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MENTAL MODELS AND ORGANIZATIONAL PERFORMANCE: THE CONTRIBUTION OF NEUROSCIENCES AND PSYCHOSCIENCES IN THE ANALYSIS OF BEHAVIORAL

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ABSTRACT

Adapting organizations to the hyper-competitive scenario implies transforming perceptions and creating groups to generate solutions to deal with everyday challenges. This adaptation is achieved through complex sets of mental, motor, perceptual, affective, symbolic, and social operations that influence the performance of individuals. This situation can be analyzed with input from Neurosciences and Psycho Sciences encompassing the understanding of the phenomenon from conscious and unconscious mental processes. This article sought to highlight, through a literature review, how mental models and cognitive structures can influence the action of individuals and how the behaviors involved in this process can affect the performance of organizations. When relating mental models, brain structures, psychological types, and archetypal profiles, it was discovered that the study of behavioral patterns could use an interdisciplinary perspective, which makes it possible to look at the phenomenon, in the organizational context, through a systemic view.

INTRODUCTION

Organizations have been experiencing challenging times in recent decades. This observation considers the fact that, although the corporate environment has not - at any time of its existence since the early days of industrialization – failed to be affected by technological and social transformations, the development of information and communication technologies and the intensification of competition as a result of globalization, which occurred at the end of the twentieth century, increased the demand for performance and quick results. The race due to competition and the best performance in the corporate environment characterizes a scenario called by Lipovetsky (2004, pp.62-63) as hypermodern, in which the "growing ascendancy of the market and financial capitalism has put in check the long-term state visions in favor of short-term performance, of the accelerated circulation of capital on a global scale, of economic transactions in ever-faster cycles." In this scenario, the rapid emergence and renewal of knowledge have made obsolete, at an unimaginable speed, much of what is learned at any given time, which brings as a consequence individuals who find it difficult to cope with a continuously changing reality.

Therefore, adapting to this reality implies transforming perceptions, creating associations, and processing new information to generate solutions to the new challenges that present themselves daily. (Araújo, 2013; Vitorino and Piantola, 2009; Malvezzi, 2008). This adaptation is achieved through complex sets of mental, motor, perceptual, affective, symbolic, and social operations that will influence the performance of individuals in the organization. Malvezzi (2008) mentions that this performance results from the influence of skills, motivations, and quality standard that is expected as a result and highlights that the skills involved in this process are not restricted only to cognitive skills but also involve psychological processes. However, addressing the psychological aspects in understanding the action of individuals in organizations implies entering into a context of analysis in which the concept of subjectivity starts to have a relevant role in understanding human actions because, as Goulart (2007) states, the man is a social and historical being and should be understood in his visible (behavior), invisible (feelings), singular (individual) and generic (collective) expressions, perspectives that are synthesized in the idea of subjectivity. This understanding is corroborated by Ziemer (1996, p.14), who considers that organizations are not only social structures governed by rationality, but also constitute "a cultural environment, which has

both patent (visible, superficial) and latent (invisible, deep) dimensions." Another possibility of analysis of the behavior of individuals in organizational contexts, which adds to this psychological "bias," involves the understanding given by Neuroscience that embraces the biological perspective involving mental processes, both those that act at a conscious and unconscious level. In this aspect, there are several possibilities of analysis about the behavior and performance of individuals in corporate contexts and, in the present article, the aspects that relate them to individual beliefs and psychological typologies will be explored, seeking to exemplify how mental models and cognitive structures can influence the actions of individuals and how the behaviors involved in this process can affect, consequently, the performance of organizations. It is considered that such analysis can contribute to the understanding of the importance of understanding mental processes in a scenario characterized by Bauman (2011) as a "liquid time" - in which the world does not stand still or maintain its shape for long and social structures dissolve faster than the time it took to shape them - and defined by Araújo (2017, p. 64) as hypercompetitive since, "due to the intensification of competition and the constant changes in the productive dynamics, [which] has led organizations to seek differentials," one has moved "from an organizational reality marked by the rationalization of work and the execution of routine tasks to a scenario in which mass production is no longer the competitive differential and innovation has become the ideal pursued by organizations."

