PATH

Prevention of **A**ddiction **TH**rough emotional education

PATH Model

Index

O2.1: theoretical part - Subtask leader: SITD

O2.1.1 (SITD): neuroscience explanation of substance-driven addictions, and their correlation with self-control abilities and emotion regulation

As for the majority of actions that identify one individual's life, also complex behaviours such as the fulfilment of a desire, self-control and addiction depend on (or, at least, they are strongly influenced) by the spatial-temporal modulation of specific neurotransmitters released within the brain.

Neurotransmitters and circuits involved in pleasure

Among these substances, one of the most important to keep unaltered the fragile equilibrium between desire, pleasure and self-control is *dopamine*, a neurotransmitter involved in several processes and activities (i.e. the crucial role that dopamine carries out in voluntary movements planning and regulation, see Gepshtein et al., 2014). This substance is, however, very important for the regulation of adaptive behaviours, such as eating, drinking, reproduce: when an individual realize such adaptive functions, his/her brain create as a reward a psychological state of gratification, *pleasure*, that is mediated by dopamine itself. In this sense, pleasure can be seen as an evolution's trick to motivate an individual to pursue rewards necessary for her/his fitness even if, in the overstimulating environments, full of possible pleasure sources, that characterize modern societies, its excess can translate into maladaptive behaviours such as addictions (Berridge and Kringelbach, 2015).

First of all, it is important to highlight that pleasure rewards involve several psychological components: liking, wanting (motivation process of incentive salience), and learning (Pavlovian or instrumental associations). Over the last decades, results from neuroimaging studies shown that different kinds of pleasures/rewards (such as food, sex, addictive drugs, and even music, art, feelings for loved ones) activate similar brain patterns. These patterns shared reward networks (referred to also as *reward system,* see Fig O2.1.a) that include anatomical regions of prefrontal cortex, portions of orbitofrontal, insula, and anterior cingulate cortices, as well as subcortical limbic structures such as nucleus accumbens (NAc, an area found in the ventral striatum that is strongly associated with motivation) and amygdala.
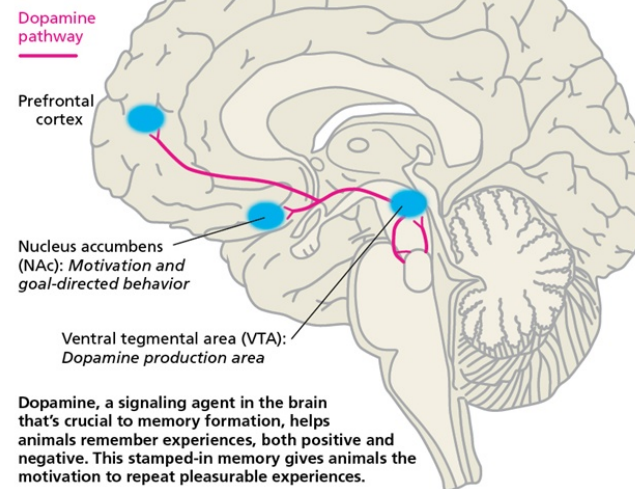
Fig O2.1.a: main structures of the brain reward system (credits Alison Mackey/Discover)

In particular, it is possible to identify two distinct pathways within the reward system: the *mesolimbic dopamine pathway*, that connects the ventral tegmental area (VTA) that produces dopamine to the nucleus accumbens; the *mesocortical pathway*, that travels from the VTA to the cerebral cortex, in which it forms extensive connections with the frontal lobes (Berridge and Robinson, 2003).

From pleasure to addiction

A pleasure-related increase of dopamine in the human brain circuits is given by substances but also by behaviours: evolutionally, pleasure is linked to actions that enhance an individual's (i.e. food) or species' (sex) chance to survive.

More recently, humans found other ways in which they could feed the *reward system*, leading to a dopamine release: psychotropic substances (both legal, such as alcohol and nicotine, or illegal, such as cannabis, cocaine, oppioid-derived drugs) or complex behaviours, such as gambling. However, it is clear that not all the people that experienced these kinds of pleasures develop an addiction in their regard, exactly like only a relatively small percentage of people develops food or sex addictive behaviours.

The first step in developing addiction is abuse: with substance abuse, the brain adapts to the regular release of dopamine and causes a tolerance, meaning individuals have to use more and more of a certain substance/behaviour to achieve the same level of pleasure and sense of wellness given by the first consumption.

The *natural* release of dopamine isn't as quick and intense as it is with drugs and alcohol, and the using addictive substances with regularity makes it even more difficult to experience naturally occurring pleasures.

Another step that occurs during the development of addiction is compulsion: this happens when the pleasure from a behaviour or a drug is no more present, but there is still the desire to repeat consumption, regardless of the consequences.

In this optic, addictions could be seen as disorders that progresses from impulsivity (positive reinforcement) to compulsivity (negative reinforcement). The construct of negative reinforcement is defined as drug consumption that alleviates a negative emotional state.

Addiction is characterized, at a behavioural stage, by three phenomena: craving (preoccupation/anticipation), binge/intoxication, and withdrawal/negative affect. Impulsivity and positive reinforcement often dominate the first stages, driving the motivation for drug seeking, and compulsivity and negative reinforcement dominate the terminal stages of the addiction cycle.

The negative emotional state that drives such negative reinforcement is hypothesized to derive from dysregulation of key neurochemical elements involved in reward and stress within the basal forebrain structures involving the ventral striatum and extended amygdala (Koob, 2009).

In fact, the brain of an individual that undergoes to an addictive behaviour shows both structural and functional changes, and this leads to a progressive loss of *self-control*, meaning the ability of manage impulses in order to achieve higher (or time-dislocated) goals: in this context, the consumption behaviour lost the features of a "choice behaviour", shifting to a "commitment behaviour". That's why, and we will discuss later, self-control empowerment could be an effective tool in addiction prevention.

Addictive drugs induce adaptive changes in gene expression in brain reward regions, including the striatum, representing a mechanism for tolerance and habit formation with craving and negative affect that persist long after consumption ceases. These neuroadaptive changes are key elements in relapse.

Not only genetics: the important role of risk factors

During the last decades of addiction research several genes that are involved in the development of addiction, have been identified. However, it is important to highlight that genetic changes are directly responsible only for an increased risk of developing addictive behaviours: family, adoption, and twin studies revealed that an individual's risk tends to be proportional to the degree of genetic relationship to an addicted relative: the closer is this relationship, the higher is the risk (Ducci and Goldman, 2012). Moreover, several studies have shown that addictions are moderately to highly heritable: heritabilities of addictive disorders range from 0.39 for hallucinogens to 0.72 for cocaine.

An important view of the shifting balance in importance of genetic and environmental influences has been obtained from the developmental perspective: the Virginia Twin Study (Simonoff et al., 1997), for instance, revealed that in the early adolescence the initiation and use of nicotine, alcohol, and cannabis are more strongly determined by familiar and social factors, but the importance of these factors gradually declines during the progression to adulthood, when the effects of genetic factors on the risk of developing problems of abuse/addiction become maximal (to decline gradually again with later aging). Therefore, when designing a preventive approach to these issues, it is important to keep in mind tha, at a certain point within an individual's lifetime, environment elements become crucial in the developing and maintaining of an addiction, at least in term of risk-increasing factors: the first of these items is the availability of the addictive agent. This availability is determined by culture, social policy, religion, economic status, and narco-trafficking, and of course it changes across time and space.

The home environment, especially during childhood, is another very important factor: parents or older family members who use drugs or misuse alcohol, or who break the law, can increase children's risk of future drug problems. However, parents aren't the only reference figures that children assume among their development, and in this optic also the scholastic environment plays a crucial role: friends and other peers can have an increasingly strong influence during the teen years. Teens who use drugs can persuade others to try drugs for the first time. Moreover, struggling in school or having poor social skills can put a child at further risk for using or becoming addicted to psicoactive substances. Even if all these factors are levelled off, there are some behaviours, directly related to the substance(s) use, that can increase the risk to develop an addiction: maybe the most dangerouse one, in this sense, is early use; research shows that the earlier a person begins to use drugs, the more likely he/she is to develop serious problems of abuse and addiction (Chen et al., 2009). This may be due to the harmful effect that drugs can have on the developing brain (see next chapter), and that's why is so important to think about preventive interventions in order to delay as much as possible teens' first exposure to this substances – both lecit and illegal- that could influence neurophysiological balance.

Another important risk factor for the development and maintaining of addiction over a substance is the consumption method, since harmacokinetics change the effects that substances (especially drugs) have on cerebral circuits: it has been shown that smoking a drug or injecting it into a vein increases its addictive potential, because both smoked and injected drugs enter the brain within seconds, producing a rapid (even if short) icrease of pleasure feeling. Scientists believe this starkly felt contrast drives some people to repeated drug taking in an attempt to recapture the fleeting pleasurable state.

So, it could be summarized that, as for other complex diseases (i.e. obesity, diabetes, heart diseases) addictions are influenced by a genetic background, but they are also strongly influenced by lifestyle and individual behaviours and choices.

That why it is so important to talk about a specific brain function, that could act as (together with…) as a protective factor against addiction: self-control, the ability – specifically expressed in human beeings – to avoid immediate, brief rewards (i.e. a box of french fries, a sigarette, a pint of beer..) if they could lead to long-term problematic situations.

Self-control and brain maturation

The different parts of the human brain have different rates of maturation, several studies that used neuroimaging techinques (see for example Toga et al., 2006) have shown: the brain systems responsible for the control of vital parameters (such as heart beating and breathing) and reflexes are obviously those that mature first, already at the fetal level. The deep, impulsive structures of the emotional brain follow; subsequently the centers and the pathways, largely cortical (therefore more superficial), which control and codify voluntary perceptions and movements. Postnatal brain maturation occurs above all these structures with thinning of neuronal circuits, extremely redundant at birth, mediated by processes of physiological cell death and synapse pruning: in general it is possible to say that the cerebral cortex undergoes to a decrease in grey matter during childhood and adolescence due to a process of clarification and pruning of neuronal circuits, that maximize their efficiency. For a sort of natural selection process, the less used synapses and neurons are eliminated and in this way the conduction of nerve signals within the most used functional systems becomes more precise, faster and more efficient.

