



The construction of Emotions: a neuroscientific approach

A cura di

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Abstract: This paper explores the evolving concept of emotional intelligence (EI), defined as the ability to recognize, understand, and manage one's own emotions and those of others. Initially conceptualized by Salovey and Mayer in the early 1990s, EI has gained significant traction across various fields, including education and workplace dynamics. The historical perspective on emotions as innate has been challenged by researchers like Feldman Barrett, who argue that emotions are learned and shaped by social and cultural contexts. This paper examines the two primary models of EI: the Mental Ability Model by Salovey and Mayer, which emphasizes cognitive skills, and the Mixed Model by Goleman, which incorporates emotional competencies linked to effective performance. The implications of EI on life satisfaction, interpersonal relationships, and academic success are discussed, highlighting the necessity for educational interventions aimed at enhancing emotional competencies in students. Furthermore, the relationship between creativity and emotional intelligence is analyzed, particularly through Edward De Bono's Six Thinking Hats technique, which fosters creative problem-solving and diverse perspectives. The paper concludes by advocating for the integration of emotional education within school curricula to promote holistic development in students, preparing them for the complexities of modern life.

Keywords: Emotional Intelligence (EI) - Educational Interventions -Creativity - Problem-Solving.

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Introduction

Over the past year, the concept of emotional intelligence has been spreading across the globe. Emotional intelligence refers to a person's ability to empathize with the emotions of others. Emotional intelligence is the ability to monitor and label one's own emotions and those of others, to discern between them, and to use this information to guide thought and action (Salovey and Mayer, 1990). Emotional intelligence provide knowledge regarding relationship between people and external world (Mayer, Salovey, 1997).

A commonly held historic view of emotions is that they are an innate part of being human. In other words, we don't learn them, they are just there in our very human nature. This view says that emotions are universal across the human race, that people from all species will experience the same emotions if they encounter the same situation. It also says that we recognise the emotions that people are feeling based in their facial expressions, regardless of their social, cultural and geographical background. Some of the research that led to this view has suffered from the replication

crisis. Feldman Barrett has challenged this view. She says that our emotions are not innate. Instead, they are learned. We aren't born with them, instead we learn what emotions we should experience in the different contexts we find ourselves in. This learning is heavily influenced by our past experiences and by our social and cultural contexts which can influence the concepts we have learned which give meaning to the different bodily experiences we give emotional names to. Under this model it is clear that emotions are not universal. Instead, different individuals may clearly experience different emotions in response to the same situation and stimuli. Predictive Feldman Barrett's model incorporates the predictive engine theory of the human brain. Essentially, what this says is that our brains are prediction engines that are constantly predicting everything that is about to / is actually happening and serving this up to our consciousness as reality. In other words, what we experience in our lives as reality is really our best predictions as to what is happening, not a genuine representation of the external world being captured through our sensory organs. Feldman Barrett's theory of emotions says that the emotions we experience arise as a response to our predictions about the world, not as a response to the actual external stimuli that we experience. This