METHOD, RESULTS AND DISCUSSION

Mental models : In a broad definition, mental models can be understood as the process by which individuals make sense of context, i.e., a process of meaning construction. A more specific definition, however, can be found in Wessling (2017, p.37), who, based on Zanelli*et al.* (2014), considers a mental model as an "organized structure of knowledge, captured through individuals' perceptions, information, motivations, and belief system that assign meaning and value to objects and social interactions." According to the author, there is no consensual definition of the term, a condition seen in her studies that presents different approaches to this term. This paper is interested in understanding the theme from Carol Dweck's point of view, an American psychologist who sought, in her research, to demonstrate the power of mental models – she called them mindset – understood as the beliefs that individuals have about themselves and that influence their personality:

> My work is part of a tradition in psychology that shows the power of personal beliefs. We may or may not be aware of these beliefs, but they have a strong influence on what we want and our chances of getting it. This tradition also shows how changing individual beliefs, even the simplest ones, is capable of producing profound effects. (Dweck, 2017, p. 9).

According to the author, the opinion that an individual adopts about himself profoundly affects how he lives and has the power to change his life because human qualities, aptitudes, and intelligence are not immutable and can be developed through one's effort and interest in changing. This condition, which was verified by the research developed by Dweck (2017), allowed him to identify two types of mindset: the fixed mindset and the growth mindset. People who have the fixed mindset, according to the author, believe in determinism (what is, is, and that is it!) and seek to thrive in what is safe, not liking to expose themselves to situations in which there is a risk of failure or of not consolidating the image they have of themselves with others. For individuals who have this type of mental model, success consists of proving that one is smart or talented, and effort is seen as a bad thing because if one is smart and talented, there is no need to make an effort to achieve something. Growth mindset individuals, on the other hand, are interested in their improvement. They seek to open themselves up to learn something new and to develop themselves. The effort is seen as what makes them smart or talented and failure for people with this type of mental model means not growing, not

achieving the things they value, and not fully realizing their potential. For each type of mental model, the perception of failure and effort have, therefore, different perspectives: for individuals with a fixed mindset, failure can become a permanent and fearful trauma because it means lack of competence or potential – since everything revolves around the result – and the need to strive is related to incompetence. However, individuals with a growth mindset see failure as a painful experience, but it does not define them, and it is seen as a problem that must be faced and from which lessons must be learned. The effort is also understood from a growth perspective, for it is through this that new competencies can be acquired. According to Carol Dweck, all people are born wishing to learn. The author cites, to support this understanding, the example of babies who daily conquer new skills such as learning to walk and talk: they do not worry about making mistakes or humiliating themselves, because they walk, fall, get up and move on, without thinking that the effort of trying is not worth it. However, Dweck (2017) points out that it is something in the individual's journey toward maturity that can change this model of behavior by consolidating in some people a fixed mindset that may be occasioned by the desire not to expose themselves to the risk of having their beliefs about themselves shaken. The author's findings lead her to conclude that an individual's opinion will profoundly affect how he will conduct his life because personal beliefs have the power to transform the mental model that governs him. It is because mindsets are an essential part of personality and can be modified. An important observation she emphasizes is that everyone has both elements and can have them at two different levels: "I may think that one's artistic ability is immutable, but that one's intelligence can be developed. Alternatively, that one's personality is fixed, but one's creativity can develop. The main point of this understanding is that "whatever mindset a person adopts in a particular area, that will be what guides them in that area." (Dweck, 2017, p. 56).