The functional areas that mature last (around the age of 18-20 years old) those of the prefrontal cortex (cfr Fig. O2.1.b). These areas play a central role in the development of adaptive behavior and in the cognitive control of the tendency to impulsively implement behaviors – even if potentially dangerous or risky- when they are associated with an emotion or when they are linked to an immediate pleasure or reward. An important study conducted on a sample of subjects from 5 to 25 years old showed that from 10 to 20 years old the prefrontal cortex loses about 60% of the excitatory synapses; in the same region from 15 to 25 years old more than 90% of inhibitory synapses (i.e. the ones that are more responsible for cognitive behavioral control, or self-control) mature (Tau and Peterson, 2009).

On the contrary, unfortunately, similar neuroimaging studies (see Arain et al., 2013) demonstrated that the parts of the deep brain (amygdala and the nucleus accumbens) that mediate emotions such as anger, aggression, the pursuit of pleasure, the pleasure of risk, have a higher activity and reactivity in adolescents and (partly) in children compared to adults: therefore, the younger ones find themselves driving an emotional machine that is much faster and more powerful than the one that the adults drive with a much smaller braking system.

This explains some of the peculiar aspects of behavior in this age, such as high emotional reactivity, impulsiveness, underestimation of risks and pursuit of short-term pleasures, despite potential negative long-term consequences.

Many neuroimaging studies eloquently demonstrated these characteristic of brain development, which must be taken into great consideration within educational contexts, in particular during the ideation of preventive approaches for adolescents.
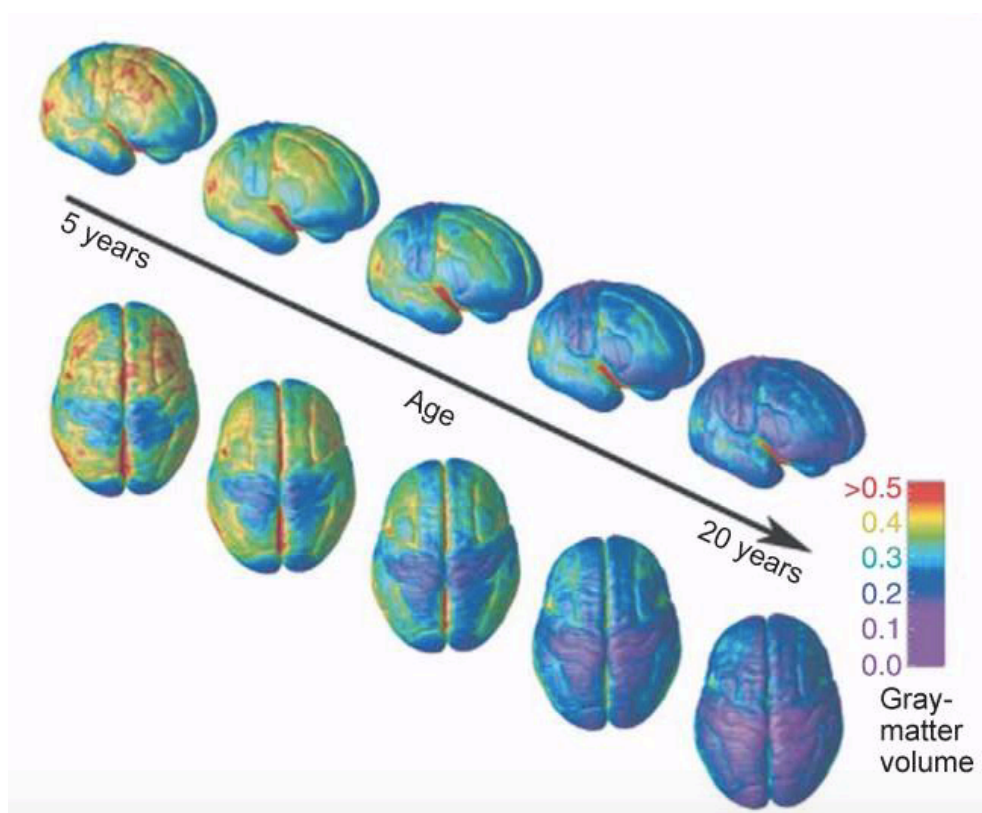

Fig. O2.1.b: Trajectory of cortical gray-matter density in 13 children scanned longitudinally every two years for eight years, highlighting different steps of brain maturation (from Toga et al., 2006)

All this illustrates, in an exemplary way, the neurobiological reasons of impulsiveness of children and provides an intuitive explanation of why preventive approaches for substances use and addiction based on rationality and voluntary regulation are often not very efficient.

Neuroplasticity and self-control

But if it is true that there are biological reasons that explain impulsiveness and low self-control levels in young people, it is also true that these mechanisms and processes are susceptible to modulation, especially if these skills are enhanced and practiced in functional ways in early childhood. Impulsivity can be modified with appropriate behaviors, like all the phenomena that take place in the organism and in particular whitin the brain, thanks to the most characteristic and specific property of the brain itselg: *neuroplasticity*, intended as a series of long-term functional and structural changes that occours within certain areas of the brain in response to each individual's experience. Let's think to the brain as an human body that has several muscles (that, for the brain, will be represented by different cortical areas): if we lift some weights with our arms we will have bigger biceps, if we squat bigger glutei, and so on….the same happens for the brain: the repetition of a certain activity will produce short and long-term lasting changes in the region of the brain that is responsible fort that activities, addressing neural communication (i.e. number, frequency and strength of synapses) as well as number of neurons, and consequentely empowerment of a certain brain area – and related functions.

A help from sport

There are several review studies that investigated the role of physical exercise, mediated by neuroplasticy phenomena, in empowering executive and cognitive functions, alleviating moode disorders such as anxiety and depression, decreasing impulsiveness and aggressive behavior, antisocial and those aimed at the intake of substances (which can then lead to abuse, and then into a proper addiction). These are studies (see for example Guiney et al., 2013) that focus on executive functions, the highest mental functions: they include the ability to pay attention, stay focused, develop strategies to solve problems, the ability to redirect our behavior based on observed results, the ability to memorize and recover contents learned in an effective way, the ability to control the impulse to act instinctively, or the expression of emotional reactions. Abilities that, especially in children and young teenagers (Verburgh et al., 2014) could be enhanced through physical activity.

But how does physical exercise produce these cognitive and behavioral effects? How does physical activity turn into better attention span and behavior control? The answer lies in the cascade of neuroplastic processes and *autogenic doping* that physical exercise triggers in the nervous system.

Neuroplasticity is modulated by the action of the so-called growth factors, endogenous substances that can promote, regulate, direct and amplify neuronal growth. There are different types of growth factors in the brain and in the human body: in fact, there are specific growth factors for the different tissues of the body. These molecules are messengers that instruct the cells of various parts of the body to produce a particular new molecule, or a specific part of the cell itself, a receptor, an enzyme and so on. These growth factors and the neuroplastic activities they promote also come into play when a part of the organism, or a functional structure is repetely activated and used more, such as in physical activity and sports (Kim, 2016). The partial modification of the function or repeated activation leads to

the need of bulding new structures or components, that reflects in the release of endogenous substances (the growth factors themselves).

We will only briefly discuss about the three most important growth factors for neuropkasticity: *brain derived neurotrophic factor* (BDNF), *insulin-like growth factor* (IGF-1) and *vascular growth factor*. The functional crossing between these three different factors is very significant. Their efficacy is enhanced by the fact that they are released both at a peripheral level - widespread in the organism -, and at the "central" level, within the brain. They have several physiological functions: for example, they regulate the sense of hunger and they are helpful to mobilize glucose in the body; but, at the same time, they activate certain specific functions at the level of central nervous system.

The fact that dopamine is released during exercise (Lin and Kuo, 2013) also helps explain why motor activity is rewarding and therefore is generally helpful for mood regulation. However, this is particularly true when it is done in a relaxed, not too stressful environment. This is the reason why we need to graduate the dose of physical exercise in an extremely progressive way to ensure that a sedentary person resumes physical activity. The individual must be put in a position to perform with a relative and easily tolerable effort the quote of physical exercise able to activate the reward system and ro allow the dopamine to trigger the rewarding experience (therefore motivating the individual) to repeat training and to continue to practice.

The connection between dopamine release and exercise is demonstrated by numerous experiments. One of the most important studies of this line of research has shown that in laboratory animals, running for a few kilometres a day for six weeks in a wheel leads to the strengthening of the various mechanisms underlying dopaminergic neurotransmission. Dopaminergic transmission is thus enhanced and so are the cerebral functions that mediate pleasure, reward and motivation, creating the so called *runner's high*.

Moreover, it has been demonstrated that the production of endogenous opioids (endorphins), endogenous cannabinoids and their related receptors also increases in response to physical (especially aerobic) activity (Sforzo, 1989; Sparling et al., 2003). The system of endogenous opioids, that are opioids produced and released by the organism itself, is an apparatus with analgesic, pain-relieving and euphoric functions that induces attenuation of anxiety and emotional states of discomfort. Endogenous cannabinoids, on the other hand, modulate appetite, have a hypotensive and vasodilator effect and great pain-relieving properties, complementary to those of endorphins. Like endorphins, endocannabinoids attenuate transmission in excitatory neurons that convey the emotional and cognitive components of pain.

Doing physical activities, therefore, is a sort of "natural doping" for our brain: it increases the experience of pleasure and the possibility of experiencing gratification and motivation, and at the same time decreases the activity of the physiological and emotional components that mediate stress and the conditions of physical and mental distress. This is a crucial point to keep in mind when talking about teenagers, that tend to seek pleasure or attenuate excessive levels of stress and anxiety through pathogenic behaviors, such as risk seeking and psychoactive substances consumption (given that both these behaviors activate the reward system).