obviously adds a further layer to their construction as we construct not only our understanding of what emotions should be, but also our predictions of the world. As previously stated, the development of various definitions of Emotional Intelligence that would lead to the definitive and most widely used one dates back to the early 1990s. Since the first definition, there has been an increasing number of studies and publications on this topic, which continues to this day, especially due to the significant impact that EI can have on everyday life. This construct is not only relevant in scientific circles but has also garnered growing interest in various fields, including education, the workplace, and interpersonal relationships. While the previous chapter placed the emergence and attention towards this new emotional component of intelligence in a temporal context, we will now delve into how its definition has evolved over time through the contributions of various authors. There are different definitions of Emotional Intelligence that can be traced back to two distinct models developed in the fields of psychology and neuroscience. Below, we will pay particular attention to the two main models of emotional intelligence currently existing, developed by scholars Salovey and Mayer, and Goleman, highlighting their characteristics and peculiarities. The initial conception of emotional intelligence, formulated by psychologists Salovey and Mayer, defined it as the ability to understand and monitor one's own feelings and those of others and to use them as sources of information for thought and action, divided into three components (Mayer and Salovey, 1997). Over time, this conceptualization has been revisited by the authors and has undergone subsequent modifications and redefinitions. The main modification to the previous model involves the addition of a fourth cognitive competence, namely emotional regulation, to promote emotional and intellectual growth. In this perspective, EI acquires a different forward-looking view; it is defined as a set of cognitive skills for processing emotional information, concerning both personal and interpersonal spheres. Ultimately, we can assert that the two authors conceive emotional intelligence as a cognitive ability or potential that interacts harmoniously with the basic cognitive functions of individuals, being not particularly influenced by cultural differences. In subsequent models of EI, which will be described below, the authors tend to systematically replace the term emotional ability with emotional competence. In common usage, the term competence refers to possessing the necessary requirements to adequately perform a particular task. These requirements correspond to having qualities (ability), learned skills, knowledge, and behavioral capabilities. For Goleman, for example, emotional intelligence coincides with perseverance in achieving a goal, the ability to motivate oneself, as well as predispositions toward empathy, hope, optimism, and assertiveness (Goleman, 1995). In his model of EI, Goleman adopts the definition of emotional competence proposed by Boyatzis, described as the ability to recognize, understand, and use emotional information related to oneself and others that drives or causes effective or above-average performance (Boyatzis, 1982). This definition has taken on a very peculiar connotation over time, especially due to the close link established between EI and the workplace, as evidenced by Goleman's various works and collaborations (Boyatzis, Goleman, and Rhee, 2000; Goleman, Boyatzis, and McKee, 2002). The current version of Goleman's model identifies a set of specific competencies divided into four domains, defined as: • Self-awareness: awareness of one's own emotions and their use in decision-making; • Social awareness:

empathy and understanding of social relationships; • Self-management: control of one's emotions and adaptation to different situations; • Relationship management: management of social relationships (Boyatzis et al., 2000). Another useful definition of EI, which has certainly contributed to popularizing this construct, is that proposed by Dr. Reuven Bar-On. He states that Emotional Intelligence is a set of non-cognitive abilities, competencies, and skills that influence the ability to cope with environmental demands and pressures (Bar-On, 2000). While some researchers have focused on defining the competencies of emotional intelligence, others have examined its effects. Reuven Bar-On falls into the latter category, having been interested in non-cognitive competencies since the mid-1980s and developing a test that measures self-assessment of these competencies, called the EQ-i. This test evaluates five areas: intrapersonal (awareness), interpersonal (relationships), stress management (stress tolerance), adaptability (problem-solving), and general mood (happiness). The scholar also explains in his work how his approach is similar yet different from the assertions of Salovey and Mayer, stating that the latter focus their attention on a specific set of emotional abilities and a potential for behavior (emotional intelligence), while his interest lies in emotional and social functioning or behavior (intelligent behavior from an emotional and social perspective). Following the analyses conducted so far on the various definitions attributed to emotional intelligence, we have found that navigating the existing models of EI, with their profound differences, is far from simple. One way to organize and classify them is suggested by the authors Mayer, Salovey, and Caruso. According to the authors, we can classify the different models of EI through two theoretical divisions: Mixed Models, which include all those models that consider EI as a set of behavioral tendencies, variables, motivations, and affective traits considered relatively stable and not necessarily linked to intelligence, including the models developed by Bar-On and Goleman. In the second category, we find the Mental Ability Models, which include the theoretical framework proposed by Mayer and Salovey, where only cognitive variables and mental abilities are considered constitutive of EI (Mayer, Caruso, Salovey, 1999).