In the organizational context, Carol considers that the type of mindset an individual adopts will be responsible for influencing his or her conduct as a manager and the fate of the organizations. The author characterizes a manager with a fixed mindset as an individual who relies only on his talent, lives in a world where some individuals are superior and others inferior (and he falls, of course, into the group of superiors); instead of building a solid team, he prefers subordinates who execute his brilliant ideas and constantly needs to assert his superiority, the organization being nothing more than a platform for this purpose. This type of mental model causes this individual not to recognize and, therefore, not correct his deficiencies, tend to self-proclaim his talent, and even achieve career success, but this ends up not being sustained for long. Managers with a growth mindset will be responsible for promoting "learning organizations" because they always seek to improve themselves, elect a culture of growth and teamwork, and believe in their own and other people's potential and human development. This type of mental model does not try to prove that they are better than others but surround themselves with more capable people and progress in their career with a confidence based on facts and not as a result of fantasies about their talent, since they believe that leadership is made of growth and passion, not brilliance. Extending the exemplifications presented by the author in the organizational context, it is possible to see how these mindsets act through different analyses. An interesting study on how mental models influence the actions of managers can be seen in the research done by Jiatao Li and Yi Tang (2010) in Chinese organizations. This work related leader's overconfidence to company risk-taking and examined the depth of influence these managers have on interpersonal relationships in the organization. A total of 2,790 leaders from various manufacturing firms in China were assessed, and the research was designed based on Upper Echelon Theory (Hambrick and Mason, 1984) and Behavioral Decision Theory (Edwards, 1954). A positive relationship between a leader's arrogance and risk-taking by the firm appears to be more significant when the leader had a greater depth of influence in the organization's interpersonal relationships when the firm faced munificent but complex markets; had less inertia and more intangible resources; had a leader who also chaired the board, and had a leader who was not politically appointed. (Li and Tang, 2010).

Arrogance refers to an exaggerated belief about one's own judgment that can deviate from objective standards (Hayward and Hambrick, 1997). Overconfidence occurs when, for example, an individual's certainty about his or her predictions exceeds the accuracy of those predictions. (Hilary and Menzly, 2006). By associating the beliefs and overconfidence of leaders referred to as arrogant - as in the mindset model proposed by Carol Dweck (2017) - it is possible to identify fixed mindset characteristics such as the fact that leaders with overconfidence tend to influence people according to their principles to reaffirm the confidence they have in themselves. Jiatao Li and Yi Tang's (2010) study compiled causes and consequences of leadership overconfidence, conceptually and empirically, demonstrating that overconfident leaders:

- Build actions comprehensively, leading to faster, less comprehensive, and more focused decisions on strategic actions of most significant interest;
- Are more likely to lead their ventures to failure;
- Pay higher premiums during acquisitions;
- Overconfidence has been positively associated with pioneering.

Behavioral finance researchers have also begun to examine the sources of overconfidence in leaders and its consequences for decision-making and financial performance of investments in the firm. In these researches it was found about leaders with a fixed mindset:

- They tended to distort their investment decisions to rely more on internal rather than external financing (Malmendier and Tate, 2005);
- Previous successful forecasts led to leader overconfidence, and that overconfident leaders were less accurate in their subsequent forecasts (Hilary and Menzly, 2006);
- Are more likely to issue overly optimistic managerial earnings forecasts (Hribar and Yang, 2006);
- Were making overpaid acquisitions by target companies and were more at risk-taking on value margin-destroying mergers and acquisitions.

The fixed mindset of leaders that reflects a lack of overconfidence can lead to serious organizational consequences. For this reason, leaders must find a balance in self-confidence by developing a growth mindset. However, why are people different? Why do some consider their qualities to be carved in stone and thus immutable, and others believe that these qualities can be cultivated? Dweck (2017) points out that scholars viewed this question in two ways:

Some claimed that there was a solid physical basis for the differences, which made them inevitable and unchangeable. Over time, these alleged physical differences were added cranial protuberances (phrenology), the size and shape of the skull (craniology), and, today, genes. Others pointed to the great diversity of each person's background, their experiences, training or ways of learning. (Dweck, 2017, pp.12- 13).

Although there is, according to the author, no consensus on this issue, it is considered interesting to deepen the reflection on the influence of mental models on visible behaviors from a Neuroscience perspective and to understand how the biological brain structure is configured and can help in the development of research on this topic in the organizational context.

