers as learners, learner centered schools recognizes the multidimensional and interdisciplinary nature of socially constructed knowledge. Each learner has the right to define the process of knowledge. Self-definition, when it is built on reflection and active categorization, is the mindful engagement of the self as individual and the self as group as well as the interactive process of the social construction of knowledge in learning environments.

The learner centered school involves an organic development of knowledge from both the teacher's and learner's perspective. Learner centered schools identifies that teachers and students continuously construct their own knowledge bases, determine what forms disconfirming or confirming facts on reality. According to Merryfield (1994) our perceptions or perspectives of the world affect both our acquisition and processing of new knowledge. In their paper Langer and Piper suggest that information is currently processed mainly in an unconditional way for several reasons (1987). First, and foremost, having been influenced directly or indirectly by classical physics, rather than quantum mechanics, most people believe in an absolute reality that is independent of the human presence. Thus, by teaching objective facts about the real world, one presents the world as it is, irrespective of subjective experiences. Second, by teaching that objects, values, people are unconditional; one surely hopes to accomplish several things simultaneously; to teach function, to enable communication and to establish stability. However, by giving information in one way, one encourages its mindless use. It seems then that a choice exists between mindful insecurity and mindless security. Most breakthroughs around history have been made when learning was not absolute. Therefore, new discoveries took place. By changing the already known mindsets and trying new different "impossible" looking ways, most experiments raised a lot of questions for already given innovations. This concept goes along with the importance of critical thinking where people are encouraged to question incidents and facts that are given for granted.

Therefore, learning new skills and adopting new knowledge cannot be restricted to formal educational settings. By integrating working and learning, students learn within the context of their study on real-world problems. Learning does not take place in a separate phase and in a separate place, but is integrated into the learning process. People construct solutions to their own problems, and the system advises them when they are getting into trouble and provides directly relevant information. The direct usefulness of new knowledge for actual problem situations greatly improves the motivation to learn the new material because the time and effort invested in learning are important. Another important factor in such educational environment is open communication between teachers and students. When communication among members of the school is open, everyone gets honest feedback on what is working and what is not. This knowledge is essential for educational growth. Such information need not be threatening if everyone understands that its purpose is to help each learn how to improve, rather than to promote judgment. The emphasis on cultivation and development brings to light the vital links with learning and education according to Langer's interpretation of mindfulness (1989, p.62). Highlighting the potential of mindfulness in enhancing well-being in education, work with older people, health, creativity and the workplace, Langer's description of the "key qualities of a mindful state of being" (Langer 1989, p.61) "by constructing new categories" will be important in exploring the educational implications of mindfulness.

Therefore, mindfulness could have a lot of positive outcomes in education by teaching questioning and critical thinking as well as reasoning. At this point I would like to distinguish the concept of non-judgment with critical thinking. By non-judgment in mindfulness, we refer to accepting everything come into awareness with positive or negative. Critical thinking exists in mindfulness practice since we do not accept rule and routine governed behaviors. In mindfulness practice, we reject facts that are taken for granted and try to find novel ways to do things. On this basis, one might also

argue mindfulness is a foundation for education: to the extent that mindfulness provides the optimal conditions for learning and teaching and also supports all pedagogical approaches. In the following part (B), the three studies that are presented were based on Langer's mindfulness approach and definition and took place in educational settings providing evidence for the theoretical background presented above. This evidence provides an understanding regarding open-mindedness, a primary component of mindfulness, that essentially involves "a willingness to revise and reconsider one's views and mindsets. The brief literature review in this chapter illustrated a growing convergence of findings across multiple methodologies, all of which point to the provisional conclusion that mindfulness and its cultivation support education and student human functioning. Such critical review also contributes to our understanding of mindfulness states and traits. This chapter supports the claim that mindfulness is a unique construct, but little is known about its convergence with other phenomena that appear to have conceptual overlap. Moreover, mindfulness applications in education are of vital importance given its uniqueness and holistic approach in thinking. Mindfulness helps individuals to develop dispositions that direct our mental resources and activate our behavior. Of note, awareness is developed that creates alertness to engage in certain behaviors. Overall, nurturing the dispositions in schools requires attention to the development of student's abilities and inclinations with respect to mindfulness.

PART B

CHAPTER 4

RESEARCH STUDIES AND INTERVENTIONS

3.3. Introduction

In the previous chapters (part A) a number of characteristics, features, theories, the nature and processes of mindfulness were examined. Chief amongst these were Langer's (1989, 2003) writings on mindfulness on the false beliefs and individual's limited resources on acting from a single perspective and relying on automatic behavior. On the other side, Kabat-Zinn describes the seven "attitudinal factors" which function as foundational prerequisites of mindfulness connected with the contemplative tradition including a non-judgmental view and being in the present from a moment to moment basis. Of note, mindfulness was explored as a disposition and measured through Langer's mindfulness trait inventory in all three studies that follow. In the following part, a combination of both approaches as well as each approach was irrespectively explored and applied. The aim of Part B is to offer a validation of the mindfulness theories and concepts presented in Part A. This part provided evidence on mindfulness as a behavioral intervention for stress, burnout, well-being and learning. The first study presented below includes a combination of Langer's and Kabat-Zinn's perspective instructing students to become aware of changes in their everyday clinical practice. In the second study, Langer's socio-cognitive perspective and theoretical framework are used to build upon the exploration of mindfulness contagion in school settings. In this study, mindfulness is shown to be contagious from the teachers' perspective to the students' perspective as well as affecting positively the latters' performance. In the third study, a combination of the meditative perspective and the socio-

cognitive perspective are presented by applying both theories in one practice. Mindfulness could be considered to be a psychological state, trait or a cognitive ability. As a state, it could be conceptualized as a facilitator of a positive psychological flow and well-being. As a trait, it is examined within the framework of individual differences from which personality scales may be developed (Langer, 1989; Langer & Bodner, 2001). As a cognitive ability, mindfulness could be viewed as a mechanism describing an individual's typical way of thinking, remembering or problem solving (Carroll, 1993; Sternberg, 2000). Kabat-Zinn refers to the beginner's mind as a state of being receptive to novel ideas and ways about thinking. The beginner's mind is humble and learns how to begin restructuring one's current mental representations or to contravene long-held blocking beliefs. Trusting one's own inner wisdom and viewing the self as a "work in progress" become hallmarks of the previous attitudes of mindfulness.

Taking the above into account, the practicing progress toward one's desired goals is opposed to perfection or individualism. In the following studies mindlessness is considered as mainly an absence of or reduction in mindfulness (Langer 1989, p.9). As discussed in the first part, Langer also posits that mindfulness is reduced when an individual performs mental shortcuts, behaving seemingly without conscious control. The behavior appears to be carried out in a habitual, unquestioning manner, as if on automatic pilot (Langer 1989, p. 12). Given the fact that mindfulness was conceptualized as a construct, it was used in the following studies both as a state and a trait combining both Langer's attention to variability (the opposite of automatic behaviors) and Kabat-Zinn's meditative approaches. One approach could work complementary to one another depending on the context and participants' personality variability. Some people who find it difficult to meditate or concentrate on a settled point, whereas there are others who could easily adjust to the meditative state and practice.

Langer's perspective could be an alternative practice for people who cannot practice meditation but could potentially adopt openness to new perspectives. We used a mixed mindfulness model incorporating the socio-cognitive perspective and meditative perspective applied in different educational settings. According to the socio-cognitive perspective, once we accept that something is impossible, we may spend our lifetime convincing others that it would be impossible for them and thereby infusing them with our own mindset. Mindsets are like viruses and we live within a pandemic of such thought. Mindfulness is the enemy of mindsets where power of uncertainty is suggested. When someone is mindless, he or she is trapped in rigid mindsets, oblivious to context or perspective. When someone is mindful, he or she is able to draw novel distinctions, rather than rely on distinctions drawn in the past. This highlights the significance of factors such as sensitivity to context and perspective. When someone is mindless, behavior is rule- and routine- governed. In this state of mindlessness, people are not aware of the subtle changes that would have led them to act differently. In the studies followed below, automatic behavior is compared to mindful behavior and mindfulness as an applicable tool in schools and various educational settings. By understanding how and why we need to challenge our mindsets, those concrete assumptions that color our experience of the world, opens a world of new possibilities. This is the state of mindfulness where openness to new information draws novel avenues for experience. The three studies discussed below, target at using mindfulness as a therapeutic tool for stress. Moreover, socio-cognitive mindfulness is applied as a simple technique for improving well-being and learning in educational settings such as schools and universities. Each study uses a special strategy at applying mindfulness depending on the different contexts, however, they are all based and designed according to on the Langerian socio-cognitive mindfulness theory.

Before I proceed with the description of the first study which was conducted in medical schools, I explore the theoretical basis of mindfulness as a therapeutic tool in medical settings. The

second and third studies both discuss mindfulness as an applicable theory in schools and universities in terms of designing relevant interventions in education.

4.2 Improving performance and learning in medical students

4.2.1. Introduction

New training methods for medical students are thought to be of major importance nowadays. Attention has been placed to alternative ways of enhancing learning and preventing mistakes. Meditative practices and relaxation techniques have been proved effective in reducing medical errors. Through the Health Enhancement Program (HEP) the new theme-based 5-year undergraduate medical curriculum at Monash University—begun in 2002—attempted to reinforce previous effort in order to foster student well-being and to enhance holistic medical education (Hassed 2004). Subsequently, other medical schools have begun using the HEP and the Monash mindfulness program has been incorporated into the optional self-care workshops for Harvard medical students (Rosenthal & Okie 2005). There is a lot of evidence showing that hygiene maintenance is very poor in most medical settings. For instance, messages about health and safety are thought to be effective when they highlight personal risks for the actor. Researchers have speculated that health care professionals "are probably driven to wash their hands by their need to protect themselves more than by their need to protect their patients" (Korniewicz & El-Masri, 2010).

According to this line of logic, messages aimed at health care professionals should emphasize how hand hygiene protects them personally. Such messages are believed to activate basic motivations related to survival and self-protection (Rothman & Salovey, 1997). As Williams and Noyes (2007) summarized, safety behavior is based on individuals believing that the risk is likely to affect them seriously. However, automatic behavior prevents awareness and better performance. Studies have

shown that without encouragement, hospital workers wash their hands as little as 30 percent of the time that they interact with patients. So, in addition to the video snooping, hospitals across the country are training hand-washing coaches, handing out rewards. All this effort is to persuade workers into using more soap and water, or alcohol-based sanitizers. Of note, under new federal rules in the United States, hospitals will lose Medicare money when patients get preventable infections making the incentive for designing novel interventions stronger (McGuckin et al. 2004).