At the moment scientific evidence is available which indicates that with sporting activity one can increase the level of pleasure and reduce the perceived stress. Constant physical

exercise not only has these immediate benefits but also contributes to building "nervous capital", the cognitive reserve on which the future ability to find rewards and motivations, resilience, to prevent and slow the onset of possible neurological, mood and behavioral disorders.

Meditation and brain plasticity

Far from being activated only by physical activities, neuroplasticity that leads to increased level of self-cotrontol can be induced also by mere intellectual tasks. Particularly important for our intervention strategy is the fact that long-term modification of the neural anatomy and function can be mediated my meditation and mindfulness trainings. Therefore, enhance the repetition of this kind of activities during youth would be helpful to indirectly influence children and teenagers' attitude towards their emotions, the relationship they have with adults and peers, self-control. In fact, different meditative activities stimulate one or more specific brain region, responsible for certain cerebral functions: repetition of that activity would then bring to both anatomical and functional changes in that region. There are several studies that report this kind of changes, that highlighting how grey matter thickness increases following mindfulness trainings in the areas, such as the prefrontal cortex and the hippocampus, that are responsible for the voluntary control of actions, and for impulses and emotions regulation (Luders et al., 2009).

Another crucial study (Tang et al., 2012) showed that these changes are rapid, and that they occour in the human brain after only four weeks of meditation practice. Importantly, they positively affect cognitive functions and behaviours thanks to quantifiable changes that occour at cellular level (for details see Fig. O2.1.c).
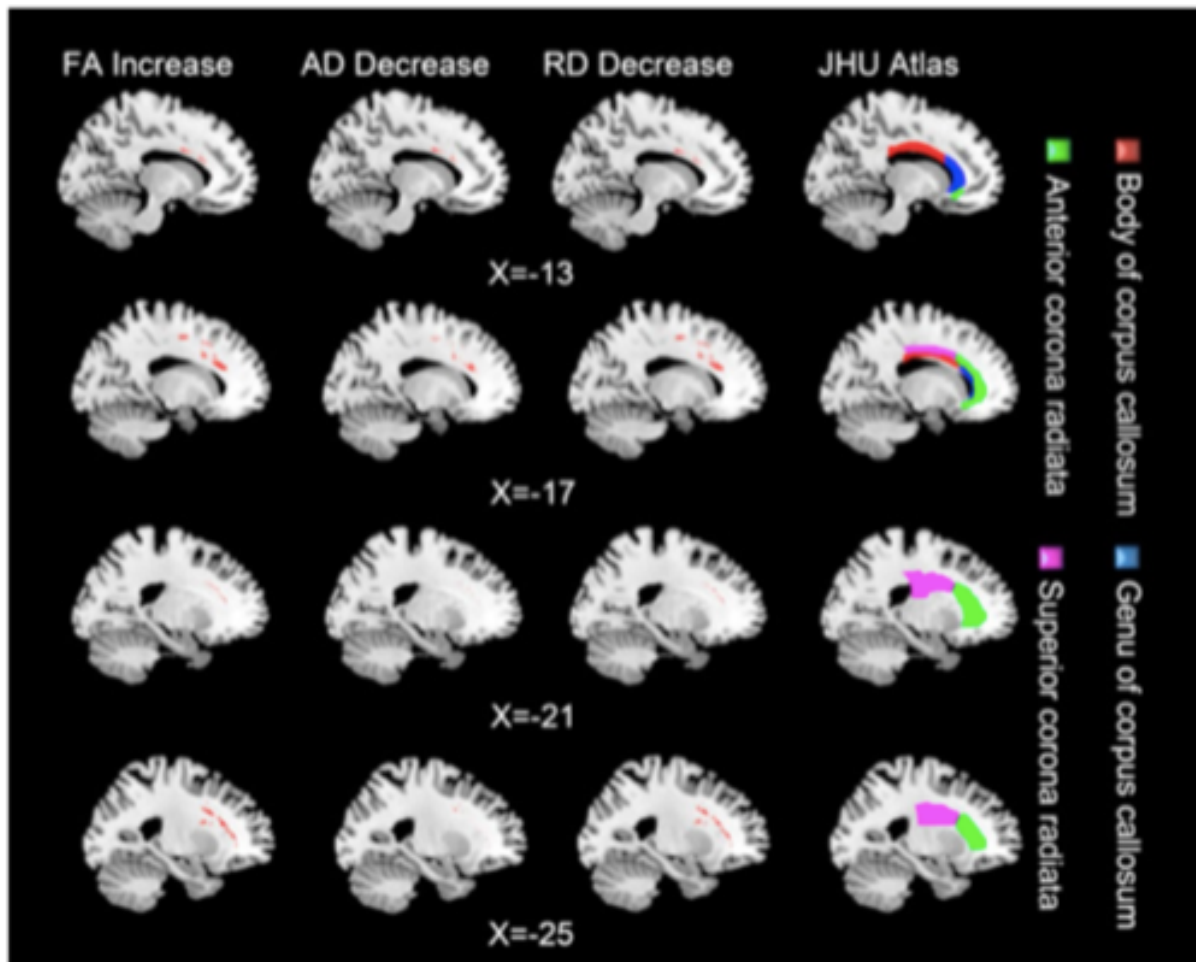
Fig. O2.1.c: imaging techniques show that a 4-week mindfulness traning produces changes in the physiological features of some brain regions. In particular, it is possible to observe an increase of fractional anisotropy (FA), an index that is indicative of white matter efficiency, coupled with a decrease of axial (AD) and radial diffusivity (RD), meaning more neurons and axons.

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O2.1.2 (SITD): critical role played by emotive intelligence

"Without emotion, it is impossible to transform light into light and apathy into movement"

(Carl Gustav Jung)

Emotions are often considered as something dangerous that interferes with our performance and that compromises our judgment, which leads us to error and shows us to others as weak and unreliable, in reality they constitute a valuable tool within of our mind if understood, integrated and adequately expressed.

The emotion is defined as an "intense affective reaction with acute onset and of short duration determined by an environmental stimulus. Its appearance causes a change in somatic, vegetative and psychic level. Physiological reactions to an exciting situation affect vegetative functions such as circulation, respiration, digestion and secretion, motor functions through muscular hypertension, and sensory functions with various sight and hearing disorders. Visceral reactions manifest themselves with a temporary loss of neurovegetative control resulting in a temporary incapacity of abstraction from the emotional context. Expressive reactions concern facial expression, body attitudes, and the usual forms of communication. Psychological reactions manifest themselves as a reduction in self-control, difficulty in logically articulating actions and reflections, diminishing the capacity for method and criticism" (Galimberti, 1999).

One of the distinctive features is therefore the emergence of a change within us, of a physiological alteration in response to a specific stimulus, but not of any stimulus, so that we talk about emotion, this reaction must be caused by an evaluation of the context in relation to the interests of the subject. Therefore in this perspective emotions do not constitute a simple reaction to stimuli, but "signification processes" since they involve an assessment of the situation and are related to the salience of some aspects of reality with respect to others. as De Sousa (1987) pointed out, emotions are not guided by an absolute and objective truth, but by a temporary and contingent but appropriate truth. Emotions therefore represent a flexible, variable and context-dependent guide to direct the organism in a complex environment. They do not indicate what is absolutely right but what is useful and appropriate for the organism at a given time.

Where emotions come from

Wiliam James (philosopher, psychologist, American educator) was the first to propose a scientific idea about the origins of emotions, he advanced the hypothesis that each basic emotion corresponds to a specific state of viscero-motor activation and that emotions do not were other than the perception of specific states of the body.

Completely reversing James's peripheral theory, Cannon (1927) developed the central theory of emotions. According to Cannon the centers of activation, control and regulation of emotions are not located in peripheral locations, but are centrally located in the thalamic region of the brain, since the nerve signals coming from it would be able both to induce the expressive-motor manifestations of the emotions, and to determine their subjective components through connections with the cerebral cortex.

At the beginning of the cognitive revolution, following the inspiration of Cannon, Schachter and Singer (1962) reported some experimental evidence that subjects performing experimental tasks perceive the positive or negative quality of their emotions in accordance with the information received from the context. Their theory therefore sees a fundamental central role in the process of cognitive evaluation.

These studies, which proposed the primacy of cognitive processes, were countered by a series of evidences (Bower 1981, Fargas 1995) that testify to the inverse influence: that of emotional states on cognitive processes. The synthesis of this last research group is summarized in what Bower (1981) called the mood congruityeffect, for which the current emotional state influences the cognitive processes of memory and learning, both facilitating the evocation of those personal memories consistent with the state of mood, both by selecting information in harmony with the affective condition in place.

Another important element in understanding emotional phenomena has been added in recent decades thanks to the convergence of the Jamesian tradition of research with the Darwinian research tradition. Recall that James had postulated the existence of specific and discrete somatic states corresponding to each emotion. Darwin (1872) had observed how the superior species have specific expressive modalities for the different emotions that signal the particular disposition to the present action. In man, the expression of emotions occurs above all through the facial musculature which makes it easily recognizable, except for clever simulations, or an ongoing emotional state.

The merit of having repeated the question of the relationship between cognitive and emotional processes in heuristic terms lies with Johnson-Laird and Oatley (1990, 1995).

According to the computational and evolutionary model of Johnson-laird and Oatley, the interactions between organism and environment are mediated by two operating systems that analyze information, process appropriate responses and are able to learn new associations between stimuli and their emotional meaning and cognitive.