Brain configurations and mental models : The influence of emotions on human behavior is a topic already addressed by science. However, when the subject is the cerebral mechanism of stimulation and behavioral blockage caused by emotions, the scientific literature is still restricted in an organizational context. Reinforcing the scarcity of literature on this subject, Mograbi (2015) highlights the importance of highlighting how the evolutionary process, which engendered the human species, was able to endow individuals with a highly developed and specialized brain in terms of its structure and capable

of performing a set of equally complex functions called mind. In a very simplistic way, the brain can be divided, as explained by the neurophysiologist John Eccles (1979), into two hemispheres: the left, which is responsible for all rational, verbal, and language abilities, and the right, responsible for visual and spatial potential. However, this definition is taken as a macro-vision given the complexity and non-exclusiveness of the functions in terms of hemispheres when it comes to the whole brain physiology. In this sense, other approaches are used to help to understand better this structure, one of them being the Triune Brain theory, proposed by Paul MacLean, which considers that evolutionarily older brain structures are related to newer ones. By this understanding, the human being would be capable of highly controlled behaviors on the one hand, and, on the other hand, extremely instinctive reactions that lack conscious control and can demonstrate deep "animality". MacLean (1970) highlights three brain regions that were incorporated into humans as the species evolved: a) the reptilian brain, responsible for genetically determined stereotyped behaviors and parasympathetic – involuntary – functions; b) the limbic brain, which acts in the regulation of emotions, motivations as well as some instinctive functions, also encompassing memory and learning; and c) the neocortex, responsible for complex analysis of internal and external stimuli, rationality, language, task resolution and flexible behavior control (Figure 1).
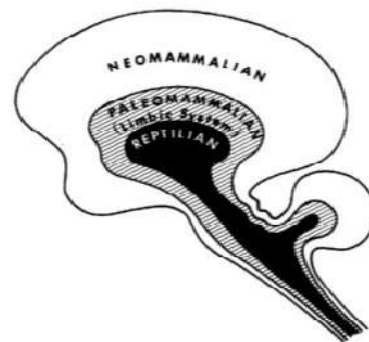
Source: MacLean (1982, p. 291)

Figure 1. Cross-Section Representation – TriuneBrain

According to this approach, throughout the evolutionary process, the human brain was developing layers, structuring that is exemplified by Garcia (2013) as "an old house to which rooms were being added." These new rooms or layers became responsible for distinct areas and interconnected by pathways established by neurons. If one considers a timeline from the first, oldest, to the last and most current of these regions, one has:

- Brainstem: responsible for the body's vital functions, such as breathing and maintaining blood pressure, referred to by Mario Schenberg (1990) as the reptilian brain.
- Limbic System: region in charge of managing emotions, memory, and learning.
- Basal ganglia, thalamus, and hypothalamus: they act in motor coordination, transmission, and reception of sensory information, as well as in the automatic activities of the body.
- Cerebellum: its function is to coordinate movements based on information provided by the brain about the limbs.
- Cortex: the outermost layer of the brain, which is divided into four lobes (frontal, parietal, temporal, and occipital). This region provides exclusively human capacities, such as, for example, consciousness, and it is here that the control over impulsiveness is exercised due to structures that make judgment and strategic reasoning possible.

About this evolutionary process, Schmidek and Cantos (2008, p. 181) mention that:

Vertebrates had traveled a long evolutionary road before their brain structures reached the dimensions, degree of complexity, and rich potential for perception, conscious integration, and

action that characterize human beings. The brain continues to undergo constant changes triggered by previous events or because of intrinsic modeling.

The authors point out in their understanding that for an orchestrated organic synchronization to occur, emotional processes are fundamental and that the Neuro Dynamics of emotions and cognitive processes are capable of formulating new explanatory categories at the neuronal level. This phenomenon, according to them, can occur either through the evolutionary process, responsible for adding new and more complex neural structures or through short-term plastic modifications, enriching the functionality of such structures.