The opposite state of acting as an automatic pilot is the state of being mindful. Mindfulness is defined as the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment to moment (Kabat-Zinn, 1981). Initially, mindfulness involves cultivating self-awareness and noticing new things in each action we are performing. For example, when we drive, wash, work, learn, watch, feel, act, perform etc (Langer, 1989). At a secondary level, mindfulness can be achieved through meditation which aims to develop awareness and tuning ourselves into a positive vibe (Kabat-Zinn, 1981). Mindfulness could play a vital role in developing hospital employees' awareness in hygiene and hand washing. By developing mindfulness, people learn to be engaged in the action that they are performing and at the same time be aware of possible changes that take place in the context (Langer, 1989). Mindfulness involves cultivating self-awareness and being attentive in each action we are performing. Therefore, reduce stress and burnout in a natural way that promotes self- awareness and reflection of everyday thoughts and feelings. A beginner's exercise that is usually introduced in people who are being taught meditation is awareness of the senses. Noticing things that we are not aware of could be the first level of developing awareness. For example, a usual exercise involves noticing different senses (smell, touch, sight, taste) every day and being in the moment with awareness. An alternative of awareness of senses is awareness of actions. Along the same context, the current intervention was designed and

introduced in medical students as a behavioral intervention for improving awareness in clinical practice.

4.2.2. Mindfulness and burnout

Mindfulness practice has been proposed as a way to reduce stress and burnout among health care professionals through a number of pathways linked to the tenets underlying the philosophy of practice (Carlson et al., 2003). In the psychological literature, mindfulness has been defined in many ways, with various approaches including cognition, awareness (metacognition), and emotion (Grossman, 2004). One proposed approach to address loss of meaning and lack of control in life is developing greater mindfulness that is the quality of being fully present and attentive in the moment during everyday activities (Santorelli et al. 1999). One dimension of burnout is depersonalization which refers to a feeling of "losing the self". Mindfulness reinforces self-concept and self-compassion, and can bring the person closer to their real self and nature (Krasner et al., 2010). For example, Shapiro et al. (2005) conducted a meditation intervention with physicians. Outcome measures included self-report measures of psychological distress and the self-compassion scale. Results indicated that individuals in the experimental condition demonstrated significantly lower levels of perceived stress, and an increase in ratings of self-compassion. Previous studies have demonstrated the beneficial effects of mindfulness based stress reduction techniques for medical students. For example, the most frequently cited method of mindfulness training is the Mindfulness-Based Stress Reduction (MBSR) program, formerly known as the Stress Reduction and Relaxation Program (SR-RP; Kabat-Zinn, 1982, 1990). It was developed in a behavioral medicine setting for populations with a wide range of chronic pain and stress-related disorders. In a randomized control trial of MBSR for medical and premedical students, findings indicated significant decreases in depression and anxiety and significant increases

in empathy in the MBSR intervention group as compared with controls (Shapiro, Schwartz, & Bonner, 1998). These findings were replicated in a recent randomized controlled trial of pre-health students (Jain, Shapiro, Swanick, Bell, & Schwartz, 2004). Thus the most recent research indicates that participation in a mindful communication program was associated with short-term and sustained improvements in well-being and attitudes associated with patient centered care (Krasner et al., 2010). MBSR also resulted in positive changes in empathy and psychosocial beliefs. Both indicators of a patient centered orientation to medical care that has been associated with patient centered behaviors such as attending to the patient's experience of illness and its psychosocial context and promoting patient participation in care. Shapiro and colleagues conducted a randomized, waiting list control trial of MBSR in a mixed group of premedical and medical students. No significant differences were found between pretest scores. However, post- intervention, the MBSR group reported significantly less depression, less anxiety, greater empathy, and greater sense of spirituality compared with controls. However, the main problem is that consciousness is either on one or the other mode of awareness which causes distraction and ailments in the mind. Awareness is one the main component of mindfulness practice. Awareness could also be referred as "inattentional blindness" which is the common failure to notice plainly visible items when attention is otherwise preoccupied, even though people look directly at them (Mack & Rock, 1998; Most, Scholl, Clifford, & Simons, 2005; Most et al., 2001; Simons & Chabris, 1999). Aspects of attention capture apply to "inattentional blindness" but these two classes of phenomena remain importantly distinct and we should not confuse them. One simple way to develop awareness is by starting to notice new things in one's environment. The following intervention which was delivered to medical students was based on the main idea that by evolving awareness we could achieve the mindfulness state that involves awareness. Our hypothesis

was that this mindful awareness intervention would improve performance and reduce burnout in medical students.

4.2.3. Materials and Methods

4.2.3.1. Participants

Participants were recruited within medical settings to participate in a study to explore the effects of a Mindful awareness program on performance. Participants were 42 medical students in their 4th year of medical studies in the Aristotle University of Thessaloniki, Greece. There were all taught the clinical skills before the beginning of the intervention and they were in their traineeship period. Participants were randomly assigned into the control or experimental group.

4.2.3.2. Design and Procedure

The design was a matched randomized experiment in which participants were assigned to a 5-week mindfulness intervention or at waitlist control group. All Participants were measured twice (a) before intervention and (b) shortly following the intervention, which was scheduled to coincide with the clinical skills evaluation (OSCE) in an attempt to explore the benefits of the mindfulness intervention during a high stress timeline. To avoid experimenter effects, questionnaires were collected by a research assistant not involved in the procedure of the study. Further, all participants were assigned a confidential identification number to which the primary investigator did not have access. Although a formal statistical power calculation was inapplicable to this pilot study, it is necessary to consider the constraints which insufficient statistical power might impose upon the interpretation of our findings.

4.2.3.3. Intervention

Medical students in the experimental group were directed to notice three specific things about each patient every day for four weeks. Participants were prompted on a daily basis with a text message.

1st week

Today how many times did you ask each patient if they felt pain?

Today how many times did you give clarifications to each patient's questions?

Today how many times did you wash your hands?

2nd week

Today did you have eye contact while speaking with each patient?

Today try did you interrupt any of your patients while talking.

Today did you prepare the correct material for the intramuscular injection?

3rd week

Today how much time did you spent with each patient?

Today how much time did you devote to washing your hands?

Today in time of the intramuscular injection was the vaccine successfully absorbed in the needle?

4th week

Today were you polite to your patient?

Today did you apply antiseptic at the injection area?

Today did you smile at each patient?

4.2.3.4. Measures

Standard demographic measures were obtained (ethnicity, age, gender, education, marital status). Participants completed the following measures:

a. Burnout was assessed through the 15-item Maslach's Student Survey-MSS (Maslach & Jackson, 1996). The MBI Surveys address three general scales: Emotional exhaustion measures feelings of being emotionally overextended and exhausted by one's work; Depersonalization/Cynicism measures an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction; Personal accomplishment measures feelings of competence and successful achievement in one's work. Using this 16-item tool, responders rate the frequency with which they experience various feelings or emotions on a 7-point Likert scale with response options ranging from "Never" to "Daily." Higher values of depersonalization (MBI-DP) and emotional exhaustion (MBI-EE) and lower values of personal accomplishment (MBI-PA) signify burnout. This instrument has been used in numerous previous studies of physicians (Thomas, 2004; Gopal et al., 2005) and many evaluations of burnout have focused on the presence of high levels of either emotional exhaustion or depersonalization as a cornerstone of burnout among high-achieving medical professionals.

b. LMS (Bodner & Langer, 2001) is a 21-item questionnaire intended for use as a training, self-discovery, and research instrument. It assesses four domains associated with mindful thinking: novelty-seeking, engagement, novelty producing, and flexibility. An individual who seeks novelty perceives each situation as an opportunity to learn something new. An individual who scores high in engagement is likely to notice more details about his or her specific relationship with the environment. A novelty

producing person generates new information in order to learn more about the current situation. Flexible people welcome a changing environment rather than resist it.

c. OSCE (3 stations): OSCE is an acronym for Objective Structured Clinical Examination, an assessment method that is based on objective testing and direct observation of student performance by senior doctors during planned clinical encounters (also called interactions or test stations). Studies have demonstrated that the OSCE is an effective tool for evaluating areas most critical to performance of health care professionals: the ability to obtain information from a patient, establish rapport and communicate, and interpret data and solve problems. Originally described by Harden (1979), the OSCE includes several "stations" in which examinees are expected to perform specific clinical tasks within a specified time period (as brief as 5 minutes to 30 minutes or longer). To complete the examination, students rotate through a series of stations (as few as 2 or as many as 20). OSCE stations can involve several methods of testing, including use of multiple choice or essay tests, but most often are planned clinical encounters in which a student interacts with a standardized patient (SP). Evaluation criteria are based on course objectives and student learning activities. The stations included in the current study were: Blood Sampling, Communications and History Taking and Hygiene. OSCE's examiners at the end of the experiment on the 5th week were blind in whether students were assigned into the experimental or the control group. The MBI questionnaire was completed by all participants at pretest and posttest and the clinical skills evaluation took place after the end of the intervention period for all participants.

At the end of the intervention period, the experimental group was distributed an adherence test with three questions regarding level of adherence and difficulty in adherence.

1.2.3.5 .Hypotheses

1. Mindfulness will improve trait-mindfulness in medical students
2. Mindfulness will reduce burnout symptoms in medical students
3. Mindfulness will improve clinical skills in medical students

4.2.3.6. Procedures

At the beginning of the experiment 40 medical students were actively recruited. Approximately 20 medical students, while being in their traineeship period, were randomly assigned to participate in the Mindful- awareness Intervention whereas 20 were assigned in the control group. The final count of participants in the OSCE examination was 88, consisting of 40 males and 48 females, all medical students in their final year of their medical studies.

4.2.4. Results

To test the primary hypothesis, both intention-to-treat and treatment efficacy analyses were performed. Independent-samples t-tests and ANCOVA analyses were used using measurements baseline as covariates for all burnout measurements. Primary analyses used independent samples t-tests in OSCE tests to explore group differences in two groups. Before running independent t-tests, we checked for potential group differences. After the end of the traineeship period, burnout (emotional exhaustion) was found to be high in all medical students (M=16.1, SD=6.5). No significant differences were found in burnout between the experimental and control groups.

The effectiveness of the intervention was examined using 2 (groups) x 2 (times) ANCOVAs, where the effect of interest is the Group x Time interaction. Separate ANCOVAs examined the influence of the mindfulness intervention on three components of burnout. As shown in Table 1, following the intervention, mindfulness participants demonstrated non- significant reductions in

exhaustion, cynicism and personal efficacy compared to the control group, resulting in a non-significant Group x Time interaction.

Burnout and mindfulness subscales were analyzed separately. More specifically, we conducted paired t-tests for burnout and mindfulness scales to test for differences between Time A and Time B (before and after the intervention. Burnout and mindfulness subscales were analyzed separately. More specifically, A paired samples t-test showed no statistically significant decrease in emotional exhaustion scores from Time 1 (M = 16.6, SD = 4.8 to Time 2, M = 18.01, SD = 5.5) t(38) = -1.6, p =.12 (two-tailed) in the Experimental group (figure 2). A paired samples t-test showed no statistically significant decrease in personal efficacy scores from Time 1 (M = 11.7, SD = 5.1 to Time 2, M = 11.1, SD = 5.7) t (38) = -1.8, p =.64 (two-tailed) in the Experimental group. A paired samples t-test showed no statistically significant decrease in cynicism scores from Time 1 (M = 10.02, SD = 5.2 to Time 2, M = 11.05, SD = 5.3) t (38) = -.77, p =.45 (two-tailed) in the Experimental group (figure 2).