An important contribution to understanding the role of emotions in cognitive processes comes from the field of neuroscience thanks to the work of Antonio Damasio (1994). He emphasized the important role that emotions have when decisions have to be made: emotions and feelings cause physiological changes in the body (hence the term "somatic")

that make us evaluate as positive, negative or neutral the expected results of an action (hence the term "marker"), thus conditioning our ultimate decision. These somatic markers often act in an unconscious manner and would allow to speed up the decision-making process by integrating and summarizing the person's desires, instinctive impulses and past experiences, with the primordial aim of contributing to the protection of the individual and his descendants. Much is about those decisions we take on the wave of what we call "presentiments", or those taken when a somatic sensation pushes us towards a certain choice, even going against what logic seems to suggest.

What are emotions for?

Emotions arise in the course of human action, particularly in interpersonal interaction, and seem to offer biologically-based solutions to human problems that cannot be tackled solely with cognitive processes (Oatley, 1992).

Emotions include a series of processes none of which is sufficient in itself to label an experience with the name of emotion. They include:

- ❖ a cognitive evaluation
- ❖ a physical sensation
- ❖ an intentionality that is an object
- ❖ a feeling or qualia
- ❖ a motor behavior
- ❖ there is in most cases an interpersonal component.

From these components we can deduce the functions to which emotions perform:
- Attentive: they influence the salience of information
- Adaptive: they govern the priorities of the objectives for a person and communicate, among more people, the intentions with ways that favor survival
- Motivational: they influence the disposition towards objectives
- Communicative: regulate interactions with others

Attentive and informational function
Emotions regulate attention by monitoring the environment in search of events relevant to adaptive purposes and warning the conscience when they arise. They also inform us about our reactions to the events, which allow us to access our assessments of the specific situation and our current needs and active purposes (Greenberg & Korman, 1993). A further consideration to be made is that primary emotions are not only characterized by their adaptive attitudes to act but are also responsible for providing us with information about ourselves in that context: in anger we become proud, in fear we slip away, in sadness we close ourselves, while interest and joy open us to the world. Another type of information that emotions provide us with regards to our needs: the understanding of our needs helps us as well as satisfying them to trace the outlines of our identity, through the identification of our priorities, tastes, inclinations and goals . All this information helps to nurture and form the idea that everyone has of himself and thus constitute a clear perception of identity.

Adaptive function

Compared to cognition, emotion is a biologically more precocious, adaptive and rapid system, therefore a system designed to promote survival. The main function of emotions is to connect our biological nature with the world in which it is inserted. Emotion regulates attention by monitoring the environment in search of events relevant to adaptive purposes and warning the conscience when they arise (eg fear warns us of danger, disgust distracts us from harmful elements, etc. .)

Therefore, the body has innate knowledge of the meaning of each of them. The interpretation of the signal is not semantic, but involves a direct recognition. These signals based on emotions are particularly useful for adaptation because they can quickly influence behavior without the need for conceptual processing. A complex organism has bodily sensations and affective states that act as means, independently of conscious cognitive processes, to guide behavior. They prepare the body for a general course of action appropriate to the environment.

Affects like this are non-symbolic ways to guide action and do not require complex inferential processes. So it seems that the primary affects are innate and related to information processing, in the sense that they help individuals adapt and survive by helping them select information and respond quickly, when it would take too long to process them without an emotional tendency action.

Motivational function

To the extent that the emotions system coincides with what determines human behavior (motivation), emotions are first and foremost a form of action-oriented response, a change in the preparation for action aimed at changing the relationship with the environment in the face of a modified balance between instinctual, cognitive and experiential elements of the internal world of a given organism.

Emotional responses through their physiological components and dispositions to action, prepare and motivate people to face the events that arouse emotions. Sometimes emotions become ends to be pursued for themselves, thus motivating behavior to increase the likelihood of those behaviors that produce certain emotional states. In other words, emotions are both an end in themselves, as states that we wish to reach or avoid, both means that lead us to those ends through provisions to action.

Communicative function

Emotions convey to others information about our intentions or our readiness to act. In evolutionary terms, emotions, such as primary signaling systems, have increased the chances of survival. In interpersonal relationships, the constant sending and receiving of signals on one's own and others' emotional states, especially through facial expressions, provides a great deal of information and regulates interaction (Greenberg & Johnson, 1988). For example, in intimate relationships being receptive and sensitive to the emotional states of the partner can save difficulties, and likewise being recipients of the partner's sensitivity to our emotional states can make us feel well-liked. Emotions as well as having an adaptive function of self-regulation also have an adaptive function of regulation of the other, as when, for example, the manifestation of anger removes the intrusiveness of the other.

Brain sources of emotions

The sources from which the emotions originate are multiple: biopsychological and cognitive, physiological, neurochemicals (Izard, 1991.1993). Thus the emotion is activated by a number of conscious and unconscious, non-cognitive cognitive sources. Most of the relevant emotions are activated by the automatic recognition of complex patterns and not by conscious thoughts, and are much more similar to intuition than to reasoning. The way people perceive or frame events depends on their needs, goals, interests and values.

From the neurophysiological point of view, structures have been identified, belonging to the so-called limbic system (a set of deep structures, which plays an important role in learning and forming memory contents, integrating emotional states, perceptions and physical sensations, see Fig. O2.1.d), crucial for emotions arise and regulation:

- the hypothalamus is the visceral brain, a deep brain center that directs and modulates all the automatic activities destined to the maintenance of vital parameters and the adjustment of physiological processes, such as the measurement of glycaemia, the volume of circulating blood, the levels of various hormones. The hypothalamus triggers the sequence of nervous phenomena destined to restore the imbalances detected through behavior (in the case of low blood sugar, for example, the origin of hunger sensations depends on the hypothalamus and therefore the activation of research behaviors of food and its consummation).

- the thalamus is the station of entry and sorting of all the perceptive stimuli that arrive from the various sensory channels to be addressed in the relative and specific emotional and cortical centers where they are decoded and eventually associated with functional behaviors.

- the hippocampus is the part of the oldest cerebral cortex from the evolutionary point of view. It is situated bilaterally in a deep fold of the cerebral convolutions below the temporal lobe. The hippocampus performs various functions, but the main one seems to be that of memory formation. The removal or injury of the hippocampus causes anterograde amnesia, but it almost never compromises the memory of past events. This data seems to suggest that the consolidation of memories foresees the intervention of the hippocampus as a station of activation, transfer and reconciliation of the contents to be remembered among the various parts of the brain involved according to their specific ways in writing, fixing and recalling memories. This idea is also consistent with the close correlation of the hippocampus with emotions, whose intervention is fundamental in the construction of memory contents.

However, damage and injury to the hippocampus does not seem to affect other types of memories, such as the ability to learn abilities, associations between events in an unconscious manner. Indeed, it has been shown that these abilities depend on other types of memory, namely procedural memory and implicit memory. These unconscious and non-verbalizable forms of memory play an extremely important role in the construction of habits, styles of behavior and therefore also in the way in which habitual patterns of reaction to stimuli in children and adolescents develop or can be modified.

-the amygdala is the first center of the emotional brain to mature, and is its central pivot. Neuroimaging studies show that the amygdala is activated in all emotional events. Although the amygdala also intervenes in the course of positive emotions and seems to mediate some component of the experience of pleasure and reward, its reactivity seems to relate to a greater extent to affective states linked to the emotions of struggle and flight: fear and anger.

The functions of the amygdala in the regulation of affective behaviors related to fear and anger were discovered for the first time towards the end of the last Thirties by Heinrich Klüver and Paul Bucy. These noted that the removal of the amygdala caused in monkeys a typical behavioral syndrome whose predominant trait was behavioral disinhibition and the disappearance of fear or anxiety towards stimuli normally able to evoke them, such as the sight of the experimenter or a snake or another rabid animal.
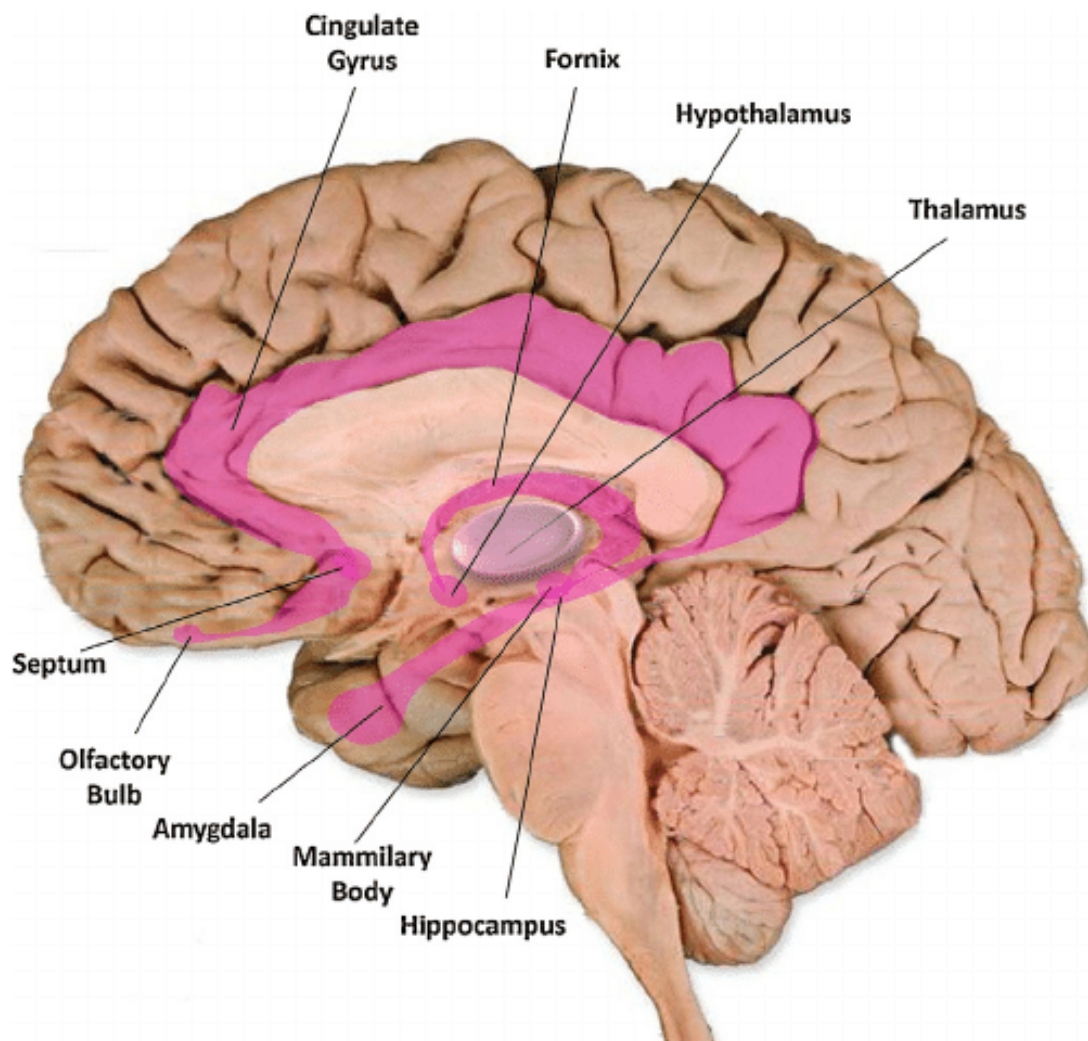
Fig. O2.1.d: main structures of the limbic system (credits researchgate.net)

