

MINDFULNESS, EDUCATION AND NEUROSCIENCE

CONSAPEVOLEZZA, EDUCAZIONE E NEUROSCIENZE

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Abstract

The practice of Mindfulness sees as its main objective the achievement of a maximum degree of awareness through which the individual should reach a state of well-being. In fact, by becoming aware and not critical of themselves and reality, individuals should be able to control and contain emotions, sensations and negative thoughts that can lead to suffering. This paper starts from the analysis of the characteristics of this particular practice and then analyzes the effects on cognitive functioning and the implications of an educational nature.

La pratica della mindfulness vede come suo obiettivo principale il raggiungimento di un grado di consapevolezza massimo attraverso il quale l'individuo dovrebbe raggiungere uno stato di benessere. Difatti, divenendo consapevoli e non critici nei confronti di sé stessi e della realtà, gli individui dovrebbero riuscire a controllare e contenere emozioni, sensazioni e pensieri negativi che possono portare alla sofferenza. Il presente paper parte dall'analisi delle caratteristiche di questa particolare pratica e poi analizza gli effetti sul funzionamento cognitivo e le implicazioni di natura educativa.

KEYWORDS

Mindfulness; Education; Learning.
Awareness; Education; Apprendimento.

Introduction

The term Mindfulness is the English translation of the term *sati* from Pali, the language used by Buddhist psychology as early as 2500 years ago. Mindfulness is rooted in the Eastern tradition, where it is understood as a state of mind obtained through the practice of various types of meditation all based on two principles: awareness of the present moment and non-judgmental acceptance of emotional states. Over the years, there have been several definitions attributed to this particular practice. Kabat-Zinn describes mindfulness as the way to "pay intentionally focused attention to the present moment in a non-judgmental way" (Kabat-Zinn, 1990). The term "focused" refers to the ability of an individual to choose a certain object, whatever it is, and direct attention exclusively to it. The object in question can be breathing, but also a bodily sensation, a loved one, a purpose, etc. When you notice that the mind begins to wander and has lost sight of the attentional focus it is important to make, intentionally but gently and without judgment, a refocusing towards the pre-established object. The second concept, "facing the present moment", means that the focus is exclusively on the experience you are living, here and now. Finally, it is a "non-categorizing" attention, that is, open to the surrounding without using categories, classifications and judgments normally used to understand the situations we live. Kabat-Zinn is considered one of the main popularizers of Mindfulness since he had the idea of creating a program based on the application of Mindfulness techniques in different hospitals and clinics to help reduce patients' stress levels. Still, Kotsou defines mindfulness as a state of full awareness that is achieved by focusing one's attention on the present moment, the only moment that really exists. Such a state is also called "full awareness meditation" (Kotsou, 2012). People, most of the time, are affected by "chronic unawareness" in fact they live experiences without really being aware of it. This happens because our brain takes us elsewhere than where we are (in the past and in the future), and perhaps also because certain automatisms push us to anguish when life is difficult. This leads to not being able to taste it even when it is pleasant; We often function mechanically and automatically, without being fully aware of what is happening inside and outside of us. The consequences of this behavior have important effects on our quality of life, training us to full awareness, step by step, we will govern our attention span freeing ourselves from distraction and dispersion to reconnect to all our senses (Kotsou, 2012). The term "meditation" can arouse different emotions ranging from the fascination of discovery to fear of an unknown situation (Varela, 1992). The word meditation is in fact used to refer to very different conditions such as states of deep relaxation or conditions of concentration on an object or a word to detach oneself from any other symbol or phenomenon of trance or mystical experiences in which one comes into contact with higher realities. The practice of mindfulness meditation 'must be understood in exactly the opposite sense' to all these forms (Amadei, 2013). Meditating in the sense of Mindfulness means in fact rooting oneself in the experience of the body, sensations, mental objects and the mind itself to be fully present. There are two important moments with respect to which mindfulness develops and they are mindful awareness and mindful practice. Mindful awareness means awareness of awareness, or realizing, knowing one's emotional state. All with the aim of knowing what you are feeling when you live it. So Mindfulness is a way of being that allows you to appropriate the body, mind and experience moment by moment. It allows us to live our experiences and our knowledge of every moment of our lives, from the moment it presents itself to our senses until it ceases (Fischer et al., 2007). By Mindfulness practice, we mean the actual practice, to develop the ability to intentionally apply mindfulness. It also means the development of skills, such as being able to pay and support attention and enhance one's ability to recognize one's own representations of oneself. Practice includes intention, attention, and attitude.

The effects on cognitive functioning

There are several empirical studies that testify to the scientific validity of Mindfulness or, more specifically, of the Mindful movement, with respect to health promotion and prevention of certain diseases. An observational study published by scholars at Hong Kong Polytechnic University, reported a better attentional and mnemonic performance in elderly subjects who practiced Tai Chi, compared to subjects of the same age, but sedentary (Man et al., 2010). Similarly, a group of scholars from East Tennessee State University has shown a faster and more accurate motor response capacity to specific sensory stimuli than the sedentary counterpart (Hofmann et al., 2010). Inhibitory control, cognitive flexibility, working memory, creativity and information processing are