More specifically, A paired samples t-test showed no statistically significant decrease in emotional exhaustion scores from Time 1 (M = 16.8, SD = 5.0 to Time 2, M = 16.2, SD = 6.0) t(38) = .69, p =.50 (two-tailed) in the Control Group. A paired samples t-test showed no statistically significant decrease in personal efficacy scores from Time 1 (M = 12.6, SD = 3.8 to Time 2, M = 12.8, SD = 4.7) t (38) = -.24, p =.81 (two-tailed) in the Control group. A paired samples t-test showed no statistically significant decrease in cynicism scores from Time 1 (M = 11.1, SD = 6.7 to Time 2, M = 12.5, SD = 7.09) t (38) = -.1.1, p =.27 (two-tailed) in the Control group (figure 2).

A paired samples t-test showed statistically significant decrease in novelty seeking scores from Time 1 (M = 32.5, SD = 3.9 to Time 2, M = 27.4, SD = 2.8), t(38) = .44, p <.001 (two-tailed) in the Control Group. A paired samples t-test showed no statistically significant decrease in novelty producing scores from Time 1 (M = 28.3, SD = 4.7 to Time 2, M = 25.7, SD = 3.2) t (38) = -2.6, p

=.02 (two-tailed) in the Control group. A paired samples t-test showed statistically significant decrease in Engagement scores from Time 1(M = 24.2, SD = 3.6 to Time 2, M = 18.4, SD = 2.1) t (38) = -6.2, p <.001 (two-tailed) in the Control group. A paired samples t-test showed no statistically significant decrease in flexibility scores from Time 1 (M = 20.7, SD =3.2 to Time 2, M = 19.5, SD = 12.6), t (38) = -.1.6, p =.108 (two-tailed) in the Control group (figure 1).

A paired samples t-test showed statistically significant decrease in novelty seeking scores from Time 1 (M = 32.4, SD = 3.9 to Time 2, M = 27.3, SD = 2.7), t(38) = -5.5, p <.001 (two-tailed) in the Experimental group. A paired samples t-test showed statistically significant decrease in novelty producing scores from Time 1 (M = 28.6, SD = 4.6 to Time 2, M = 24.6, SD = 2.7) t (38) = 5.3, p <0.001 (two-tailed) in the Experimental group. A paired samples t-test showed statistically significant decrease in Engagement scores from Time 1(M =25.2, SD=3.3, to Time 2, M = 16.9, SD = 3.0), t (38) = -7.3, p <.001 (two-tailed) in the Experimental group. A paired samples t-test showed no statistically significant decrease in flexibility scores from Time 1 (M = 20.1, SD =3.6 to Time 2, M = 19.5, SD = 2.8), t (38) = -.71, p =.49 (two-tailed) in the Experimental group (figure 1).

Figure1. Means and Standard Deviations in Mindfulness Scales Control vs Experimental

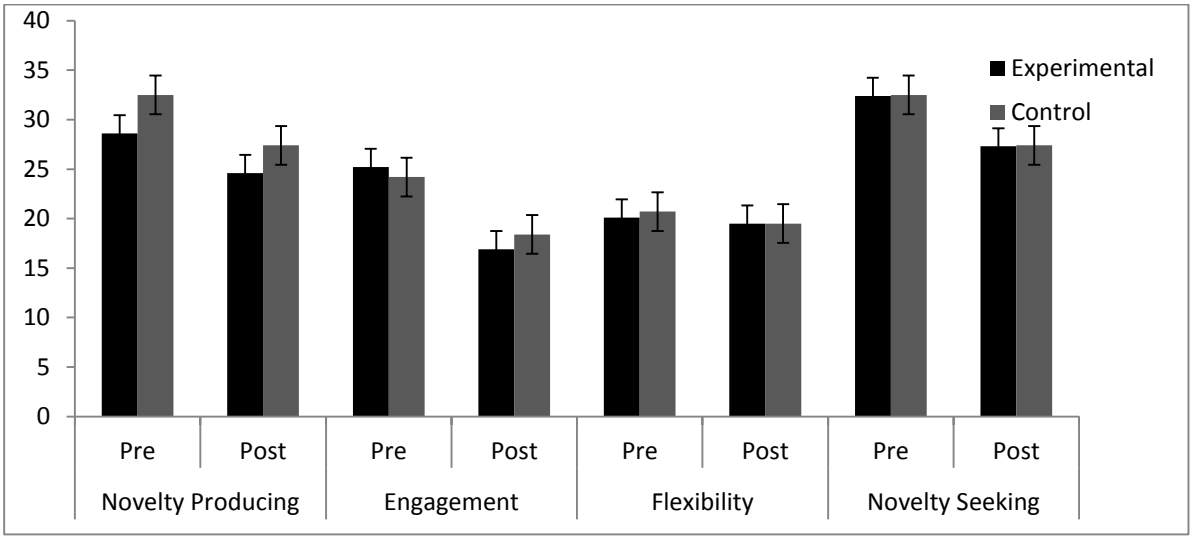
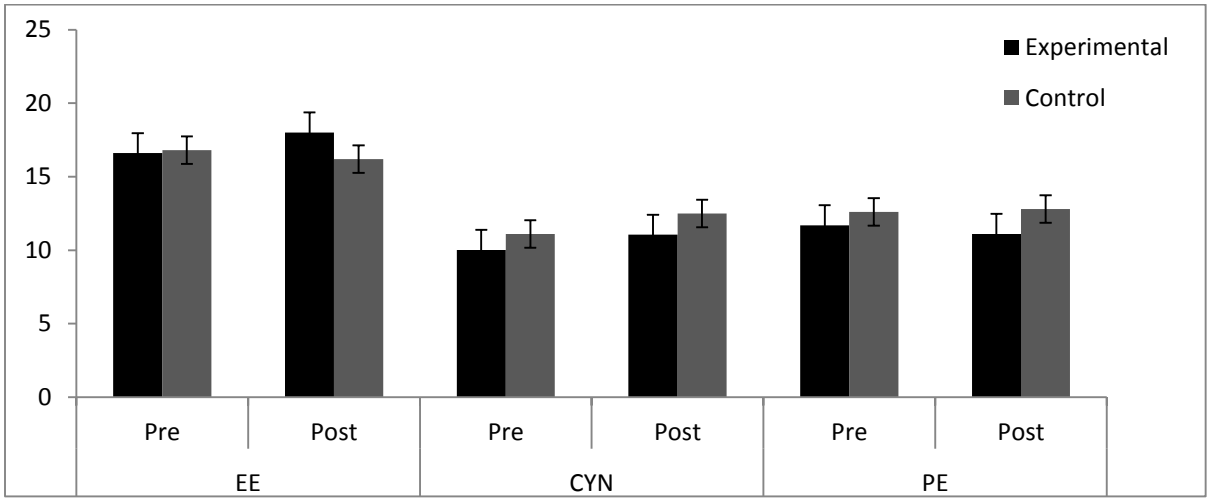
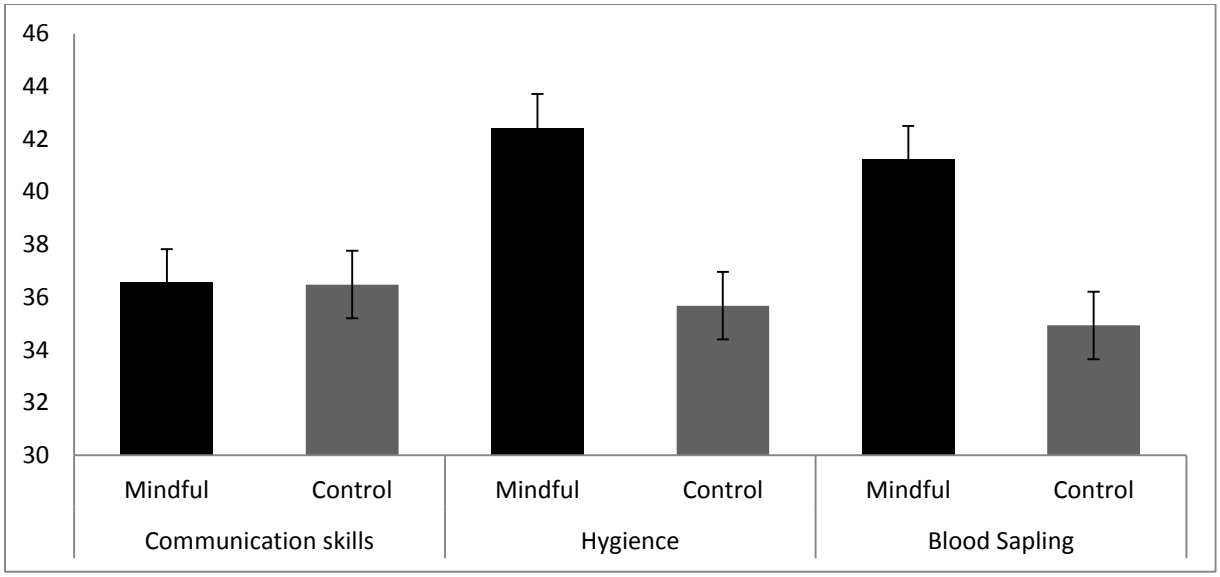


Figure 2. Means and Standard Deviations in Burnout Scales, Control vs Experimental



EE= Emotional Exhaustion, CYN= Cynicism, PE= Personal Efficacy

Figure 3. Means and standard deviations, Control vs Experimental Group, *Clinical Skills*



Due to the non-normal distribution of the data, three Mann-Whitney tests were conducted to compare differences between the experimental and control groups in all OSCE stations. There was a significant higher scores in the Hygiene scores in the experimental group compared to the control group (Mann-Whitney U_1 =1.80, p = .03). There was no significant difference in Communication skills and Blood Sampling scores between experimental and control groups. (Mann-Whitney U_2 = -.013, p = .49, U3 = -1.11, p = .134). In all Mann-Whitney tests the exact p-value was reported due to the small sample size (figure 3).

Table 1. Unadjusted means and indicators of the influence of mindfulness training on outcome

Outcomes	Pretraining [M (SD)]	Posttraining [M (SD)]	Group _ Time interaction (F)	Effect size (hp^2)	p
Burnout					
Emotional exhaustion			2.3	.13	.06
Intervention group	16.6 (4.8)	18.01 (5.5)			
Control group	16.8 (5.0)	16.2 (6.0)			
Cynicism			.17	.67	.005
Intervention group	10.02 (5.2)	11.05(5.3)			
Control group	11.1 (6.7)	12.5 (7.09)			
Personal accomplishment			.47	.01	.49
Intervention group	11.7 (5.1)	11.1 (5.7)			
Control group	12.6 (3.8)	12.8 (4.7)			

As a measure of effect size, partial h_p^2 refers to the proportion of variance accounted for, where .01, .06, and .14 represent small, medium, and large effects, respectively.
*$p \leq .05$.
**$p \leq .01$.