Neuropsychological and neuroimaging studies have subsequently shown that lesions or structural alterations affecting the amygdala are associated with disturbances in the emotional sphere and in particular with fighting and flight behaviors. More recently, evidence of functional neuroimaging has shown that when watching scenes capable of causing fear, the amygdala is activated. This happens even when a subject sees a face that expresses an emotion of anger or fear. The same phenomenon occurs when an individual observes

an image of the face of a person of another ethnic group or social group towards which an individual has a feeling of hostility or for whom he imagines he is the object of dislike. This appears to be a psychobiological reflex encoded in the human brain.

Thus, in the amygdala, a sort of neurobiological basis of the aversion towards the stranger seems to be written. Fortunately this is a feeling that we generally manage to temper with the education and moral values learned. It is therefore a form of cognitive modulation which requires at least the maturation of the cerebral systems of prosocial behaviors to function well: the prefrontal cortex, an area of the brain which, as we have seen, unfortunately reaches maturity beyond the twenty years of age. The amygdala is also characterized by gender differences. It is larger in males than females and this correlates with a higher reactivity, especially aggressive, typical of the male genus.

Through a single synapse, the amygdala is directly connected to the thalamus, the entry and sorting station of all the perceptual signals from the different sensory channels, sight, hearing, smell, etc. In this way the perceptive stimuli conveyed from the thalamus to the others brain centers can reach the amygdala immediately. Through a very short neuronal passage, the perception of a threatening stimulus activates the amygdala which tends to trigger the fight and flight behavior without the intervention of cognitive processing and any judgment of appropriateness or moral evaluation. In these conditions it is important, in fact, that the animal reacts without delay to danger.

The emotional process

Feelings and emotions involve a natural process in which they emerge and become aware. Somehow we can control what we feel by limiting our exposure to external evocative signals, or trying to control our conscious thoughts, yet we can do little to prevent the automatic emergence of many feelings.

This can be explained also from the neurophysiological point of view: in fact, simultaneously with the impulsive and thalamus-amygdala reflex mechanisms, longer and more complex circuits, and therefore slower in response, carry the perceptual evoked signals of the environment from the thalamus towards the prefrontal cortex. Here they are processed in a cognitive way, in relation to previous experiences, to education, to ethical sensitivity and to learned moral values, and their evaluation leads to the decision on the appropriateness (even moral) and convenience of the expression of emotional response, in this case the fight or flight. The prefrontal cortex can block the tendency to trigger impulsive responses by the amygdala by starting inhibitory signals in the direction of it.

This cognitive and ethical control allows a more sophisticated response to emotional stimuli, but may be too slow to be realized. For this reason, therefore, the impulsive reaction promoted by the amygdala is often fully expressed. The chain of nervous and neuroendocrine events activated by the amygdala and the limbic system in conjunction with an acute emotion has, unfortunately, also the ability to sabotage the functioning of cognitive and inhibitory controls of the prefrontal cortex. This is why during acute emotional reactions, such as anger, anxiety, fear often "you just can't think".

Recall that the prefrontal cortex is still functionally immature during adolescence and that therefore the inhibitory restraint that it can activate against aggressive impulses is weaker than what adults can do.

We must also consider the extraordinary complexity and wealth of stimuli of the contemporary environment, associated with frequent and rapid emotional activations, alarm reactions, stress. In this type of environment, the speed with which the amygdala can trigger fight-and-flight reactions or the behavioral expression of an emotion without the intervention of conscious thought carries a higher risk of excessive or inappropriate responses, such as risk behaviors, peer violence in boys and other unruly emotional reactions.

From the psychological point of view, the natural process of feeling can be described as a set of phases: the emergence of awareness, appropriation, expressive action, and completion, followed by the emergence of a new feeling that starts the cycle again (Greenberg, 2000). When this process is chronically interrupted as for example when the emergence and identification of the lived is avoided, when the experience is not symbolized in awareness, or when the expression of the feeling is constantly interrupted and the action is blocked and the completion, people become trapped in a chronic negative feeling, malfunction and find themselves in a perpetual state of discomfort.

It is important to recognize that feelings, though they increase the disposition to action, are not behaviors. So feeling angry doesn't mean being aggressive. Feelings involve sensory experiences is an organization aimed at particular actions while behavior implies action in the world. Feelings therefore constitute a subjective experience, while behaviors are manifest and are subject to social regulation. Problems arise when people confuse behaviors with their own emotions and feelings, that is, when people try to conform their feelings to social norms rather than their own behavior through self-manipulation and harmful self-enforcement.

Primary emotions

Fear

Fear is one of the basic emotions in human beings who seek to ensure survival and procreation, and consequently escape all threats that jeopardize this fundamental tendency. Therefore it is a very adaptive mechanism that has developed in the course of evolution in our species with the result of favoring its survival.

It manifests itself in various physical reactions which, taking as reference the parameters used by Ekman in his work are: increase in heartbeat frequency and skin conductance. As for the expression of the face it is possible to notice an elevation of the eyelashes, contraction of the upper and lower eyelids, lifting and tension of the lips, and the mouth can remain open. Fear is an unpleasant emotion that causes malaise and worry, a feeling of loss of control. It is an emotion that any healthy person is able to decipher in an innate way on the face of a fellow man and proves to be fundamental for the survival of an individual, in fact it favors an escape reaction to avoid the danger of the situation.

When one feels fear, attention is focused almost exclusively on the event that triggers fear and a large amount of energy is made available to the body to react. This serves to reinforce any kind of learning in a negative sense, and, concentrating all the attention on the stimulus that causes it, brings a consequent reduction of the remaining cognitive processes. A fundamental difference between fear and anxiety or anguish is that the former is experienced in the presence of something defined both physical and conceptual while the latter is faced with something undefined that often cannot even be explained, but which is expressed as a consequence of an anticipatory cognitive process.

Anger

Anger is one of the most complex emotions, it can be caused by frustration, threat or pain and it is an emotion that all the human beings are able to perceive and recognize in their fellows, characterized by an enormous destructive and self-destructive capacity.

Anger arises from a biological tendency to defend oneself when one is attacked or to protect oneself from intrusion. The emotion of anger is often directed towards those we love because of the perception of an offense.

The typical expression of anger is aimed at correcting the situation or preventing it from happening again.

It was selected in the course of evolution because it allowed man not only to assert himself, but also to defend himself from attacks and attacks in an effective way, and to mark the territory. It has proved useful to the individual but dangerous on a social scale. In fact, all communities develop mechanisms to control and channel the anger of their members to prevent them from becoming a threat to society itself. Ekman's work showed that this emotion is the cause of a greater combined increase in heart rate and hand temperature.

It was the first step in the development of the territory and to mark the territory. It has proved useful for the individual but dangerous on a social scale. In fact, all communities develop mechanisms to control and channel themselves. Ekman's work showed that this emotion is the cause of a greater combined increase in heart rate and hand temperature.

The recognizable facial expressions are the lowering and contraction of the eyelashes, tight and tense lips, dilation of the nostrils and half-closed eyelids; while at the physiological level there is an increase in the levels of adrenaline and noradrenaline as well as of arterial pressure. Faced with a potential danger the brain generates a fight or flight reaction.

Disgust

Disgust is a reaction of repulsion towards something unpleasant offensive or negative, or something dangerous. Darwin called it a reaction to something repulsive. It is thought that from an evolutionary point of view this emotion originated as a defensive reaction towards potentially harmful foods that are identified thanks to characteristic odors. In addition to foods in poor condition, most of the things that cause disgust in some way carry the risk of bacterial infections such as: urine feces organic fluids such as saliva vomit, mumps, excessive sexual fluids to dirt, etc.

The typical facial expression of disgust is easily recognizable in different cultures correctly interpreted on the face of a blind person as well as by deaf people from birth. All this seems to suggest the existence of an important innate biological basis for this emotion.

Joy

Joy is short-lived, sometimes linked to the concept of happiness. This emotion generates well-being pleasure optimism contributes to an improvement in health and can be rather contagious. The facial expression of joy is characterized by the raising of the cheeks and the corners of the mouth, as well as by the formation of wrinkles on the skin under the lower eyelids due to the contraction of the muscle around the eyes called the orbicular.

It is precisely this contraction that gives rise to a sincerely cheerful smile. The fact that a smile and laughter are phenomena that are much more social than solitary suggests that joy is a shared feeling of human beings, social by nature. The molecules that give rise to states of joy are those that produce pleasure and a feeling of reward, especially the dopamine released from one neuron to another in the synapse. When these substances are released and the joy is felt, the activity increases, the will is strengthened and the motivation is unleashed, the fatigue diminishes, the attention is focused, the creativity and the ability to solve problems are increased, in general all the pleasant mental processes are strengthened.