Thus, beyond the ability to process information, brain plasticity is an important characteristic that allows humans to "learn new pathways, establish different connections of neurons, and create reaction scripts from experiences and stimuli." (Garcia, 2013 p.21). Due to this adaptive characteristic of the central nervous system, it is possible to modify its functional and structural organization and achieve neurochemical and synaptic mutations. These modifications can happen due to alterations, whether they are in the external or internal environment (Oda*et al*, 2002). Studies such as those by George Ojemann and Eric Kandel corroborate that the brain reacts to the slightest external stimuli and that the new paths learned are unique for each individual. In this way, it is possible to state that:

> The environment provides stimuli/information picked up by sensory receptors and converted into electrical impulses, which are analyzed and used by the central nervous system to control vegetative, motor, and cognitive responses. These responses constitute the behavioral patterns that act upon and modify this environment. (Ferrari *et al*, 2001 p.191)

The nucleus accumbens, part of the limbic system, registers positive sensations and is responsible for the pleasure circuit. This circuit, in turn, encourages the search for satisfaction. Research conducted and led by Professor Carmen Sandi of the EcolePolytechnique Fédérale de Lausanne (EPFL) and Dr. GediLuksys of the University of Edinburgh found results correlating performance with the ratio of two neurotransmitters in the nucleus accumbens. The amygdalae, in turn, are another source of motivation in addition to pleasure seeking. They react to stimuli through impulses and have the ability to establish a kind of cause and effect. Paraphrasing Elizabeth Phelps (2004), the tonsils are responsible for the structure: "if I do this, that may happen."

The discussions so far demonstrate the brain's property of adapting, even unconsciously, to situations. It corroborates the ability to change the mindset proposed by Dweck (2017), because if it is possible to create new neural pathways from previous experiences, it is also possible to transform the way of perceiving the world, the way of leading teams that is: it is possible to expand the mental models. Furthermore, these models work through cognitive maps, which are responsible for the way people interpret the world. The cognitive map refers to "the process by which an organism represents the environment in its own brain, an activity that most contemporary brain scientists seem to agree is one of the brain's primary functions. Maps do not consist of an exact copy of the environment but rather a simplified representation or model of reality that provides an approximate picture of that reality (Laszlo *et al*., 1993). Weick and Bougon (1986) complement that maps are not static representations of the environment; they are constantly updated from the subject's experiences. The need for continuous adjustment to changes in the context requires incorporating new information and, therefore, the learning process is reconstructing the maps. In the organizational field, two phenomena stand out due to the number of studies that use cognitive mapping techniques: Strategic thinking and formulation; the second is the survey of maps to analyze technological innovation processes (Bastos, 2002). Bastos (2002) describes three types of concept maps:

- Identity maps: how people perceive categories of their languages strongly influence the world. To do this, they use processes such as evocation, recollection, and association.
- Categorization maps: individuals have to examine successively and order objects to search for hypothetical common attributes. To do this, they use primarily categorization.
- Causal maps: in a world of hypothetical data, individuals make causal inferences that allow for the interpretation. For this, they use primarily explanation and justification.

The concept map to be used by the individual varies according to the person's mental model and how he or she preferentially evaluates and interprets facts. However, despite individual preferences, there is no fixed concept map for everyone. Bastos' (2002) studies indicate that although there is an individual predisposition in using the concept map – according to the mental models – the demands and situations to which the subject is exposed also influence the form of "mapping" of the facts.