4.2.5. Discussion

The current mindful awareness intervention, it was significantly effective for improving hygiene in medical students. Hygiene is a very important aspect of clinical practice. Diseases often spread in hospitals because health care professionals fail to wash their hands. These findings suggest that messages about patient consequences, rather than personal consequences, can encourage hand hygiene among health care professionals (Gould, 2002). Our results have important theoretical and

practical implications for the design of future persuasive communications about health and safety. To our knowledge, this is the first study to explore effects of mindful awareness interventions using technology in improving clinical skills. Armellino et al. (2012) in a recent study at North Shore, New York, found that during a 16-week preliminary period when workers were being filmed but were not informed of the results, hand-hygiene rates were less than 10 percent. When they started getting reports on their filmed behavior, through electronic scoreboards and e-mails, the rates rose to 88 percent. The hospital kept the system, but because of the expense, it was limited to the intensive care unit, where the payoff is greatest because the patients are sickest. This study confirms our present finding that daily attention and awareness of hygiene skills improves clinical practice. The current length of mindful awareness intervention (5 weeks) might not be an appropriate intervention for reducing the burnout symptoms and blood sampling and communication skills. This is because burnout and stress are deep feelings accompanied by complex symptoms, which need a lot of effort to eliminate them. Another important aspect of any mindfulness intervention is consistency and regularity as well as the need for a longer program. However, emotional and mental relief of various burdens might take time depending on the personality, type and length of practice. More research along these lines is needed since the concentrated stress in the medical practice and education is inherent and could have a powerful negative effect on well-being. Mindful awareness seems to be an initial practice at developing awareness (Hansen, Lundh, Homman, & Wangby-Lundh, 2009; Price, McBride, Hyerle, & Kivlahan, 2007). A lot of people confuse awareness with attention. However, when someone is attentive to a task, they become absorbed. When someone is mindful, they are alert to changes that take places in the environment and at the same time they are focused on a settled point or task successfully. Moreover, the proposed intervention is cost effective and could be implemented in any organizational setting or hospital since it is a straightforward to perform and

explain. Moreover, our results through this intervention on hygiene come to agreement with previous studies on hygiene awareness (Grant and Hoffman, 2011). Grant and Hoffman (2011) believe one reason for the failure of such HHIs is that they emphasize the personal benefits for the health-care professional. Instead, Grant and Hoffman argue that interventions will be more effective if they place emphasis patient consequences rather than personal consequences. To test this hypothesis, the authors conducted two experiments. Both experiments took place in US hospitals, and none of the medical professionals nor experimenters/observers were privy to the hypotheses. The results of study 2 showed that post-test hand-hygiene adherence in the patient-consequences condition increased by approximately 9% when compared to the baseline (two weeks before the posters went up). That was significantly more than the personal-consequences condition, which did not change.

When practicing mindfulness, one has the opportunity to experience life events as they come up, without being attached to the action they are performing. An individual functions neither avoiding nor denying an experience. When someone adopts the principles of mindfulness, he has the opportunity to be attentive to subtle stimuli that an individual not practicing mindfulness would ordinarily overlook (Dobie, 2007). Therefore, attention to subtle stimuli motivates individuals to heighten the capacity for mental insight and face successful problems. In this way, mindfulness facilitates learning. Extensive research has demonstrated that hand hygiene plays a critical role in preventing the spread of infections and diseases (Backman, Zoutman, & Marck, 2008). Nevertheless, it is common for health care professionals to wash their hands less than half as often as recommended, and many interventions for improving hand hygiene among healthcare professionals have proven ineffective (Gawande, 2004; Whitby et al., 2007). In this study learning in hygiene clinical skills was improved in the mindfulness group compared to the control. However, one main limitation of the study was the duration, which was not long enough to make a difference in medical students' well-being and

reduction of burnout. Moreover, the distribution of the questionnaires at post-test took place just before the students had their clinical skills evaluation that might have affected the results because of their higher stress levels. Stress is a state that is multifaceted and includes a lot of different aspects. Therefore, interventions targeting at reducing job stress and burnout should be individually planned and last for longer timelines including follow-ups. Future research should be addressed to other components of the medical practice such as announcing bad news, medical errors and decision-making.

Beginners of mindfulness practice find it very hard to be aware of certain things and usually it is simpler to begin with noticing variability (e.g moods, thoughts, interactions) or concentrating on different things. This could be a first step into cultivating awareness which includes a lot of different layers diving deeper and deeper to the self (Thompson, 2008). Our data and experience suggest that reflection in the form of mindful awareness, as well as any form of keeping a diary and lifestyle programs can improve students' performance, even during high stress periods. Moreover, this kind of simple mindfulness practice is less time consuming and could be integrated easier in any busy program. Furthermore, it can help meet other important and integrated educational objectives. In a future study, Langer's mindfulness perspective could be applied on noticing things in everyday life introduced more as an open awareness practice. Organizations have been eager to utilize techniques that increase mindfulness in employees and managers. Studies of mindfulness in the business context have shown that increases in mindfulness are associated with increased creativity and decreased burnout (Langer, Heffernan, & Kiester, 1988).

4.3. Mindfulness contagion in schools

4.3.1. Introduction

The applications and use of mindfulness-based interventions in medicine, mental health care, and education have been expanding as rapidly as the empirical evidence base that is validating and recommending them (Baer, 2006;Hassed et al., 2004; Siegel et al., 2007). This growth has created a powerful demand for educators who can effectively deliver these interventions, and for the training of new professionals who can enter the fold. Ironically, while the scientific literature on mindfulness has surged, little attention has been paid on how should enhance mindfulness pedagogy. Contemplative knowing might be vital point that affects student performance, character, and depth of understanding. Therefore, a common ground and concern in modern philosophy of education and educational thought and practice in general is to abandon all old conceptions of learning that treat the human mind as an empty container and the individual learner as an uncritical subject that simply accumulates information. Mindful teachers could easily recognize that a student's ability to direct and sustain his or her attention toward a task at hand has a direct impact on success.

The main aspect of contemplative practice is nourishing the quality of one's attention. Contemplative practice has been shown to improve a variety of perceptual and cognitive abilities related to the quality of attention (Murphy et al., 1997). In addition to the general significance of attention to learning, 4% to 6% of students are now diagnosed with attention difficulties (Wilens et al., 2006).

Teaching mindfulness could offer the first in-depth treatment for both teachers and students. Awareness is one of the central components in achieving the state of mindfulness. Fostering a mindful mindset in the classroom requires that teachers rest their teaching upon thinking "outside the box",

metacognition and learning in a variety of novel, even playful, ways (e.g. in writing or spelling words). On this basis, our main objective is to explore whether teachers' mindfulness influences students' mindfulness and their performance in school. Mindfulness could be contagious, having an effect of one person's mindfulness on another in different settings including education and schools.Sometimes it might be easier to perceive the meaning of mindfulness by understanding the opposite term, mindlessness. Langer (1989, 1997) refers to mindlessness term which is based on false beliefs in our limited resources, acting from a single perspective and relying on automatic behavior. What takes place in the mindlessness state is the automatic pilot mechanism used in our everyday life. This comes to explain the concept of awareness which is the opposite of setting our lives in the automatic pilot. Siegel (2007) suggests that there are many ways of cultivating mindful awareness. While we are mindful, attention is concentrated on the task we are performing. The mind's natural tendency is to wander and ruminate continually. The difficult part is to focus the awareness in a settle point and develop awareness as well as reach the state of Mindfulness.

Mindfulness begins when teachers and students learn to pay attention in the experience of "paying attention" called awareness. Since teaching stems from personal experience and understanding, educators' familiarity with mindfulness should precede implementation of student-centered methodologies. Mindful awareness helps enhance a resilient response to challenges and this included noticing inner cues for doing so. In the current study we explored whether teachers' and students' mindfulness could affect performance and learning at school.

4.3.2. Methods

4.3.2.1. Sample

A sample of 134 students and 14 teachers (total n=148) was recruited through two state high schools in Northern Greece. The student sample did not vary from the study population on available characteristics of age, gender, ethnicity, and specialization.

4.3.2.2. Hypotheses

The present study was based on Langer's mindfulness perspective suggesting that mindfulness could be contagious. Therefore, mindful teachers create a mindful context and consequently instill mindfulness to students. We aimed at answering the following question: Is mindfulness associated with the Burnout Scales and the different modules (English, Maths, Greek Literature, Modern Greek) irrespectively? Overall, our hypotheses in the present study are that:

1. Trait –mindfulness in students will correlate positively with performance (modules) in students.
2. Mindfulness is contagious from the teacher's perspective to the student
3. Students' Mindfulness predicts positively school performance

4.3.2.3. Measures

Students and Teachers were asked to fill out 3 questionnaires: the MBI (Maslach Burnout Inventory), LMS (Langer's Mindfulness Scale) and Positive-Negative Affectivity Scale (PANAS). Students' Performance was accessed through their final written exams in the Modules of Maths, English, Greek Literature and Modern Greek.

a. *Burnout for teachers was assessed through the 22-item Maslach's burnout Inventory* (Maslach & Jackson, 1996). The MBI Surveys address three general scales: Emotional exhaustion measures feelings of being emotionally overextended and exhausted by one's work; Depersonalization/Cynicism measures an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction; Personal accomplishment measures feelings of competence and successful achievement in one's work.

b. Burnout for students was assessed through the 15-item Maslach's Student Survey-MSS (Maslach & Jackson, 1996). The MBI Surveys address three general scales: Emotional exhaustion measures feelings of being emotionally overextended and exhausted by one's work; Depersonalization/Cynicism measures an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction; Personal accomplishment measures feelings of competence and successful achievement in one's work. Using this 16-item tool, responders rate the frequency with which they experience various feelings or emotions on a 7-point Likert scale with response options ranging from "Never" to "Daily." Higher values of depersonalization (MBI-DP) and emotional exhaustion (MBI-EE) and lower values of personal accomplishment (MBI-PA) signify burnout. This instrument has been used in numerous previous studies of physicians (Thomas, 2004; Gopal et al., 2005) and many evaluations of burnout have focused on the presence of high levels of either emotional exhaustion or depersonalization as a cornerstone of burnout among high-achieving medical professionals.

c. *The LMS (Bodner & Langer, 2001)* is a 21-item questionnaire intended for use as a training, self-discovery, and research instrument. It assesses four domains associated with mindful thinking: novelty-seeking, engagement, novelty producing, and flexibility. An individual who seeks novelty perceives each situation as an opportunity to learn something new. An individual who scores high in

engagement is likely to notice more details about his or her specific relationship with the environment. A novelty producing person generates new information in order to learn more about the current situation. Flexible people welcome a changing environment rather than resist it.

d. The 20-item Positive and Negative Affectivity Scale (Watson, 1988) comprises two mood scales, one measuring positive affect and the other measuring negative affectivity. Each item is rated on a 5-point scale ranging from 1 = very slightly or not at all to 5 = extremely to indicate the extent to which the respondent has felt this way in the indicated time frame. The authors have used the scale to measure affect at this moment, today, the past few days, the past week, the past few weeks, the past year, and generally (on average).

e. *Learning* was assessed thought the students written final exams in the English, Maths, Modern Greek, Greek Literature modules.