Sadness

Sadness is an emotion that involves painful and negative effects. It is characterized by a feeling of discouragement, melancholy, low mood and loss of energy that in general leads the individual to reduce the pace of his activities. As for facial movements, everyone can intuitively recognize them in any of their kind: the dull look, the skin around the lashes that form a triangle, and the eyes of the mouth that are lowered. The agreement with Ekman's studies has been overcome by a high level of heartbeat and by very small variations in hand temperature.

Sadness is a feeling that is felt in many situations: departures, separation, loss of an attachment bond. The psychological forms of separation include: feeling excluded or not belonging, the inability to communicate or express one's real feelings, feeling neglected, and of course mourning the death or loss of a loved one. Sadness can also be evoked by broken disappointments or hopes, failure to achieve important goals, and loss of self-esteem. The two tendencies to action associated with primary sadness are:

- turn to others for consolation on course in order to reduce suffering
- withdraw into themselves to recover from the loss.

A specific feature of the experience of sadness is its heaviness. Individuals feel oppressed and have awkward movements, being well erect involves a great deal of effort, so they prefer to lie down and curl up.

Sadness therefore includes a collapse in tears, a passive withdrawal from the involvement of life, a temporary surrender and the renunciation of the need for the lost object. Sadness makes it possible to accept loss to heal and move on to a renewed interest in life.

Furthermore, the acceptance of loss allows the individual to have a more precise and clear perception of the lost object since it is no longer obscured by the intensity of the suffering (Greenberg, 2000).

Surprise

Surprise is a neutral emotion caused by a new and unexpected situation that quickly disappears and is immediately replaced by other emotions. In any case, like all emotions, surprise produces various alterations on the face: the eyelashes are raised in an arc, the skin is stretched, the eyelids remain open and generally the jaw is lowered, hence the expression "remain open-mouthed". Surprise helps to focus attention and working memory on information at a given moment.

From the evolutionary point of view it is believed that it could be advantageous as it concentrates the cognitive attention on the event that causes the surprise and therefore would facilitate the memory of the event. The surprise strengthens and intensively modifies the learning process in different species: the experts of the Memory Laboratory of the Institute of Cell Biology and Neuroscience (IBCN), belonging to the Faculty of Medicine of the University of Buenos Aires (UBA), have shown that the surprise can be used to reinforce the impression of children's memories.

Secondary emotions

In addition to primary emotions, there are secondary or social emotions that are shaped by the culture in which one is born. These are not innate emotions but emotions that require a certain cognitive development and a basis of relationships with other people, therefore learning and socialization are born, from the assimilation of social and moral norms and are closely linked to the self-awareness that each person has of itself. While primary emotions are constituted as an example of the human race, secondary emotions are decisive for forming us as specific individuals different from the others.

Another fundamental difference between the two types of emotion is that the former always require an external stimulus, while the latter can take place without this stimulus; the main secondary or social emotions are: guilt, shame, pride and jealousy. A further characteristic of these emotions is that their duration is much longer, the primary emotions usually vanish when they have fulfilled their mission of adapting to the environment and of reacting to a practical situation while secondary emotions can remain for years and torment who experiences them.

Emotions, memory and thought

Feelings and emotions exert a strong influence on reason because they can increase or decrease the processes of reasoning and decision-making. They promote decision-making processes by helping to determine the relevance of specific outcomes for the individual who perceives them. They help reduce alternatives by making a rapid assessment at a preconscious level of events in terms of benefits / damages in relation to the self. So they

help focus our attention on the negative possibilities of the situation and allow an immediate response that takes us away from it. This process is followed by a rational analysis of the situation only after the automatic affective evaluation has rapidly reduced the options. This increases the precision and efficiency of decision-making processes.

Emotional dysregulation and addictions

The dysregulation of emotions corresponds to the difficulty or inability to manage or effectively process emotions, and can manifest itself with their excessive intensification or deactivation. The intensification of the emotion occurs when its activation is experienced by the subject as unwanted, intrusive, overwhelming or problematic. The deactivation of emotion instead passes through dissociative experiences, such as depersonalization and derealization, splitting or through emotional flattening in the course of experiences that normally should involve an emotional activation. In some situations temporarily disabling or suppressing an emotion could also be an effective strategy during the traumatic experience, for example. At first it may be more adaptive to temporarily suppress the feeling of fear in order to manage the situation more effectively. Emotion regulation therefore includes any coping strategy, ie coping, adaptive or maladaptive, used to manage emotions that are too intense, can be thought of as a homeostatic process that moderates the intensity of emotions to keep them within a manageable level.

The effectiveness of the regulation of emotions, similarly to that of other coping styles, depends on the context, is problematic or adaptive depending on the person and the situation he is experiencing at that particular time.

In general, the use of coping strategies that promote those adaptive reactions which in turn guarantee a more productive functioning both in the short and in the long term depending on the objectives and aims of the person are generally defined as good adaptation.

Folkman and Lazarus (1988) identified 8 strategies of emotional coping:
- comparison for example affirmation
- distancing
- self-control
- search for social support
- acceptance of responsibility
- avoidance or flight
- problem solving planning
- positive revaluation.

Adaptive strategies should include:
- ❖ relaxation exercises
- ❖ temporary distraction during crises
- ❖ physical exercise
- ❖ enhancement of emotions
- ❖ replacing an unwanted emotion with a more useful or pleasant one
- ❖ non-judgmental awareness (mindfullness)
- ❖ acceptance
- ❖ commitment to pleasant activities

❖ intimate communication and other strategies that help to develop, deal with, reduce and tolerate intense emotions and learn from them.

In fact, following this type of strategy, the most valid objectives and goals for the person are not compromised and sometimes can even be consolidated.

Emotional dysregulation is one of the aspects involved in borderline personality disorder (Linehan, 1993) and has a central role in numerous other psychopathologies such as generalized anxiety disorder (Mennin et al., 2000) or post traumatic stress disorder (Cloitre, 1998).

The skills of emotional regulation and the processes involved in the acquisition of the competences related to it, seem to develop through the involvement of the family and social context, through the interaction between external and internal, motivational and temperamental factors (Gross, 2007; Morris et al . 2007). They develop in the first year of age, and their unsuitable development involves early difficulties affecting both the social area and context adaptation (Eisenberg & Fabes, 2006).

Gratz and Roemen (2004) proposed a vision of emotional regulation that includes 6 separate dimensions in which specific difficulties can occur:

1) lack of awareness of emotions
2) reduced transparency of emotional responses
3) failure to accept the emotional response
4) limited access to strategies of emotional regulation perceived as effective
5) difficulty in impulse control
6) reduced ability to implement effective behaviors when experiencing negative emotional states

The use of substances allows to modify some emotional experiences, and precisely to increase the perception of positive emotions, as well as to alleviate that of negative states.

The theory of "Self-Medication by Khantzian (1985) in fact starts from 2 fundamental assumptions:

➢ The presence of negative affective states predisposes to the use of substances
➢ The choice of the type of substance is not random

Using substances sometimes seems to be a very effective (even if short-term) strategy to bring about a change in the emotional experience of the abuser.

There are several studies that demonstrate this association, for example a study by Sanchez - Craig (1984) showed that out of 297 alcohol-related episodes, 80% had the purpose of managing different personal experiences, such as negative emotions.

This figure also explains the frequent association between mood and anxiety disorders, and substance use. They would have the purpose of reducing unwanted sensations or lowering the level of activation (Mirin et al 1987).

Furthermore, another datum that appears to be relevant in this sense is the high incidence of substance abuse among those who are victims of traumatic experiences (Polusny and Follette, 1995).

Considering substance abuse as a maladaptive coping strategy (Graz and Roanen, 2004) implies the idea of an experiential avoidance for people suffering from this disorder.

Indeed the impulsive behavior would aim to modify a negative emotional state through a strategy of avoiding undesired emotional experiences (Linehan 2002; Wagner and Linehan, 1999).

Moreover, even when the person who abuses substances does not start using for the purpose of experiential avoidance, the effects of excessive use, which involve states of dysphoric mood and abstinence, contribute to maintaining the vicious circle of addiction (Sher 1987) .

To reinforce their use would be the effects that somehow improve the pre-existing emotional states of those who abuse them, both by increasing the perception of positive emotions and by alleviating the negative ones.
Some authors believe that individuals with high levels of aggression and anger would be more predisposed to the use of opiates or alcohol for emotional regulation, while instead people who try to react to depressive states would resort more to cocaine and amphetamines (Sarnu & Maderno, 2007).

Finally, it is well documented that negative emotional states increase the craving, use, and relapse (Sinha & Li, 2007).
Other authors have also shown that the use of functional strategies on an emotional level allows the lowering of craving, and therefore a lower possibility of relapse (O'Connell et al 2007; Westbrook et al, 2013).

Self-control and regulation of emotions

A fundamental aspect of emotions is their regulation, their control. Indeed, it would be very damaging for an individual to let an emotional reaction express itself in an uncontrolled way. In fact, it could be potentially dangerous to give way to an emotional impulse, or inappropriate, or socially unseemly, ethically wrong. It is therefore important that mechanisms of control and self-regulation of emotions exist. We will also talk about it in the chapter on self-control. In this section we would like to briefly discuss the role of certain cognitive processes, with particular emphasis on those mediated by language through the competences of the emotional lexicon.

To understand how an emotion can be regulated, it is necessary to know the sequence of processes that develops in each emotional event.

An emotional phenomenon begins with:

1) the occurrence of an event that requires a change, that is an emotionally relevant situation;
2) this focuses attention on the new event
3) determines the activation of a cognitive assessment process
4) which in turn triggers a physiological and behavioral response aimed at adapting to the event in an adaptive way.