Typologiesapplicable in studiesabout mental models: As pointed out by Esperidião-Antônio et al. (2008), the interest in understanding mental processes can be identified in the pioneer investigations that took place at the beginning of the last century, carried out by Sigmund Exer, Sigmund Freud, and Israel Waynbaum [1], when studies about neuronal networks and possible structures that could compose the emotional circuits began to be developed. Since then, the advance of Neuroscience has enabled the construction of hypotheses to explain emotions and the basis for understanding how individual beliefs can influence people's behavior in various contexts, including the organizational environment. The relationship between physiological and chemical processes and mental processes, whether conscious or unconscious, has been pointed out by Sigmund Freud since the 19th century. As Scorza and Cavalheiro (2013) mentioned, in 1880, Freud had already indicated that the brain could change its own structure. This researcher was the first to propose a fundamental law of neuroplasticity. Besides this aspect of the investigation, which has been widely developed in Neuroscience, other areas of knowledge, such as Psychology, Psychiatry, and Psychoanalysis, have made efforts to understand brain processes from the behavioral perspective. In this sense, some classifications and typologies have been developed by these areas to understand what is underlying the mental processes involved in the several ways individuals react to situations experienced in the social context. Besides this strand of investigation, which has been widely developed in Neuroscience, other areas of knowledge, such as Psychology, Psychiatry, and Psychoanalysis, have made efforts to understand the brain processes from the behavioral perspective. In this sense, some classifications and typologies have been developed by these areas to understand what is underlying the mental processes involved in the several ways individuals react to situations experienced in the social context

Some typologies and taxonomies can be adopted to explain the different attitudes that individuals demonstrate in their activities, helping to understand the influence of mental processes and leading to possibilities of conscious intervention by the subjects to reorient their actions. One of these typologies – called Psychological Types – was developed by the Swiss psychoanalyst Carl Gustav Jung by identifying and describing a certain number of basic psychological processes linked together in various combinations and sought to determine an individual's character. According to Jung (1991, p.19):

> when we observe the unfolding of a human life, we see that the destiny of some is determined more by the objects of their interest and that of others more by their inner, subjective selves. Moreover, since we all lean more to this or that side, we are naturally inclined to understand everything from the viewpoint of our own kind. Jung (1991, p.19).

Based on this understanding, Jung (1991) identified two psychological attitudes and four mental functions responsible for developing a psychological typology. According to this researcher,

attitudes are predispositions that the individual has to act in a certain way, and they can be classified into two types: Introversion and Extraversion. According to Jung (1991), all individuals have both, though one may be conscious and the other not, and both balance each other, so no individual is one hundred percent introverted or extroverted. For him, these terms would indicate a tendency, with individuals being more introverted or more extroverted depending on how they react to the influence of environmental factors (external factors) and subjective factors (factors internal to the subject):

> The introvert behaves abstractly; it is always concerned with withdrawing libido from the object to guard against an overpowering of the object. The extrovert, on the contrary, behaves positively toward the object. He affirms its importance because he constantly orients his subjective attitude by the object and reports to it. (Jung, 1991, p. 316).

The definition of attitudes proposed by Jung (1991) is complemented by the concept related to the psychological functions, which, according to the author, are also constituents of the personality and can be identified in four types: thinking, feeling, sensation, and intuition:

> The conscious psyche is a kind of apparatus of adaptation or orientation, consisting of many different psychic functions. As basic functions, we can list sensation, thinking, feeling, and intuition. By the concept of sensation, all perceptions through the sensory organs; thought is the function of intellectual knowledge and the logical formation of conclusions; by feeling, the function that evaluates things subjectively; by intuition, the perception by unconscious ways the perception of unconscious contents. (Jung, 1991, p. 477).

Jung (1991) considers that the psychological functions present an internal consistency, which is responsible for establishing abilities, aptitudes, and tendencies in the individual's relationship with the world and with himself, presenting itself more predominantly than the others in each person. For him, thinking and feeling are called rational functions because they use information processing and judgments. On the other hand, sensation and intuition are called irrational functions because they are based on the perception of the concrete. According to Jung (1991), this typology should be considered a kind of orientation to understand better individuals and the relationships established among them. It should not be a scheme used to label people. For the author, the typology should be seen as a general disposition observed in individuals, characterizing them only in terms of their interests, references, and abilities. Another strand of studies on typologies, which it is worth highlighting, can be found in the work of French psychologist Yves Durand (1988), who developed an application based on Gilbert Durand's (1997) theory. This theory, called Anthropological Structures of the Imaginary, aimed to systematize a dynamic and structural classification of images considering the configurations of symbolic images from archetypes. This perspective of analysis, which considers the symbolic bias to characterize the way individuals deal with existential angst, departs from the theory proposed by Gilbert Durand that, according to Cemin *et al*. (2001, n.p),

> is organized under the method of convergence, that is, the symbols (re)group themselves around organizing nuclei, the constellations, which are structured by isomorphisms, which refer to the polarization of the images; it indicates that there is a close relationship between the gestures of the body and the symbolic representations. The symbols are bonded because they are developed from the same archetypal theme because they are variations on an archetype.