4.3.3. Results

Our main hypothesis that mindful students would score higher in their exams was confirmed. Cynicism seems to correlate negatively to engagement and negative affectivity. Novel seeking seems to correlate negatively with cynicism and negative affectivity. Novel producing seems to correlate positively to personal efficacy and positive affectivity. Flexibility seems to correlate negatively with negative affectivity and correlate positively to positive affectivity (table 1).

Table 1. Intercorrelations between Burnout, Negative-Positive and Modules

	1	2	3	4	5	6	7	8	9	10	11	12
1.CYN												
2PE												
3.EE												
4.NA												
5.PA												
6.Engagement	**-.29****	-.16	-.09	**-.20***	.13				.			
7.N.Producing	-.09	**.22***	-.11	**-.20***	**.42***	**.33****						
8. N.Seeking	**-.26****	.15	-.16	**-.33****	**.37****	**.48****	**.45****		.			
9.Flexibility	-.06	-.10	-.11	**-.39****	**.49****	**.34****	**.58****	**.62****				
10.English	-.13	**-.27***	.03	-.15	-.61	.23	.14	.07	.09			
11.Modern G.	**-.21***	.01	-.10	**-.22***	.16	**.36****	**.30***	**.26***	**.35****	**.78****		
12. G.Literature	-.15	.07	-.06	**-.20***	.05	**.33****	**.26****	.14	**.26****	**.62****	**.85****	
13.Maths	**-.22***	.01	-.09	**-.33****	.15	**.34****	**.24****	**.29****	**.32****	**.75****	**.76****	**.66****

Note. CYN= Cynicism; PE= Personal Efficancy; EE= Emotional Exhaustion; NA= Negative Affectivity; PA= Positive Affectivity; N. Producing; Novel Producing; N. Seeking= Novel Seeking; Modern G.= Modern Greek, G. Literature= Greek Literature

*p < .05, **p < .01

On regression analysis, association was found between Flexibility, Modern Greek, Greek Literature and Maths but no association between Flexibility and English. Novel seeking was found to associate with Literature Review I. No association was found between Novel Producing and Maths, Literature Review I, II and English. Engagement was found to associate with all the modules (table 2).

Table 2. Associations between students' mindfulness and modules

Predictors (independent	Predicted (dependent variables) {regression coefficient [95% CI] P value}			
	Maths	English	Modern Greek	G. Literature
Flexibility	.45[.087, .819].01	.27[-.238,.788].28	.42[.138,.714].004	.388 [.120, .656] .005
Nov.Seeking	-.04 [-.283, .202].74	-.17[-.538, .182].32	-.19 [-.386, -.005].04	-.095 [-.272, .083] .29
Nov. Producing	.01 [-.194, .221].89	.06 [-.236, .368].66	.058 [-.105, .220].48	.038 [-.113, .189] .62
Engagement	.37 [.119, .632].005	.36 [-.001, .727].05	.31 [.117, .519].002	.304 [.118, .491] .002

Linear mixed model, with class attended used as a random effect.

Each cell represents a separate model (regression).

Coefficients represent predicted change in the dependent variable (second row) for each unit of change in the independent variable (left column), after adjusting for the dependent variable at baseline.

Rescaled scores were used for a more meaningful comparison.

Rescaled scores were used for a more meaningful comparison. In the modules of English and Maths, students performed worse in their final exams (mean=12, SD= 5.3, mean=9.1, SD=5.7). In line with this result, Maths and English teachers scored low in all mindfulness scales (see Table 3). English and Maths Teachers scored relative low to all mindfulness scales (Table 4) confirming our hypothesis that low mindfulness could be contagious to students affecting performance.

Table 3. Descriptive Statistics on students' scores in modules and mindfulness (LMS)

	Mean (SD)
Maths	12 (5.3)
Modern Greek	13.5 (4.7)
Greek Literature	13.4 (4.1)
English	9.1 (4.2)
Engagement (LMS)	22.5 (4.3)
Novel Seeking(LMS)	31.5 (4.8)
Novel Producing (LMS)	30.8 (5.6)
Flexibility (LMS)	19.4 (4.1)

Table 4. Descriptive statistics on teachers' mindfulness (LMS) scores

	English Teacher (N=2)	Maths Teacher (N=3)	Greek Literature Teacher (N=4)	Modern Greek Teacher (N=5)
Engagement (LMS)	28 (4.8)	25.2 (4.1)	33 (4.2)	26.6 (4.2)
Novel Seeking(LMS)	25(4.3)	31.2 (4.2)	32 (4.2)	36.3 (5.2)
Novel Producing (LMS)	18 (5.6)	25 (4.3)	33 (4.1)	32 (4.9)
Flexibility (LMS)	19 (4.3)	20.5 (4.2)	22(4.1)	23 (4.7)

4.3.4. Discussion

Mindfulness seems to be contagious since students who are mindful perform better. By the teachers acting in a mindful way, it seems that students' learning and performance improve. Even if we could not confirm our second hypothesis (mindful teachers create mindful students), the effect of mindfulness in students' performance and learning is high significance. By looking at the descriptive statistics, Math and English teachers scored relatively low in the Mindfulness Scale. As expected in these two courses, students performed worse. Even if we could not explore whether teachers' mindfulness predicts students' mindfulness these results are interesting. A Mindful teacher is more engaged, novel seeker, novel producer and flexible in the new situations. Mindfulness helps the mentor approach trainee as special and devotes the time that is needed for his growth. In a mindful state, beliefs and attitudes about an individual and the relationship are more malleable and ever-changing (Langer, 1989). If students learn to live in the present moment, they can increase the quality of learning performance and find ways to overcome stress (Langer, 1997). Students learn how to be fully engaged, flexible in perceiving new information and seek novel ways to absorb knowledge. Being fully engaged means being alert on what you are doing. It seems that there are really two components in mindfulness and teaching. The first is the ability of the instructor to model an example of mindful awareness and presence in the classroom and in interactions with the students. For instance, the intention of teacher should be to be fully present to all of their students' responses in the classroom and to teach with a compassionate stance towards them. The second component is the actual material that is taught, and the possibility of incorporating concepts related to mindful awareness into the curriculum at various points. Thus, concepts such as presence, receptivity, non-judgment, authenticity and awareness would readily "fit" into various aspects of curricula. All these concepts and values might explain the

contagion phenomenon that the present results indicate.

Langer (1997) presents a whole new approach on education based on mindful pedagogy. The current study is based on Langer's socio cognitive perspective showing how mindfulness can be contagious from the teacher's perspective to the learner. She suggests that education should mindfully establish routine and practices as guides but not as absolute governing rules. Such perspectives could easily help increase learning and awareness as well as creativity in the classroom. Taking into account the growing ethnic diversity that takes place; future research should be addressed to develop mindfulness interventions in schools. This could be done by developing exercised focused on compassion, awareness, engagement with non-attachment, empathy, novelty and flexibility in teaching and absorbing new knowledge. Along the same lines, there is yet another conceptualization of mindfulness also worth considering which could fight mind wandering: an active state of mind characterized by drawing novel distinctions that result in being 1) situated in the present 2) sensitive to changes that take place in the context and guided by non-governed rules.

A student who is mindful, thus attentive and engaged in the environment could ameliorate mind wondering. What is more, mindfulness enhances critical thinking and decision making (Langer, 1989). The present results indicate that by developing mindfulness someone adopts a different state of mind, noticing changes that take place and attending to variability which results in a happier life. A happier and relaxed mind is always more receptive to new information and learning that a depressed and mind in turmoil (Bodner & Langer, 2001).

4.4. A breathing meditation intervention in college students

4.4.1. Introduction

Breathing techniques are the base of most traditions of meditation. Deep breathing is among the most important life skills in research based stress reduction programs, which has a proven record of success for reducing stress and lowering risk of heart diseases (Jain et al., 2007). Most people take breathing for granted. Breathing is automatic and it does not require much thought as you go about individual busy day. The importance of breathing has also been demonstrated by a well-known study called "Framingham study of cardiovascular health and longevity which is a population-based, observational cohort study that was initiated by the United States Public Health Service (Kannel and Thomas, 1982). This study showed that the best predictor of longevity and well-being is not genes or nutrition but how much exercise someone gets and correct way of breathing. Although the mind has the power to control the body, it is influenced by the body.

Mental anxiety is not possible whenever someone is in a relaxed state of mind. By maintaining an even steady breath someone maintains a state of physiological balance. This means someone could achieve a significant degree of control over emotions by learning to regulate the breath. This could have many positive effects if taught to students. Students learn to relax and control their emotions which are difficult to handle in adolescent life. In a recent study, 24 college students learned either a meditation or a cognitive self-observation procedure for 3 consecutive training sessions and practiced the method daily (Greene & Hiebert, 1988). Both groups showed reliable increases in dimensions of self-actualization (measured by the Personal Orientation Inventory) and decreases in common stress-related symptoms (measured by the Symptoms of Stress Inventory). There were no differential treatment effects (Greene & Hiebert, 1988). In another relevant study conducted in students, data suggested that compared with a no-treatment control, brief training in mindfulness meditation or

somatic relaxation reduces distress and improves positive mood states (Jain et al., 2007). However, mindfulness meditation may be specific in its ability to reduce distractive and ruminative thoughts and behaviors, and this ability may provide a unique mechanism by which mindfulness meditation reduces distress. The mind becomes more absorbing to new knowledge when relaxed and tranquil (Langer et al., 1989). The novelty in this intervention was that we applied a traditional meditation with added instructions on novelty seeking according to Langer's mindfulness perspective. In this study, we wanted to explore any differences between a traditional meditation and a traditional meditation combined with novelty seeking.

4.4.2. Methods

Participants were all university students both in the undergraduate and graduate programs. All participants were matched for age, sex and educational status. The breathing technique was introduced before the beginning of each class in the Education and Social Policy department of the University of Macedonia, Greece. We recruited 20 subjects Control, 25 subjects Traditional Meditation 26 subjects in Novelty seeking Meditation after accounting for drop outs.

4.4.2.1. Hypotheses

1. Both novel seeking meditation and Traditional Meditation programs will improve self-compassion, trait-mindfulness, self-authenticity, self-esteem and reduce stress and heart rate.

2. Novel seeking meditation will differ significantly compared to the traditional meditation group in all the dependent variables.