Since the behavioral response modifies the event, the phases of the emotional process can develop recursively through reciprocal feedback that modifies the course in a dynamic and circular way.

Emotion regulation, which in any case always activates cognitive and metacognitive processes, can occur in each of these four phases. It is possible, for example, to select the situation, so as to avoid the encounter with emotionally relevant events and situations. This type of strategy is complex and problematic, because it often leads to avoidance and disengagement: behaviors that can leave unchanged a situation that is lived with discomfort and therefore exacerbate the related stress.

Furthermore, this strategy is difficult to achieve because we often mistake the so-called affective forecasts. In fact, many researches have ascertained that we generally tend to judge the most difficult and emotionally demanding situations with respect to what is later revealed. At the same time, there is a tendency to overestimate our emotional resources, although often, especially among boys, there is an underestimation of the skills available to face an emotionally relevant situation. These gaps typical of affective predictions make it very difficult for this to choose which emotional situations to face and which to avoid.

To regulate the emotions associated with an event it is possible to change the situation, either by intervening on the material aspects of the situation, or by modifying the internal dynamics of the emotion through a cognitive modification of their impact and their meaning.

The regulation of emotions can intervene on the phase of attention through the mobilization of attention itself, with strategies of distraction, or with the suppression of thoughts, rumination and worry. All of these strategies can distract an individual from the acute present emotional event, but they all tend to be disturbing.

More interesting and useful is what happens in the cognitive evaluation of an emotion. In this phase it is possible to implement very effective regulatory strategies that not only guarantee a better comparison with a present emotion, but that tend to build stable ways of adaptive emotional reaction. In the cognitive re-evaluation (reappraisal) of an emotionally relevant situation it is possible to change the affective meaning of the event itself and therefore its impact, the level of stress it brings and the strength of the impulse to react that that event tends to determine in the immediate.

A reappraisal strategy is, for example, to reconsider the effect of a certain emotional situation beyond the immediacy and over a longer period of time, or to assess the impact of the situation also with respect to similar or more emotionally complex situations experienced by others, and so on. The reappraisal is a cognitive change that takes place from the top down, a top-down process, from the frontal cortex - home of cognitive processes and voluntary

control - to the deep emotional-impulsive brain: amygdala, septum, accumbens and in general the limbic system. Neuroimaging studies show that reappraisal activates the areas of cognitive processing on the prefrontal cortex and deactivates the centers of the emotional-impulsive brain.

Another form of self-regulation of emotion and cognitive change is distancing. This strategy involves taking a distance from the emotional event, relating to it from the perspective of another, or using the techniques proper to mindfulness, that is to say the awareness and the curious opening towards emotional states, but from a non-judgmental position, not actively involved. These are techniques that can be learned rather easily with practice.

Emotional Intelligence

Feeling represents the process of being. Human beings therefore need to live in a harmony that is conscious with their feelings and not to try to control them. Emotions must be integrated with the will, the intellect, the desire in a holistic response of the self. Emotions are therefore not opposed to reason but guide and manage thought according to basic methods and are also complementary to and to it. They allow the best conduct to be undertaken when it is not possible to make a decision due to partial knowledge, the presence of conflicting goals, and limited resources (Oatley, 1992). In order to trust one's emotions, one must learn to manage them with a form of special wisdom or intelligence.

Emotional Intelligence (Salovey, Hsee & Mayer, 1993) implies the knowledge of one's emotions and self-awareness. This involves recognizing one's feelings as they emerge, and also the ability to manage them to achieve one's goals. Awareness helps to manage one's feelings so as not to be overwhelmed, it helps to placate oneself and manage one's anxiety, anger or sadness. Emotional intelligence also implies being able to control one's impulses and to self-motivate oneself. Being able to defer their emotional responses and reflect on them is part of the intimate nature of man. Finally, emotional intelligence requires the ability to recognize the emotions of others and thus manage relationships successfully (Salovey et al., 1993). All these abilities emerge from the awareness of emotions that is the basis of emotional intelligence.

In 1983, Gardner in his text "Formae mentis", argued that there was no single monolithic type of intelligence fundamental to success in life, but rather that there was a wide range, of which he identified seven fundamental varieties. The key word in this concept of intelligence is "MULTIPLA": Gardner's model goes far beyond the standard concept of Q.I. as a single unchangeable factor. Gardner's thought on the fundamental characteristics of personal intelligences can be summarized as follows:

"Interpersonal intelligence is the ability to understand others, their motivations and their way of working, while discovering how it is possible to interact with them in a cooperative manner. Successful salespeople, politicians, teachers, Clinical and religious leaders are probably individuals with a high degree of interpersonal intelligence Intrapersonal intelligence [...] is a correlative capacity turned inward: it is the ability to form an accurate and truthful model

of oneself and use it to work effectively in life "and again," the ability to distinguish and respond appropriately to the moods, temperament, motivations and desires of others ". In intrapersonal intelligence, which is the key to accessing self-knowledge, he understands "access to one's feelings and the ability to discriminate and base oneself on them, assuming them as a guide to one's behavior".

Although the description of Gardner's personal intelligences leaves ample room for the understanding of the game of emotions and the ability to dominate them, Gardner and his collaborators have not however studied in depth the role of "feeling" in these intelligences, concentrating more than "on" it, on the "relative" cognition to it.

It was Peter Salovey, who mapped in great detail the various ways in which it is possible to bring intelligence into the sphere of emotions by describing the abilities that are part of emotional intelligence:

• "Knowledge of one's emotions". Self-awareness - in other words the ability to recognize a feeling when it occurs - is the keystone of emotional intelligence. The ability to monitor feelings moment by moment is fundamental to the psychological understanding of oneself, while the inability to do so leaves us at their mercy. People who are very sure of their feelings can manage their lives much better; in fact they have a safer perception of what they really feel about personal decisions that can range from the choice of spouse to the professional activity to be undertaken.

• "Emotional control". The ability to control feelings so that they are appropriate is based on self-awareness. Those who are lacking or poorly endowed with the ability to calm down, to get rid of anxiety, sadness or irritability, find themselves perpetually having to fight against tormenting feelings, while individuals capable of emotional control are able to recover much more quickly from defeats and from the reverses of life.

• "Self motivation". The ability to dominate emotions to achieve a goal is an essential skill to focus attention, to find motivation and self control, as well as for creativity. Emotional control - the ability to delay gratification and repress impulses - is the basis of any kind of realization. The ability to enter the "flow" state allows us to achieve exceptional performance of any kind. Those with these skills tend to be more productive and efficient in whatever field they apply.

• "Recognition of the emotions of others". Empathy, another capacity based on awareness of one's emotions, is fundamental in relationships with others. Empathic people are more sensitive to subtle social signals that indicate the needs or desires of others. This makes them more suitable for careers, teaching, sales and management professions.

• "Relationship management". The art of relationships consists largely in the ability to dominate the emotions of others. These are skills that increase popularity, leadership and

effectiveness in interpersonal relationships. Those who excel in these skills succeed well in all fields in which it is necessary to interact in an easy way with others: in other words, they are true champions of the social arts.

Daniel Goleman later in his book Emotional Intelligence (1996) describes better what it consists of and what are the aspects that characterize it most. As for school-age children, he identifies the characteristics that these should have:

1. "Trust". A sense of control and mastery over one's body, behavior and world; the child's feeling that he is more likely to succeed in what he undertakes than he has instead of failing, and that adults will help him anyway.
2. "Curiosity". The feeling that discovery is a positive activity and a source of pleasure.
3. "intentionality". The desire and ability to be influential and persevering. This ability is connected to the sense of competence, to the feeling of being effective.
4. "Self control". The ability to modulate and control one's actions in an age-appropriate manner; a sense of inner control.
5. "Connection". The ability to engage with others, based on the feeling of being understood and understanding others.
6. "Ability to communicate". The desire and ability to verbally exchange ideas, feelings and concepts with others. This ability is linked to a feeling of trust in others and pleasure in engaging with them, including adults.
7. "Ability to cooperate". The ability to balance one's needs with those of others in a group activity.

Moreover in the teaching model of Emotional Intelligence Goleman identifies as contents: self-awareness, that is the ability to recognize feelings and to build a vocabulary for their verbalization; to understand the connections between thoughts, feelings and reactions; know if you are making a decision based on thoughts or feelings; predict the consequences of alternative choices; apply this knowledge to decisions on issues such as drugs, smoking or sex. Self-awareness can also consist in recognizing one's own strength and weaknesses and knowing how to consider oneself in a positive but realistic light (thus avoiding a trap in which the self-esteem movement commonly falls).

Another aspect that is emphasized is how to control emotions: understanding what is behind a feeling (eg the offense that triggers anger) and learning how to treat anxiety, anger and sadness. Much importance is also given to the assumption of responsibility for decisions and actions and the maintenance of the commitments undertaken.

A fundamental social skill is empathy, that is, understanding the feelings of others and the ability to take their point of view, respecting the different ways in which people consider a situation. Particular attention is paid to interpersonal relationships. The treatment of this theme includes: learning to listen and to ask questions; distinguish between what someone says or does and their reactions or judgments; be confident, instead of getting angry or being passive; learn the art of collaborating, resolving conflicts and negotiating compromises.

Emotional Intelligence can be learned and perfected, learning to recognize one's own emotions and those of others. Organizing intervention programs aimed at improving and developing this form of intelligence especially for children is particularly important:

"It is here that the thesis that supports the importance of emotional intelligence hinges on the link between feeling, character and moral instincts. There is growing evidence that, in life, fundamentally moral attitudes derive from elementary emotional capacities. The impulse is the medium of emotion; the seed of the impulse is a feeling that presses to express itself in action. Those at the mercy of the impulse - those who lack self-control - are affected by a moral deficiency: the ability to control impulses is the basis of will and character. For the same reason, the root of altruism lies in empathy, or in the ability to read emotions in others; without the perception of the needs or desperation of others, there can be no concern for others. And if there are two moral attitudes that our times are in great need of, those are precisely self-control and compassion ". (Goleman, 1996).