This theory was systematized empirically in the field of psychology by Yves Durand through the proposition of the Nine Elements Archetypal Test (AT.9), a projective test that allows, through a graphic representation, associated with a narrative and a questionnaire, "to identify the mythical micro-universes of individuals, which enables to evidence deep data and understand how they react to external interference, denoting what permeates their actions in everyday life" (Araújo 2013, p. 41). As presented by Estrada (2002), these micro-universes can be classified as (a) heroic micro-universe, whose structure is centered on heroic action; (b) mystical micro-universe, in which an atmosphere of rest is portrayed; (c) synthetic micro-universe, where the heroic and mystical sequences are organized around the scheme of return; and there are also the negative forms of imaginary universes, in which there is the failure of the hero or other pessimistic conceptions, and the Universe of non-structuring, in which no connection between the elements is presented.

This typology has proven useful, especially in the organizational context, because, according to Chanlat (1996), this is a place conducive to the emergence of the symbolic considered as a particular space of human experience. After all, it reflects society and plays a considerable role in the lives of human beings. Araújo (2013, 2017) was one of the researchers who used this instrument to characterize the profile of decision-makers in organizational contexts and has sought to associate this mode of coping, which characterizes the mythical profiles of AT.9, to the brain structures of fight and flight, bringing the study of the imaginary closer to the neurobiology of emotions.

Other typologies that apply successfully to the organizational context by a comprehensive reality system are highlighted by Fernandes (2021). According to the author:

> This process of construction has been going on since the earliest systems conceived (such as the galenic description of human temperaments in phlegmatic, choleric, melancholic, and sanguine types, for example) to the Big Five personality traits by numerous authors in the 1980s and what is now considered the Big Five. The Big Five personality traits, whose premise was initially proposed by Ernest Tupes and Raymond Christal (1961), developed into the dominant (and most scientifically tested) model for representing human behavioral tendencies. (Fernandes, 2021, p.18)

The Big Five Personality Traits, cited by the author, correspond, according to Dessen and Paz (2010), to a model developed between the 1920s and 1930s that characterizes five personality factors comprising: a) openness to experience; b) conscientiousness; c) extroversion; d) neuroticism (or Emotional Instability); and e) amiability, this being one of the most scientifically accepted and commonly used measures in Psychology to determine personality traits. This strand of analysis is not something recent in the context of science nor the scope of philosophers' inquiries. According to Araújo (2017), the concern with the individual's inner universe can be seen in Seneca - a writer and philosopher of the Roman Empire who lived from 4 a.C. to 65 d.C. The latter, by realizing that people are endowed with an inner space that is distinct from exteriority, draws attention to the existence of a non-palpable dimension that characterizes and influences human actions. In this sense, relating mental models, personality, and performance is a promising strategy to understand what underlies human relationships and analyzes the organizational performance from the perspective of individuals who work in organizations.

Conclusion

By relating mental models, brain structures, psychological types, and archetypal profiles, one realizes that the study of behavioral patterns can avail itself of an interdisciplinary perspective for understanding human personality that articulates to neuroscience contributions from both psychology and anthropology. This understanding can be associated with what Saiz and Amézaga (2005) mention when referring their analysis to Eric Kandel, 2000 Nobel laureate in Medicine, and the Swiss psychoanalyst Carl G. Jung. From Eric Kandel, the authors (2005, p. 96) recall that the next step in Neuroscience will be the unification of the study of behavior, the

science of mind and neuroscience, the science of the brain. This last step will allow us to achieve a unified scientific approach to the study of behavior. As for Carl Jung, Saiz and Amézaga's (2005, p. 96) extract, the "multiplicity of the empirical world rests on an underlying unity" and points out that the existence of undeniable causal connections between the psyche and the body are responsible for confirming this underlying unitary nature. In this sense, the authors conclude that