Epistemological Aspects of Emotional Intelligence

Good emotional intelligence would be a predictor of life satisfaction, leading to favorable outcomes in numerous areas such as family, school, work, and interpersonal relationships (Palmer, Donaldson, and Stough, 2002). To the extent that people are more emotionally intelligent, they would also have a greater likelihood of being happy and fulfilled, and of exhibiting more productive psychological adjustment (Pellitteri, 2002). Finally, it has been found that higher EI is significantly correlated with attachment style and parental warmth, with positive repercussions on family relationships (Mayer, Salovey, and Caruso, 1999). Starting from these statements, the need to implement interventions aimed at increasing emotional intelligence skills in individuals becomes evident. It is in this context that the growing interest of schools in EI develops. Emotional education is a topic that schools have been questioning for some time. More and more projects and activities have developed in response to the growing interest in this important theme, which has received sporadic attention for a long time. It is not difficult to assert that schools have long been contexts where little attention has been paid to emotions (Pellai, 2016; Cavioni & Zanetti, 2015; Elias & Harrett, 2006). However,

until recently, there was no perceived need to bring these aspects to light, nor was there a discussion about the necessity of a role for schools in developing emotional competence (Pellai, 2016; CASEL, Pampier, 2012). This task remained assigned to families, marginalized, and only in certain cases was it addressed as a response to specific problems (for example, in cases of bullying or performance anxiety), highlighting its educational value. Furthermore, in the past, academic performance was the focal point of the entire educational proposal in schools and the metric by which the quality of a student and a school community in general was measured (Cavioni & Zanetti, 2015). The premature classification of emotions in the educational scenario and their difficult measurement have influenced the understanding of teaching, which still remains anchored to methods used in the past. The debate over what should be taught in schools and what is truly useful is still open, leaving unresolved the question of what type of education should be adopted. The primary intent of scholars in every field is to focus attention on the need to develop educational processes that equally consider mathematical, linguistic, bodily-kinesthetic, artistic, musical, emotional, etc. components (Robinson & Aronica, 2015; Gardner, 1999). Schools have always been seen as a fundamental place for the development of students, as they allow them to acquire the basic skills necessary to face the different challenges of life. As a training agency, schools have a fundamental role to play in educating the new generation, promoting not only cognitive development but also social and emotional development. A school, and consequently teachers who accept the responsibility of teaching emotional education, recognize the importance and necessity of orienting their traditional teaching methodologies towards the development of students' emotional competencies, facing the difficult task of designing and implementing educational proposals centered on emotional development. Teaching emotional education is based on the construction of individualized paths that respond to the specific needs of individuals and the class group. In recent years, thanks in part to educational reform, interest in broader school curricula that help students develop their social and emotional skills has increased. Scientific research shows that possessing emotional intelligence and good social skills is often associated with success in many areas of life, including better academic and work performance. It is in this prospective vision that the legislative proposal No. 2782 of November 13, 2020, titled "Provisions regarding the experimental teaching of emotional intelligence education in schools of all levels," presented by Hon. Maria Teresa Bellucci, fits in. This proposal aims to introduce a curricular hour of emotional intelligence in schools of all levels to effectively combat bullying, educational poverty, school dropout, and other deviant phenomena, promoting the recovery of lost emotional vocabulary, improving relational climate among students and within the educational holding, among students, teachers, and families, enhancing learning environments, easing relationships between schools and families, and preventing cases of isolation and the early onset of pathologies among adolescents. We live in an increasingly globalized, technological world, but at the same time characterized by distrust in interpersonal relationships, experiencing anxiety in facing challenges, managing our emotions, and our behaviors. We are facing a real educational emergency, identified by the OECD, which proposes for the "Education 2030: the future of education and skills" project the development of sixteen skills grouped into five areas proposed by the CASEL