3. Mindfulness (both programs) will improve learning and reduce burnout.

4.4.2.2. Measurements

a. *Stress (PSS).* Perceived Stress Scale (PSS) is a widely used psychological instrument for measuring the perception of stress (Cohen, 1988). The version we used has 14 items and is rated on a 5-point Likert type scale, ranging from 0 (never) to 4 (very frequently). It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way.

b. *Self-esteem (Rosenberg).* The scale is a ten item Likert scale with items answered on a four point scale - from strongly agree to strongly disagree (Rosenberg, 1965). The original sample for which the scale was developed consisted of 5,024 High School Juniors and Seniors from 10 randomly selected schools in New York State.

c. LMS (Bodner & Langer, 2001) is a 21-item questionnaire intended for use as a training, self-discovery, and research instrument. It assesses four domains associated with mindful thinking: novelty-seeking, engagement, novelty producing, and flexibility. An individual who seeks novelty perceives each situation as an opportunity to learn something new. An individual who scores high in engagement is likely to notice more details about his or her specific relationship with the environment. A novelty producing person generates new information in order to learn more about the current

situation. Flexible people welcome a changing environment rather than resist it.

d. Self-authenticity (Kernis) The Authenticity Inventory (AI-3; Kernis & Goldman, 2006) is likert scale 44-item Authenticity Inventory which measures authenticity. Authenticity is defined generally as the unobstructed operation of one's true or core self in one's daily enterprise. More specifically, it involves the following four components: awareness, unbiased processing, behavior, and relational orientation.

e. *Self-Compassion Scale* (SCS; Neff, 2003) is an 26-item questionnaire including six subscales: Self-Kindness items (5 items, i.e. I try to be understanding and patient towards those aspects of my personality I don't like‖), Self-Judgment (5 items, i.e. I‘m disapproving and judgmental about my own flaws and inadequacies), Common Humanity (4 items, i.e. I try to see my failings as part of the human condition‖), Isolation (4 items, i.e. When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world), Mindfulness (4 items, i.e. When something painful happens I try to take a balanced view of the situation), and Over-Identification (4 items, i.e. When I‘m feeling down I tend to obsess and fixate on everything that‘s wrong. Responses are given on a 5-point scale (1 = Almost Never‖; 5 = Almost Always. Several items are reverse-scored and higher scores on the 5-point scale indicate higher self-compassion.

d. Biological Measurements: Oximeter (Heart Rate, Oxygen Saturation). Pulse Oximeter, oxyhemoglobin saturation (SaO2), measures the cells’ oxygen saturation and heart rate. Pulse oximeters are being widely used for non-invasive, simultaneous assessment of haemoglobin oxygen saturation. They are reliable, accurate, relatively inexpensive and portable. Pulse oximeters are often used for estimating heart rate at rest and during exercise and their use has been validated by various research findings (Iyriboz et al., 1991).

e. In addition, *learning* was assessed through the students' final written exams in this course (Philosophy).

4.4.2.3. Intervention

Participants were assigned to two experimental groups and one control group. The one experimental group followed a traditional breathing meditation once per week for 20 minutes. The second experimental group followed a novelty seeking breathing meditation based on the same meditation in experimental group 1 plus instructions on novelty seeking (e.g notice the difference in the rhythm). The total intervention lasted for 5 weeks and it was taught before the beginning of their classes.

Instructions given to Traditional Meditation group (15 minutes)

Sit in a comfortable meditation posture and relax the whole body. The spine should be straight and eyes slightly closed with your hands placed on your knees. Observe the natural and spontaneous breathing process. Develop total awareness of the rhythmic flow of the breath. Feel the breath flowing in and out of the nose. Do not control the breath in any way (pause). Notice that the breath is cool as it enters the nostrils and warm as it flows out (pause). Observe this with the attitude of a detached witness. Feel the breath flowing in and out at the back of the mouth above the throat. Bring the awareness down to the region of the throat and feel the breath flowing in the throat. Bring the awareness down to the region of the chest and feel the breath flowing in the trachea and bronchial tubes. Next, feel the breath flowing in the lungs. Be aware of the lungs expanding and relaxing. Shift the attention to the rib cage and observe the expansion and relaxation of this area. Bring the awareness down to the abdomen. Feel the abdomen move upward on inhalation and downward on exhalation.

Finally, become aware of the whole breathing process from nostrils to the abdomen and continue observing it for some time (long pause). Bring the awareness back to observing the physical body as one unit and open the eyes.

Instructions given to Novelty Seeking Meditation group (combined interventions, 15 minutes)

Sit in a comfortable meditation posture and relax the whole body. The spine should be straight and eyes slightly closed with your hands placed on your knees. Observe the natural and spontaneous breathing process. Develop total awareness of the rhythmic flow of the breath. Feel the breath flowing in and out of the nose. Do not control the breath in any way (pause). Notice that the breath is cool as it enters the nostrils and warm as it flows out (pause). Observe this with the attitude of a detached witness. Now feel how your next breath is different from your previous breath (pause). Feel the breath flowing in and out at the back of the mouth above the throat. Bring the awareness down to the region of the throat and feel the breath flowing in the throat. Bring the awareness down to the region of the chest and feel the breath flowing in the trachea and bronchial tubes. Next, feel the breath flowing in the lungs. Be aware of the lungs expanding and relaxing. Feel if your breath is now deeper than your previous breath (pause). Shift the attention to the rib cage and observe the expansion and relaxation of this area. Bring the awareness down to the abdomen. Feel the abdomen move upward on inhalation and downward on exhalation. Feel if there are any changes in your breathing now compared to your previous breath. Finally, become aware of the whole breathing process from nostrils to the abdomen and continue observing it for some time. Try to observe the differences now before and after the practice. Bring the awareness back to observing the physical body as one unit and open the eyes.

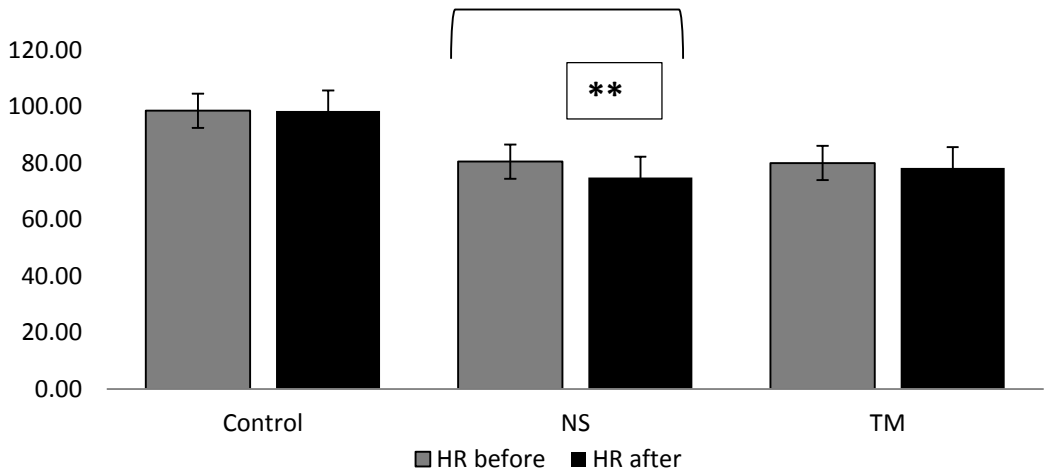
4.4.3. Results

We conducted ANOVA tests between all groups to test for changes and effects in mindfulness, self-compassion, self-authenticity, stress, self-esteem, heart rate/oxygen saturation and learning after the mindfulness intervention. We found significant differences between groups in compassion, heart rate, stress and self-esteem. However, due to low effect size, only the heart rate differences between groups considered notable (table 1). By looking at the Planned contrasts, it shows that Novel seeking meditation reduced heart rate compared to control (p= .01, 95% CI [-18.2, -1.7]). However, based on the effect size no other significant and meaningful differences were found in all other variables between all groups irrespectively (figure 1).

Table 1. Adjusted Postintervention Group Means and CIs Based on ANCOVA Analyses

Control Postinterventionc	Control *Postinterventionc*	Meditation *Postinterventionc*	Novel Seeking *Postintervention*	*F test for ANCOVA Analysis*
Heart rate	84.2 (2.2) {79.7, 88.7}	77.8 (2.4) {73.07; 88.7}	74.3 (2.7)** {68.8; 79.7}	F (2,60)= 4.21, p= .01
Oxygen Saturation	98.2 (.20) {97.8, 98.7}	98.6 (.18) {98.2, 99.001}	98.4 (.17) {98.06, 98.7}	F (2.60)= .844, p= .43
Self- Compassion	89.5 (2.8) {83.8, 95.2}	99.2 (2.8)* {93.4, 104.9}	91.1 (2.9)*** {85.2, 97.03}	F (2,60)= 3.24 p=.046
Stress	21.7 (1.1) {19.5, 24.09}	19.9 (1.26) {17.4, 22.4}	18.1 (1.1)* {15.8, 20.4}	F (2,60)= 2.5, p=.08
Self-esteem	29.8 (.72) {28.3, 31.2}	31.0 (.72) {29.5, 32.4}	31.6 (.71) {30.2, 33.1}	F (2,60)= 1.6, p=.20
Self- authenticity	158.3 (2.4) {153.4, 163.2}	162 (2.53) {156.7, 167.2}	160.8 (2.5) {155.7, 165.9}	F (2,60)=.57, p= .56
Mindfulness	98.6 (2.0) {94.6, 102.7}	100.9 (2.3) {96.2, 105.6}	105.3 (2.2)* {100.8, 109.9}	F (2,60)= 2.4, p=.09

Figure 1. Means and Standard Deviations in Heart rate pretest, Posttest in all groups



NS= Novelty seeking meditation, TM= Traditional Meditation, Control= Non Treatment group

*p<0.5, **p<0.01

Learning was assessed through the students' final written exams in the module where breathing meditation was taught. An independent samples t-test showed statistically significant difference in learning scores between traditional meditation group (M = 3.7, SD = 1.7) and novelty seeking group (M = 7.5, SD = 1.4), t (34) = -.6.8, p <. 001 (two-tailed). The mean difference in burnout scores was 3.79 with a 95% confidence interval ranging from -4.92 to -2.66.

In addition, we conducted an ANOVA test for heart rate and post hoc tests. We found that heart rate was significantly reduced in the Novelty seeking meditation group, F (2, 67) = 3.46, p < .05.

The results of a post-hoc LSD test revealed that heart rate reduced in the novelty seeking meditation group compared to the control.

4.4.4. Discussion

According to these results, novelty seeking meditation seems to reduce heart rate and bring relaxation to participants. We did not find any significant differences in the traditional meditation group, which followed only the breathing technique, part of the MBSR program (mindfulness based stress reduction program). Langer et al. (1975) showed that mindfulness may reduce stress by novelty seeking and being flexible to new contexts. A recent study by Low et al. (2008) illustrated that individuals who reflect on a stressful experience through acceptance-focused writing have more efficient control over their heart rate than individuals who reflect through an evaluative, judgmental method. This research illustrates a core component of Langer's mindfulness paradigm suggest that all mindfulness requires is a switch in general cognition to making novel distinctions. Over the last several years, many studies (Depascalis et al. 1991; Moravec 2008) have considered the use of biofeedback and other meditative practices in regulating heart rate. The principal method of controlling heart rate in biofeedback trials is visual confirmation by electrocardiogram (ECG). In the current study, we illustrated that individuals can regulate their heart rate through simple mindful attention in breathing. Given the expense and time required in acquiring both equipment and technological support for electrocardiogram trials, it appears that just promoting mindfulness can efficiently help to decrease heart rate. Therefore, we indicate a simple method to reduce overall stress which could be very important for students. This exercise takes between 10-20 minutes and could be practiced before the class starts to help students unwind and adhere a more absorbing mind. One indicator of healthy functioning is heart rate variability (HRV), which measures the time between heart beats. Existing

research has shown that high HRV can indicate a low stress response and better physiological and psychological well-being (Berg et al., 2007) and fits well with our current findings on reduction in heart rate. Traditional meditation based on Vippasana is based on open awareness breathing without directed instructions. In the present study and especially in the novelty seeking meditation, specific instructions were given to participants to attend differences in their breathing. As a result, this type of practice might have given them more control over stress and resulted in lowering their heart rate beats (Delizonna et al., 2009).