additional cognitive functions that have been improved following both single sessions and long periods of mind-body training (Chambers et al., 2009). Preliminary evidence suggests a first involvement of the sympathetic nervous system and the hypothalamic-pituitary-adrenal (HPA) axis: mindful motor practices have been useful in reducing stress and increasing stress management capacity in those who practice them, with a consequent reduction in the activation of the sympathetic system and the HPA system, thus reducing anxiety, depression, and cognitive deterioration processes (Chambers et al., 2009). Another mechanism by which mind-body training improves cognitive functioning is the increase in inter- and intra-hemispheric neuronal synchronization, especially in the frontal area of the brain and frontocerebellar and in alpha frequencies. Finally, further studies have found an increase in synapses, neurotrophins and cerebellar gray matter (Pesce & Ben-Soussan, 2014). In this scenario, the attentional process plays a particular role. The role that attention plays in defining all meditative "movements" is quite central both in terms of functions and brain areas, so much so that mindfulness could almost be considered a general component of attention or rather, a different way in which attention manifests itself. The mindfulness practice, according to this model, is a core process, the main target of mindfulness practice, which is reached thanks to a motivational process (motivational factors). The central processes generate a mental and "generalized" state that produces various behavioral, physical and mental outcomes. Two fundamental aspects at the functional level of attention where mindfulness has been seen to act positively are: sustained attention and attentional control. With regard to sustained intent (Schmertz, Anderson, Robins, 2008) it has been seen how, as the feeling of mindfulness reported by the subjects increased, the performance at the Continuous Performance Test also increased (Allen et al., 2012; Clarke, 2008), a test frequently used to evaluate the sustained attention. The same results were obtained by Moore and Malinowski (2009) who with a similar methodology also verified how expert "meditators" perform better than non-practitioners in sustained attention tasks. Using an adaptation of the Stroop test that included the presentation of affective stimuli with positive or negative valence, it was seen that the scores referring to interference decreased only in the meditation group, but not in the control group. This was accompanied by a functional increase in the activation of the dorsolateral prefrontal cortex during the task.

Mindful education

In recent years the practice of *mindfulness* has become very consolidated, so much so that it can be considered almost a routine in the clinical field. More recently introduced, however, are the interventions carried out in the school environment. The method of meditation to full awareness is a "language" that children understand perfectly and can deal with considerable benefits because it passes through the body. Until a few years ago, however, it was thought that meditation was not a domain for children because on the one hand it would seem too difficult and too intellectual an activity and on the other hand it was thought that they did not even need it. In fact, although they spontaneously have the ability to live the present moment, it is good to help them preserve and cultivate this attitude in such a way that they can cope with it in joyful moments, but above all in situations of malaise or difficulty that they may encounter in life (Francescono D, 2011 a-b). The effectiveness of *mindfulness* compared to children/adolescents is now demonstrated and, in support of this thesis, Zenner et al. (Zenner, Hermleben-Kurz and Walach, 2014) conducted a literature review to support this thesis. Zenner's work proposes a revision of the objectives that education systems must have from here on out, to raise individuals suitable to live in a hyper-modern society like the one in which we find ourselves. The qualities that the school should promote are not only emotional and attentional regulation, but also empathy, compassion, self-representation skills, creativity and problem solving skills. Although the interest in this approach applied among the school desks is growing more and more, too little is done to apply standardized protocols, so much so that Zenner's own group argues that the enthusiasm for *mindfulness* has been and is so strong that it has exceeded the actual evidence of scientific research. Teachers who work with young people day by day and who testify to their progress and efforts, know that meditation allows not only to achieve a merely professional success, but above all psychological and interior (Baer, 2003; Brown et al., 2007). The mechanisms involved in regulating emotions interact with executive functions, such as making decisions, scheduling meetings, and evaluating options, functions that are involved in developing problem-solving skills during the preschool years. *Mindfulness* is a way of paying attention, a tool to manage stress through different mechanisms such as giving attention to thoughts, emotions and physical sensations of

the present, without focusing on negative events. Secondly, the attention on a present experience increases and expands concentration and allows you to carry out in the best possible way the activity to which you are dedicating (Carmody, 2008). Third, *mindfulness* allows you to observe your life experience without any subjective judgment or evaluation. *Mindfulness* is a skill that can be honed with practice, in fact it can be directed and maintained, intentionally and with great stability, on objects of our choice. *Mindfulness* is a different way of using the mind than in our daily experiences: most of the time, in fact, children and adolescents use their minds to manipulate ideas or concepts, to recall information from the past, to imagine future circumstances, to design, plan, calculate or program. These are just some of the most important functions of the mind that improve and increase through education. The intellectual faculties are therefore developed, as mentioned above, with practice and have direct relevance for self-awareness, for great self-control and for an emotional balance, fundamental for the well-being of our body

Conclusions

Mindfulness is a meditative practice that interacts with numerous components of the "human system". We know that it interacts deeply on our attentional abilities, so much so that it could rightly be considered a very modality of the attentional system. Mindfulness is a technique that allows introspective and perceptual awareness, favoring awareness towards our psychological processes and habits. Interhemispheric communication increases, which is typical of states of creativity, as the meditating individual is able to perceive increasingly subtle details of the stream of consciousness and mental processes. The inclusion of moving practices in meditation interventions allows you to walk the path that leads to greater awareness and conscious presence since no element of human nature is overlooked. Listen, observe and pay attention to your thoughts, your feelings, your emotions, the parts of your body. The cognitive part, the emotional part, the sensory, perceptual part and the more purely physical and motor part are called to take part in the awareness training. Mindfulness in motion also has the characteristic of being an effective foothold for beginners who can find in yoga exercises or conscious walking recognizable elements and closer to their life habits. Going to the gym or walking are activities that are part of everyday life and therefore there can be less resistance in carrying out this type of practices, then opening up to their new meanings and new potential. When mindfulness meets the school it determines a change of perspective, the way of thinking about the mind and the skills necessary to be a competent citizen change and the practices and "being" mindfulness seem to collect this need. Competence, with mindfulness, becomes awareness of being and of others, it becomes the ability to understand one's own judgmental limits, it becomes taking a space to understand oneself and one's body so that one can also understand what happens in the perspective of others.

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