model, which advocates the SEL (Social Emotional Learning) approach. These socio-emotional competencies are important in life because they allow us to relate to and manage every situation. The five competencies are as follows: self-awareness, or the ability to recognize one's own emotions; self-regulation of one's own and others' emotional states; social awareness, or empathy, respect for others, appreciation, and valuing diversity; relationship management understood as the ability to communicate, give and ask for help, and cooperate; and finally, responsible decision-making, recognizing and addressing problems while analyzing one's own responsibilities. These resources are promoted equally among both students and teachers. In line with legislative proposal No. 2782, in recent years, several programs have been proposed to enhance the emotional skills of students and teachers, among which we find the proposal from the organization Collaborative for Academic, Social, and Emotional Learning (CASEL). Founded in 1994 in Chicago, it represents the leading international authority on SEL (Social Emotional Learning). This organization outlines two programs. The first program is the Emotional Intelligence workshop for teachers, which aims to provide teachers with resources to create a safe, satisfying, attentive, and productive school environment, as well as coping strategies for managing stress. The workshop provides teachers with in-depth information on the four emotional intelligence skills: perception, use, understanding, and management of emotions; and practical skills that leverage an emotional approach: they play a fundamental role in teaching, decision-making, classroom management, stress management, interpersonal relationships, and the overall quality of their lives; innovative strategies and tools to develop emotional intelligence skills: activities, simulations, and group discussions (Brackett, M.A., & Katulak, N.A., 2007). The second program concerns Emotional Literacy for students. Literacy promotes students' social skills, improving their self-awareness and awareness of others, empathy, and healthy communication. The program consists of six concrete and easily implementable phases. The phases must be followed in order, introducing a new emotion each week; the six phases are: introduction of the emotion of the week: the teacher asks students to associate an emotion with a personal experience, thus personalizing the learning experience for the students and connecting the emotion at both intellectual and emotional levels; drawings and personal explanations: the teacher asks students to interpret abstract drawings related to the emotion to encourage divergent thinking; associations with studied topics or the real world: the teacher educates students to experience the emotion from a different perspective, framing it both personally and socially; discussion with a family member about the emotion: this phase encourages family involvement in the school world and fosters good communication between students and their families; class discussion: this phase helps students embrace and understand others' perspectives; creative writing: students use their own ideas and personal experiences to think creatively and critically. In this phase, students are asked to write a text about the emotion of the week in relation to their experiences. This is a powerful means of expressing their emotional awareness (Brackett, M.A., & Katulak, N.A., 2007). A recent meta-analysis highlighted the effects of 82 SEL interventions that included follow-up measurements at various time intervals, from 3 months to 18 years after the intervention. The results demonstrate that even many years later, students who benefited from SEL showed fewer behavioral problems, less emotional stress, and significantly less substance use compared to

students who did not benefit from it. Similarly, students in experimental groups showed greater social and emotional competencies, a more positive attitude towards themselves and others, significantly better academic and work results compared to students in control groups, along with a considerable range of other well-being indicators (Taylor et al., 2017)

Fostering Emotional Intelligence Through Creative Thinking

Edward De Bono, the Six Thinking Hats Technique, and Lateral Thinking. An important theme to address in the landscape of emotional intelligence is the relationship between creativity and intelligence. In the 20th century, early studies on creativity placed it within the broader realm of intelligence, defining it as the ability to solve problems (Petter, 2010). An important contribution will be made by Guilford in defining the link between intelligence and creativity. According to the author, the heightened focus on objective measurements of intelligence has led to the undervaluation of other important aspects, including creativity. What Guilford believes contributes to explaining the structure of intelligence is the combination of three "dimensions": operations (understood as psychological processes found in cognitive activity), contents and materials, and products (Guilford, 1956). Creative thinking finds its full expression in the field of operations, as this area prioritizes the production of original ideas. Creativity today is the subject of interest in multiple fields of study, from educational, socio-cultural, and psychometric to neuroscience. When we talk about creativity, we refer to that psychological capacity present to varying degrees in every individual, and as fundamental life skills for individual well-being (WHO, 1992; 1993; 1999). It is a meta-competence applicable to different areas and, like any skill, can be enhanced through specific opportunities that favor its development or through specific training (Antonietti et al., 2011). It seems that even in the first three years of life, it is possible to stimulate creative behavior (Petter, 2010). The combination of these statements contributes to a particular focus on the development of creative thinking and how it differs from logical-rational thinking, which has characterized the school environment until now, prompting psychology to question what is truly meant by creativity. We can understand creativity as the process by which original and valuable ideas are generated. There are two other concepts to consider related to the concept of creativity: imagination and innovation. At the root of creativity is imagination, which is the ability to bring to mind things that are not present to our senses. Being creative means putting imagination to work. Creativity is applied imagination. Innovating means putting new ideas into practice (Robinson, 2017, p. 147). Being creative today means not only adapting to constant change but also finding innovative solutions to problems never seen before. A creative person is not an "infallible" person or one who always has the ready solution. On the contrary, it is a person who loves to experiment, to put themselves on the line, and who does not give up in the face of initial difficulties. For this reason, to nurture creativity, it is necessary to equip individuals with "responsible autonomy" and seek to "break down hierarchies." Stress and tension have been identified as major factors that negatively influence creativity production, but they are not the only ones; among these, we find the three Cs that inhibit creativity: control, criticism, and the clock. Teresa Amabile, a psychologist at Harvard Business School, speaks of the fundamental elements of creativity:

- Experience: it is not possible to do something creative without a certain level of expertise in a given field. For example, one cannot teach English to children innovatively without knowing English.
- Lateral thinking: according to Edward de Bono, it is the ability to look at things from a different perspective. While vertical thinking seeks to dig deeper or build higher, lateral thinking asks whether the starting point is the right one.
- Passion: creativity ignites when we do something with passion. When we create something for the sake of doing it and not for financial compensation or social recognition, our ability to do excellent work increases exponentially (Goleman, Ray, Kaufman, 2017). Furthermore, creativity, contrary to what was once thought, is not something one possesses innately at birth or not, but rather, like the abilities to read and write, it is learned over time and with practice. Similarly, adequately developed creativity allows for a wealth of ideas and diverse strategies across multiple areas. Despite this assertion, in formal contexts, the development of creative skills is not imparted on par with other academic disciplines. Schools are increasingly committed to achieving the full development of students in terms of cognitive and non-cognitive skills, abilities, and competencies, but creativity tends to take on a marginal importance, almost in opposition to the main task that schools propose, which is to develop and stimulate logical-rational thinking in students. However, today it is urgent to recognize, value, and enhance creative thinking; in the top 10 compiled by the "World Economic Forum" on the skills that will be essential in the near future, creativity ranks third, right after the ability to solve complex problems and think critically. Until five years ago, in 2015, creativity was only in tenth place: this "leap forward" of seven places suggests that it will become increasingly indispensable for facing future challenges. This is why it is important to adopt different methods aimed at making learning a meaningful and motivating journey for students. Among the various methods adopted to enhance and stimulate creativity, one of the most original and effective is undoubtedly the "Six Thinking Hats" method devised by Edward de Bono. A scholar of creativity and the mechanisms of the mind, he believes that creative thinking is a skill that can be increased and enhanced; the Maltese psychologist and physician, in fact, applying creativity to the business world and linking it to corporate competitiveness, defines it as "the ability to think and act differently that can be systematically and deliberately developed by anyone who wants to apply the principles of lateral thinking" (de Bono, 1994). This method serves as a model for exploring different perspectives on a situation or for solving a complex challenge. Often, when faced with a problem, we focus on a single solution, the most probable one, and fail to broaden our perspective towards other possible solutions, which may seem improbable, bizarre, or "illogical." The scholar, through the metaphor of the six hats, teaches how to approach problems by adopting different viewpoints and proposes six different perspectives from which an idea can be generated. Edward de Bono's reflection starts from the way we approach problematic situations, often considering only one point of view and thereby reducing possible solutions. He proposes an exercise to tackle problems from different angles. In practice, each child assumes defined roles to express their positions, step out of their prejudices, and consider alternative viewpoints; they do this by wearing a hat of a particular color. The white hat is neutral and does not express any judgment; the blue hat represents rationality that establishes the rules of the game; the black hat is the devil's advocate and

highlights the negative aspects of everything; the yellow hat is the angel's advocate that points out the positive aspects; the red hat represents emotions and feelings; the green hat, finally, indicates creative outlets, new ideas, analyses, and improvement proposals, unusual visions. To find truly innovative solutions, therefore, one must step outside predetermined frameworks, question supposed certainties, and rely on novel associations of ideas. Ultimately, we can observe how creativity is an area of interest within the educational dimension, in which schools can play a decisive role in the development of students. Creativity in schools should be understood as a resource to promote critical learning, necessitating and requiring the reworking of educational experiences undertaken. It should represent for the student a way to better restructure situations, even the most problematic ones, placing themselves in an observational position that draws inspiration from alternative visions. Finally, but no less importantly, creativity in schools must represent an essential factor for building the well-being of children and adults.

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