One limitation of the current study is that we included both graduate and undergraduate students that might differ in different characteristics and this might have influenced the results. However, given the significance of results in the heart rate, the current study provides a good base for designing future studies in educational settings including longer interventions. Of note, we found a significant difference in learning which adds to the literature supporting that mindfulness accelerates learning (Zeidan et al., 2010). In previous studies, people who have undergone mindfulness training have shown improvements on cognitive performance (Jha et al., 2007; Cahn & Polich, 2006) and mood (Davidson et al., 2003). Moreover, long-term meditation practice has been found to ameliorate attentional (Jha, Krompinger, & Baime, 2007) and visuospatial processes (Kozhevnikov, Louchakova, Josipovic, & Motes, 2009). In the present study, written final exams might not have been the ultimate assessment of learning in universities but it gave us the basis for designing future studies.

Concluding Remarks

Mindfulness is nowadays understood to be a broadly known and widely received methodology that serves to reduce stress, enhance well-being and learning in various populations (Teasdale et al. 1999, Shapiro, Schwartz & Bonner, 1998; Shapiro et al., 2006). For generations, educators, psychologists, policy makers, educational philosophers, psychologist and practitioners have decried the 'mindlessness' of schools and their tendency to stifle creativity, curiosity, and enthusiasm while nurturing passivity and superficial learning. The state of mindfulness involves a receptive state of mind, where attention is kept to a simple registering of the facts observed. In education, awareness and attention allow the student to "be present" to new knowledge rather than react to it or habitually process it through conceptual filters or mindsets.

Research on mindfulness including the present studies has resulted in the identification of various means of configuring the environment and identifying constraining situations to make individuals more mindful (Langer, 1997). These interventions help us to understand both how the mind works and the role of the environment in facilitating more mindful states. However, teaching and schooling are much more than the clever, effective, or even mindful presentation of material. It is an organic process where both teacher and student play an interactive role. Therefore, it is important for schooling to strive to cultivate the dispositions that lead to a lifetime of learning and enjoyment (Hyland, 2011). Mindfulness is one of the main of those dispositions.

Current research studies conducted in different educational settings offer promising results for further investigations and efforts to enhance mindful education and happiness (Langer, 1993). Moreover, in the present Thesis, different approaches of mindfulness were discussed and investigated offering evidence for future initiatives. In the long run, it does not really matter what approach of

mindfulness is incorporated as far as it has an effect on peoples' health and overall well-being. What is more, all type of mindfulness concentrates on the impact of awareness as a mediator leading in engagement in the present moment and accepting all incidents as natural events either positive or negative.

More specifically, in the present studies I used a mixed mindfulness model including both the meditative and socio-cognitive perspective. In the meditative perspective, one of the most popular practices is breathing meditation which was used as a practice for the third study described in Part B. Another vital component in the meditative practice is awareness of senses, actions and thoughts. This type of practice has being applied by the socio-cognitive perspective as "attention to variability".

In the first study implemented in medical students, a combination of awareness of actions and "attention to variability" was applied particularly adjusted in the medical context. However, it is interesting that awareness and compassion are still sadly undernourished in most hospital settings, especially since these qualities are what hospitals are ostensibly all about. The second study was primarily based on the socio-cognitive perspective suggesting that mindfulness is contagious and may be the essence of charisma. Therefore when a teacher is mindful, their teaching is attractive to students. Of note, a teacher who is mindful has also specific attributes such as compassion, non- judgmental attitude, awareness and insight. The Student is placed in the center of the learning process, given the tools to develop critical thinking and creativity.

In the third study mindful breathing was introduced to students as a simple way of cultivating mindfulness through awareness of the physical body. If anxiety and impatience are the enemies of flow in the classroom, one obvious solution for the student is to practice mindful breathing. The purpose of mindful breathing is to reduce stress, bring one to awareness of the present, and create calmness. Meditation is thought to be the antithesis of anxiety and impatience. Therefore, it brings a

state of tranquillity in both students and teachers reinforcing well-being and felicity. Congruently, mindful breathing is a creative skill that allows students to access and understand creative "flow" in and beyond the classroom .

There is nothing out of the ordinary about meditating or meditation. It is simply about paying attention in our life as if it really mattered. It might help to keep in mind that while it is really nothing out of the ordinary, nothing particularly special, mindfulness is at the same time extraordinarily special and utterly transformative in ways that are difficult to perceive although a state that could be cultivated with practice. When cultivated, mindfulness can function effectively on every level, from the individual to the corporate, the social, the political, and the global. This process unfolds from this first step. Attention to variability or simply paying attention is something we do so selectively and haphazardly that we often don't see what is right in front of our eyes or even hear sounds that are carried to us through the air and are clearly entering our perception. In the same way, the same happens with the other senses.

Overall, mindfulness is a "gentle knowing" and being open. It is a different way of being offering a mindset of uncertainty. Mindfulness is growing more and more in recent scientific world and research labs are expanding their work in conjunction with mindfulness worldwide. Brown and his colleagues (Brown et al., 2007) explain that interest in mindfulness has "quietly exploded" over the past two decades and it seems that this interest will only continue to gain momentum. For as Jon Kabat-Zinn (2003) observed, "The bell of mindfulness tolls in each moment, inviting us to come to our senses, reminding us that we can wake up to our lives, now, while we have them to live".

Various mindfulness techniques could be applied in schools, universities, hospitals, companies and help trainees and employees unwind from stress and release mental and physical tension. Obtaining a relaxed body and mind, performance is increased and diseases are prevented in both

students and teachers. Burnout is one of the most common psychological diseases causing considerable suffering in school teachers. In school settings, student misbehavior is one of the most important predictors of burnout in teachers because disruptive behavior leads to emotional exhaustion (Klusmann et al., 2008.) As a result, the manner in which a teacher manages a classroom becomes crucial. Teachers with more training in behavior management and higher levels of classroom confidence usually report lower levels of burnout (Martin et al. 2012).

There are various traditions and techniques belonging to mindfulness general philosophy that could fit to someone's lifestyle according to his own routine, behavior, beliefs, values and philosophy of life. For example, in the first study, awareness was developed in students using a very simple technique that could be used in any professional interacting with other individuals in everyday life. In the third experiment, where two different meditative techniques were taught, people were instructed breathing meditation which is one of the simplest meditation used in mindfulness and could also be practiced by beginners in any educational setting. Mindfulness is becoming a trend in modern society that is full of worries and difficulties. Implications for student learning from the current mindfulness research studies are suggested by the present data adding to previous knowledge on student's inclination to mindfulness. According to Langer (1993), a premature cognitive commitment is "a rigid belief that results from the mindless acceptance of information as true without consideration of alternative versions of that information" (p. 45). In many occasions of instruction, a student automatically "commits" information in preconceived and predetermined ways (Langer, 1993). Thus, previous knowledge of subject matter may reduce students' performance by hindering the ability for the student to examine or learn information from new perspectives. The last 20 years show the growth of mindfulness, both in applications to psychology in clinical and educational settings and to society. These three studies were novel in their attempts to examine a form of mindfulness that combined the

different applications and definitions of mindfulness. While much literature has been written about mindfulness, the exploration of mindfulness still appears to be in its infancy. As demonstrated in the first theoretical part, the processes and concepts that constitute a mindful education are not without basis in the foundations of educational psychology. Recently, existing research and theories offer various views on the effectiveness and appropriateness of mindfulness in education. Therefore, a vital reason for using mindfulness in an educational environment could result in an increase of psychological well-being of both teacher and student. A possible implication for teachers using mindfulness could be to increase the teacher's awareness of his/her presence in the classroom. Mindfulness also may have benefit in increasing teacher self-consciousness to improve classroom management and positive teaching attitude for the purpose of the ultimate student outcome (Langer, 1993).

Mindfulness is fundamentally a state of pure consciousness and except among intrepid bands of philosophically oriented psychologists and cognitive scientists, consciousness has received relatively little attention in psychological scholarship, research, and clinical practice. There is an enormous interest in mindfulness and its enhancement has quietly exploded in recent years. Medical, educational and psychological research on mindfulness has been increasing exponentially over the past 20 years, with the number of mindfulness-related reports increasing from less than 80 in 1990 to over 600 in 2013 (Khoury et al., 2013). A lot of studies have been published as well as future topics remain to be studied on the possible applications of mindfulness in modern society. The main contribution of this Thesis is that it demonstrates different interventions and conceptual frameworks of mindfulness that could potentially be applied in modern educational syllabi. I hope this Thesis will become a stepping stone for further explorations and study of mindfulness as a tool for stress recovery and well-being in educational settings.

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Appendix A

Langer Mindfulness Scale (LMS)

PERSONAL OUTLOOK SCALE

Instructions: Below are a number of statements that refer to your personal outlook. Please rate the extent to which you agree with each of these statements. If you are confused by the wording of an item, have no opinion, or neither agree nor disagree, use the "4" or "NEUTRAL" rating. Thank you for your assistance.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

	Disagree						Agree
I like to investigate things.	1	2	3	4	5	6	7
I generate few novel ideas.	1	2	3	4	5	6	7
I am always open to new ways of doing things.	1	2	3	4	5	6	7
I "get involved" in almost everything I do.	1	2	3	4	5	6	7
I do not actively seek to learn new things.	1	2	3	4	5	6	7
I make many novel contributions.	1	2	3	4	5	6	7
I stay with the old tried and true ways of doing things.	1	2	3	4	5	6	7
I seldom notice what other people are up to.	1	2	3	4	5	6	7
I avoid thought provoking conversations.	1	2	3	4	5	6	7
I am very creative.	1	2	3	4	5	6	7
I can behave in many different ways for a given situation.	1	2	3	4	5	6	7
I attend to the "big picture."	1	2	3	4	5	6	7
I am very curious.	1	2	3	4	5	6	7
I try to think of new ways of doing things.	1	2	3	4	5	6	7
I am rarely aware of changes.	1	2	3	4	5	6	7
I have an open-mind about everything, even things that challenge my core beliefs.	1	2	3	4	5	6	7
I like to be challenged intellectually.	1	2	3	4	5	6	7
I find it easy to create new and effective ideas.	1	2	3	4	5	6	7
I am rarely alert to new developments.	1	2	3	4	5	6	7
I like to figure out how things work.	1	2	3	4	5	6	7
I am not an original thinker.	1	2	3	4	5	6	7

Appendix B

Maslach Burnout Inventory (MBI)

Please read each statement carefully and decide if you ever feel this way. If you have never had this feeling, write a '0' (zero) before the statement. If you have had this feeling, indicate how often you feel it by writing the number (from 1 to 6) that best describes how frequently you feel that way.