> The meeting of these two epistemological proposals promotes a revision of our cartographies about the brain-mind relationship through a path of interdisciplinarity, emerged from the research carried out in Neuroscience (Cognitive Neuroscience) and the field of Psychoscience (Analytical Psychology). Within the framework of Jung's proposal that "the separation of psychology from basic postulates of biology is purely artificial since the psyche of the human being exists in indissoluble union with the body" (Jung, 1937/1968, p.114), we are developing self-control called Psycho Neurosciences to contribute to the conception of a unified mapping of the brain-mind relationship. Our goal is to investigate from the patterns described by Neuroscience, Analytical Psychology, and Cognitive Psychology the existence of underlying common organizational patterns that influence how the personality and the world are organized, structured and processed of our patients. For this, we will start from the studies around the archetype concept by Stevens (2003), Hogenson (2003), and Knox (2003), and from the Neurobiological and Neuro Epistemological studies by Maturana (1996) and Varela (1988) to carry out, in the domain of Psycho Neuroscience, a revision of the notion of archetype that allows us to define it as a pattern of organization. (Saiz and Amézaga, 2005, pp. 96-97).

In the authors' understanding, this articulation will allow looking at the phenomena of life, the psyche, and the body through a systemic vision, thus contributing to a new perspective of analysis about the human being, an assumption with which the present work is aligned. Referring, finally, to the main objective of this article of relating mental models and organizational performance, the concept of brain plasticity is resumed, permeated by the theories of personality types and the understanding of Carol Dweck (2017) when she talks about mental models. According to the author, when people understand their mindsets, they recognize themselves and can reorient themselves, an essential condition in the current organizational context. Every day a new challenge is presented, and one cannot be content with yesterday's success thinking that it will be eternal. On the contrary, the capacity that one possesses today may not be sufficient or adequate for the new challenges that the liquid and hypermodern times characterized by Bauman (2011) and Lipovetsky (2004). This is also the case when individuals identify their psychological type and their mythical micro-universe. The perception of how the personality is structured and coping with existential angst can be used both for self-knowledge and to enhance individual aspects in the organizational context. However, it is worth reflecting on the limits of change in the case of mindsets. In the society of urgency, characterized by Aubert (2003) as a time in which subjects must always be ready and able to respond to challenges, individual identities, and the relationship they establish with time, influencing their way of thinking, being, feeling, and living, can lead to illness and depression. It is not new to see situations where the pressure for performance has negatively affected the subjects [2]

Neuroscience has shown that the brain forms new connections and "grows" when it learns new things. However, to continuously and intensely pursue this development is something that each individual must decide. Some individuals are satisfied with their fixed mindset. "If I know my talent and my capabilities, I know what my situation is, and I know what I can expect. Why give that up?" To this inquiry, Dweck (2017) states that if you are satisfied with it, you should stick with it. By presenting the two types of mindsets and the worlds that both create, the author considers that it just shows people that they have a choice and that what is important is awareness of this and knowing that it is possible to choose which of the two worlds the

individual wishes to inhabit. In the same way, Carol Dweck points out that having a growth mindset does not force the subject to wish to achieve a specific goal but informs him of the possibility of developing his capabilities, which depends on each individual to do it or not. In this sense, the author mentions that it should be noted that not everything possible should be changed because it is also necessary that each person accepts their imperfections, especially those that do not harm their own life or that of others, be it an individual or an organization. For her, each one has to decide whether the change is appropriate or not: "Has the change towards the growth mindset solved all my problems? No. But I know that thanks to it, today I have a different life, a richer life. And I know that I am a more alive, more courageous, more open person because of it." (Dweck, 2017, p.275).

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