0	Very rarely 1	Rarely 2	Regularly 3	Often 4	Very often 5	Always 6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. _____ I feel emotionally drained from my work.
2. _____ I feel used up at the end of the workday.
3. _____ I feel fatigued when I get up in the morning and have to face another day on the job.
4. _____ I can easily understand how my patients feel about things
5. _____ I feel I treat some patients as if they were impersonal objects.
6. _____ Working with people all day is really a strain for me.
7. _____ I deal very effectively with the problems of my patients.
8. _____ I feel burned out from my work.
9. _____ I feel that I am positively influencing other people's lives through my work.
10. _____ I 've become more callous toward people since I took this job.
11. _____ I worry that this job is hardening me emotionally.
12. _____ I feel very energetic.
13. _____ I feel frustrated by my job.
14. _____ I feel I'm working too hard on my job.
15. _____ I don't really care what happens to some patients.
16. _____ Working with people directly puts too much stress on me.
17. _____ I can easily create a relaxed atmosphere with my patients.
18. _____ I feel exhilarated after working closely with my patients.
19. _____ I have accomplished may worthwhile things in this job.
20. _____ I feel like I'm at the end of my rope.
21. _____ In my work, I deal with emotional problems very calmly.
22. _____ I feel patients blame me for some of their problems.

Student Maslach Burnout Inventory (MBI-SS)

Please read each statement carefully and decide if you ever feel this way. If you have never had this feeling, write a '0' (zero) before the statement. If you have had this feeling, indicate how often you feel it by writing the number (from 1 to 6) that best describes how frequently you feel that way.

	Very rarely	Rarely	Regularly	Often	Very often	Always
0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. _____ I feel emotionally drained by my studies.

2. _____I feel used up at the end of a day at university.

3. _____I feel tired when I get up in the morning and I have to face another day at the university.

4. _____Studying or attending a class is really a strain for me.

5. _____I feel burned out from my studies.

6. _____I have become less interested in my studies since my enrollment at the university.

7. _____ I have become less enthusiastic about my studies.

8. _____ I have become more cynical about the potential usefulness of my studies.

9. _____ I doubt the significance of my studies.

10. _____ I can effectively solve the problems that arise in my studies.

11. _____ I believe that I make an effective contribution to the classes that I attend.

12. _____ In my opinion, I am a good student.

13, _____ I feel stimulated when I achieve my study goals.

14. _____I have learned many interesting things during the course of my studies.

15. _____During class I feel confident that I am effective in getting things done.

Appendix C

Neff Self-Compassion scale

How I typically act towards myself in difficult times …

Please read each statement carefully before answering; using the scale given below indicates, to the right of each item, how often you behave in the stated manner:

almost never ***almost always***

1 2 3 4 5

1	I'm disapproving and judgmental about my own flaws and inadequacies	
2	when I'm feeling down I tend to obsess and fixate on everything that's wrong	
3	when things go badly for me, I see the difficulties as part of life that everyone goes through	
4	when I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world	
5	I try to be loving towards myself when I'm feeling emotional pain	
6	when I fail at something important to me I become consumed by feelings of inadequacy	
7	when I'm down, I remind myself that there are lots of other people in the world feeling like I am	
8	when times are really difficult, I tend to be tough on myself	
9	when something upsets me I try to keep my emotions in balance	
10	when I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people	
11	I'm intolerant and impatient towards those aspects of my personality I don't like	
12	when I'm going through a very hard time, I give myself the caring and tenderness I need	
13	when I'm feeling down, I tend to feel like most other people are probably happier than I am	
14	when something painful happens I try to take a balanced view of the situation	
15	I try to see my failings as part of the human condition	
16	when I see aspects of myself that I don't like, I get down on myself	
17	when I fail at something important to me I try to keep things in perspective	
18	when I'm really struggling, I tend to feel like other people must be having an easier time of it	
19	I'm kind to myself when I'm experiencing suffering	
20	when something upsets me I get carried away with my feelings	
21	I can be a bit cold-hearted towards myself when I'm experiencing suffering	
22	when I'm feeling down I try to approach my feelings with curiosity and openness	
23	I'm tolerant of my own flaws and inadequacies	
24	when something painful happens I tend to blow the incident out of proportion	
25	when I fail at something that's important to me, I tend to feel alone in my failure	
26	I try to be understanding and patient towards those aspects of my personality I don't like	

Appendix D

Perceived Stress Scale- 10 Item

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

1. In the last month, how often have you been upset because of something that happened unexpectedly? ___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

3. In the last month, how often have you felt nervous and "stressed"?__0=never___1=almost never___2=sometimes___3=fairly often___4=very often

4. In the last month, how often have you dealt successfully with day to day problems and annoyances? ___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

6. In the last month, how often have you felt confident about your ability to handle your personal problems?___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

7. In the last month, how often have you felt that things were going your way?___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

8. In the last month, how often have you found that you could not cope with all the things that you had to do?___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

9. In the last month, how often have you been able to control irritations in your life?___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

10. In the last month, how often have you felt that you were on top of things?___0=never___1=almost never___2=sometimes___3=fairly often___4=very often

11. In the last month, how often have you been angered because of things that happened that were outside of your control? 0=never___1=almost never___2=sometimes___3=fairly often___4=very often

12. In the last month, how often have you found yourself thinking about things that you have to accomplish? 0=never___1=almost never___2=sometimes___3=fairly often___4=very often

13. In the last month, how often have you been able to control the way you spend your time? 0=never___1=almost never___2=sometimes___3=fairly often___4=very often

14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0=never___1=almost never___2=sometimes___3=fairly often___4=very often

Appendix E

Rosenberg Self-Esteem Scale

The scale is a ten item Likert scale with items answered on a four point scale - from strongly agree to strongly disagree. The original sample for which the scale was developed consisted of 5,024 High School Juniors and Seniors from 10 randomly selected schools in New York State.

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.*	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.*	I feel I do not have much to be proud of.	SA	A	D	SD
6.*	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.*	I wish I could have more respect for myself.	SA	A	D	SD
9.*	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

Appendix F

PANAS Negative/Positive Affectivity Scale

This scale consists of a number of words that describe different feelings and emotions. Indicate to what extent you have felt this way over the **last six months**.

1	2	3	4	5
Very slightly or not at all	A little	Moderately	Quite a bit	Extremely

Interested	1	2	3	4	5	Irritable	1	2	3	4	5
Distressed	1	2	3	4	5	Alert	1	2	3	4	5
Excited	1	2	3	4	5	Ashamed	1	2	3	4	5
Upset	1	2	3	4	5	Inspired	1	2	3	4	5
Strong	1	2	3	4	5	Nervous	1	2	3	4	5
Guilty	1	2	3	4	5	Determined	1	2	3	4	5
Scared	1	2	3	4	5	Attentive	1	2	3	4	5
Hostile	1	2	3	4	5	Jittery	1	2	3	4	5
Enthusiastic	1	2	3	4	5	Active	1	2	3	4	5
Proud	1	2	3	4	5	Afraid	1	2	3	4	5

Appendix G

Authenticity Inventory (Kernis & Goldman, 2006)

The following measure has a series of statements that involve people's perceptions about themselves. There are not right or wrong responses, so please answer honestly. Respond to each statement by writing the number from the scale below, which you feel most accurately characterizes your response to the statement.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

1. I am often confused about my feelings.

2. I frequently pretend to enjoy something when in actuality I really don't.

3. For better or for worse I am aware of who I truly am.

4. I understand why I believe the things I do about myself.

5. I want people with whom I am close to understand my strengths.

6. I actively try to understand which of my self-aspects fit together to form my core- or true-self.

7. I am very uncomfortable objectively considering my limitations and shortcomings.

8. I've often used my silence or head-nodding to convey agreement with someone else's statement or position even though I really disagree.

9. I have a very good understanding of why I do the things I do.

10. I am willing to change myself for others if the reward is desirable enough.

11. I find it easy to pretend to be something other than my true-self.

12. I want people with whom I am close to understand my weaknesses.

13. I find it very difficult to critically assess myself.

14. I am not in touch with my deepest thoughts and feelings.

15. I make it a point to express to close others how much I truly care for them.

16. I tend to have difficulty accepting my personal faults, so I try to cast them in a more positive way.

17. I tend to idealize close others rather than objectively see them as they truly are.

18. If asked, people I am close to can accurately describe what kind of person I am.

19. I prefer to ignore my darkest thoughts and feelings.

20. I am aware of when I am not being my true-self.

21. I am able to distinguish those self-aspects that are important to my core- or true-self from those that are unimportant.

22. People close to me would be shocked or surprised if they discovered what I keep inside me.

23. It is important for me to understand my close others' needs and desires.

24. I want close others to understand the real me rather than just my public persona or ''image.''

25. I try to act in a manner that is consistent with my personally held values, even if others criticize or reject me for doing so.

26. If a close other and I are in disagreement I would rather ignore the issue than constructively work it out.

27. I've often done things that I don't want to do merely not to disappoint people.

28. I find that my behavior typically expresses my values.

29. I actively attempt to understand myself as best as possible.

30. I'd rather feel good about myself than objectively assess my personal limitations and shortcomings.

31. I find that my behavior typically expresses my personal needs and desires.

32. I rarely if ever, put on a ''false face'' for others to see.

33. I spend a lot of energy pursuing goals that are very important to other people even though they are unimportant to me.

34. I frequently am not in touch with what's important to me.

35. I try to block out any unpleasant feelings I might have about myself.

36. I often question whether I really know what I want to accomplish in my lifetime.

37. I often find that I am overly critical about myself.

38. I am in touch with my motives and desires.

39. I often deny the validity of any compliments that I receive.

40. In general, I place a good deal of importance on people I am close to understanding who I truly am.

41. I find it difficult to embrace and feel good about the things I have accomplished.

42. If someone points out or focuses on one of my shortcomings I quickly try to block it out of my mind and forget it.

43. The people I am close to can count on me being who I am regardless of what setting we are in.

44. My openness and honesty in close relationships are extremely important to me.

45. I am willing to endure negative consequences by expressing my true beliefs about thing

Appendix E

Heart rate/ Cell Oxygen Saturation Measurement (Oximeter)

Decription: Oximeter is a very simple device without any side effects measuring the cell oxygen saturation and heart rate. This device is based on the principles of spectroscopy. This device measures the amount of saturated hemoglobin in the tissue capillaries by transmitting a beam of light through the tissue to a receiver. This noninvasive method of measuring the saturated hemoglobin is a useful screening tool for determining basic respiratory function. This cliplike device may be used on either the earlobe or the fingertip. As the amount of saturated hemoglobin alters the wavelengths of the transmitted light, analysis of the received light is translated into a percentage of oxygen saturation (SO_2) of the blood.