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O2.1.3 (UAB): prosociality as a key element of emotion and stress management

Prosociality in 1000 words

The sentence "prosocial behavior" has gained a strong presence in the vocabulary and scientific research since the 70's (Brief and Motowidlo, 1986). Throughout the time, the studies on prosocial behavior have gained a place not only in the psychological area, but also in other sciences.

Although the interest for the study of prosocial behavior has its origin and prevalence in the area of psychology, circa 45 disciplines or disciplinary areas are performing research on this matter. And the range is very wide, from development psychology, multidisciplinary psychology, social psychology, education psychology and other disciplines, as for example, psychiatry, family studies, sociology, economy, neuroscience, sport science, communications, businesses, tourism, pediatrics, public health, anthropology, criminology, nuclear radiology, religion, among several more. (Escotorin, 2013).

The interest for investigating the topic is increasing. The "prosocial subject" has positioned in the scientific research as a permanent topic and also in the regular speech of the persons. The use of the term is also installed in the most informative search engines, like Google. A simple search in Google about "prosocial behavior" provides around 365 thousand results; the Spanish term "comportamiento prosocial" delivers more than 9 thousand results; the adjective "prosocial", more than 1 million results.

This increase in circulating material, compel the specialized researchers to generate articles or books that organize- at least in part- the state of the question (Penner, Dovidio, Piliavin, Schroeder, 2005; Marti, 2010) and increase the doctoral theses, which, in their turn, continuously update the state of the art.

In a recent study (Escotorin 2013) we have verified that there is a great interest on the part of the scientific community for deepening the basic research on Prosocial Behavior and less interest in applied research in intervention programs.

The scientific research in this field of psychological studies has increased greatly from the 1970s until now as the international bibliography shows.

Theoretical approaches

Thus, in one of its most common definitions prosocial behavior is described as "voluntary behavior that benefits other people or promotes harmonious relationships with others "(Bergin, Talley & Hamer, 2002; Einseberg & Miller, 1987; Fabes, Carlo, Kupanoff & Laible, 1999). More recently Garaigordobil (2005), presented a definition of prosocial behavior that includes "*any positive social behavior that is done to benefit another person with/without an altruistic reason, including behaviors such as giving, helping, cooperation, sharing, consoling, etc.*".

Beyond the current discussion regarding the definition of prosocial as a more motivational or more behavioral concept (Martí, 2010) seems to be a quite generalized agreement regarding the definition that gathers the work of Batson, Eisenberg, Fabes, and Spinrad; Penner, Dovidio, Piliavin, and Schroeder:

Prosocial behaviors refer to voluntary actions undertaken to benefit others, such as sharing, donating, caring, comforting, and helping (Caprara, Allesandri y Eisenberg, 2012, page 1289).

According to some authors, the action of helping may be used to establish or to reinforce different status perceptions between "helper" and "receiver". The act of helping may create a sense of inferiority or dependency in the receiver (Penner, Dovidio, Piliavin y Schroeder, 2005)

If we only focus on transference and training, there may be applicative voids in the definitions that organize the concept within a general framework, leaving open the possibility of a great diversity of interpretations and applications.

In the LIPA (Laboratorio de Investigación Prosocial Aplicada, Laboratory of Applied Prosocial Research) (What is LIPA, 2019)

under prosocial behavior we understand the following:

"*those behaviors that, without expecting any extrinsic or material rewards, favor other persons or groups according to their criteria or in accordance to objectively positive social goals, increasing the probability of generating a good-quality and joint positive reciprocity and solid unity, in the interpersonal or social relationship, safeguarding identity, creativity and autonomous initiative of the individuals or groups involved*" (Roche, 1995, p.16).

This definition, that has been widely developed in previous publications (Roche, 1991, Roche, 1997b; Roche, 1998;Roche, 1999; Roche, 2004a;), proposes the receiver as the last criterion. This is a highly significant aspect, since it supposes a fundamental appreciation within the current approaches that study and apply prosociality, often focused on the author of the action and not on the receiver.

Summarizing, a prosocial action is an action that benefits someone else in the way this would like to be benefited, what contrasts against a conception of "helping" actions, which within the model of prosociality do not include the circumstances, needs, identity and culture of the receiver.

Incorporating the reality of the other person in the definition of prosociality itself, avoids the risk of accepting as prosocial actions, those that instead of providing a benefit to the other person, damage the other. For example: doing a favor with a good intention, for which the receiver did not thank, because it just didn't help him/her; generating dependent relationships; or, with no intention, making feel the other person undervalued.

Benefits of the prosocial behaviors

- Prevention of violence and antagonisms and, being incompatible with it.
- Improvement of the climate of the groups. It promotes positive reciprocity and solidarity in personal and group relationships. It implies the valuing of inter-group attributes. It increases sensibility in regard to the complexity of others and of the group.
- Nourishment of the dignity and the respect of the human rights. It produces a nourishment and enrichment of the conscience on the dignity of the man, without which, the perception of this dignity can become abstract, theoretical, and flat.
- Positive control of the negative emotions. It invests the persons concerned with better mental health.
- Enrichment of the of initiative, creativity. The subject experiments an amplification of his/her resources. He/she takes conscience of his/her possibilities. It experiments a satisfaction in the exercise of his/her ideas. It represents a projection of the value of the self. It moderates dependency tendencies
- Production of meaning. In the prosocial actions the authors experiment a source of meaning, not dependent from the external stimuli. They are able to self-compensate seeing the results in the others. It increases the self-esteem and sense of identity for the persons involved.
- It promotes a true communication and empathy. The human communication many times becomes problematic, its channels are limited, that doesn't make it efficient if there is not a total listening from the receiver.
- It is an element of dialogue among ideological or religious systems. They find in the science a sure referent. In fact, it is in tuning with the values of great religions.
- Moderator of the ambition and the power. Prosociality, perhaps, is the only motive able to reedit again in front of the negativity and violence. Perhaps the only one that can cut the circles of negativity. It re-enforces self-control in the face of the propensity to control others.
- It is close to the paradigm of giving. The specialists are discovering new tendencies of the human being, that of giving, not only that to have or to possess. This way in the frequent dichotomy, from a philosophical vision, of the value of the being in front of that to have, our proposal is inserted in a culture of giving that correspond to tendencies so naturals in human beings.

- Promoting the reciprocity and new circles of positiveness. It nourishes interpersonal and social empathy. It increases flexibility and avoids dogmatism
- Important influence on social transformation. The prosocial action provokes around, concentric circles of positiveness. It is always difficult to become himself/herself/themselves account of the sure effects, real, that a prosocial action can produce in the receivers which are converted in turn in authors toward other people and situations and so on.

Categories of Prosocial Actions

1. Help and physical service: behaviors that seek help or service to other people to meet a certain objective and that have the approval of the recipients.

2. Caring for people: personal assistance (hygiene, health, comfort or well-being) to people in a situation of lack of autonomy or vulnerability or need (children, the elderly, the sick, etc.) and that concludes with the approval or satisfaction of these.

3. Giving: Deliver objects, foods or possessions to others, therefore losing their ownership or the possibility of use it in the future.

4. Verbal help: Oral explanation or instruction or sharing ideas or different life experiences, that are useful and desirable to others, groups, in order to achieve an objective.

5. Verbal comfort: Verbal expressions that reduce sadness and help people to feel better improving their mood.

6. Confirmation and positive valuation of the others: Verbal expressions that confirm the value of other persons or increase their self-esteem, even when this person is absent (interpret positively the actions of others, exculpate, intercede, with words of solidarity and praise).

7. Deep listening: Meta-verbal conducts and attitudes of attention that express patient acceptance, however, actively oriented to the contents expressed by the interlocutor in a conversation.

8. Empathy: Verbal behaviors that, starting from a voluntary emptied of contents by the initiator, express cognitive comprehension of the thoughts of the interlocutor or expressing similar feelings.

9. Solidarity: Physical or verbal behaviors that express the intentional acceptance of share the consequences, especially those painful, of condition, state, situation or the mischance of other people, groups or countries.

10. Positive presence and unity: Personal presence that expresses attitudes of psychological closeness, attention, deep listening, empathy, willingness to give help, solidarity for and with other people and that contribute to the

psychological climate of well-being, peace, harmony, reciprocity in a group of

two or more people. (Roche, 1995).

Prosocial education: health, social climate and school achievements

For decades, programs aimed at preventing violent and aggressive behaviors in children and adolescents in school setting have been the subject of study and research. The different authors who have analyzed and optimized these educational programs have verified that the increase in prosocial behavior is an effective solution for their goals of improving the climate in the classroom and at school (Bar-Tal, 1976; Mussen & Eisenberg-Berg, 1977; Radke-Yarrow, Zahn-Waxler & Chapman, 1985; Staub, 1979). More recent studies (Caprara, G.V., Barbaranelli, C., Pastorelli, C., Bandura, A., Zimbardo, P.G. (2000) confirm the incidence of prosocial characteristics in the school achievements after 5 years.

There are a series of empirical evidences on the benefits that these actions
have for the receivers, for the groups involved and even for the authors, even in the emotional sphere.

The prosocial actions can be taught and learned. Longitudinal studies with students, of the same age that in the project EBE-EUSMOSI with children of 8,5-9 aged) (Morganti, A, Roche, R. 2017)
that lasts more than 15 years, have demonstrated positive academic
effects both in adolescence and the field of professional work after 22/24 years old. (Caprara G.V. et al. (2000): *Prosocial foundations on later academic
achievement).*

LIPA details some critical factors for their implementation:

1. The importance and benefits of prosocial behaviors as an excellent way to improve the mental health, social climate and school achievements.

2. Psychology as pedagogy, sociology and other disciplines related to close human attention have crucial responsibility in this mission. At present we have a lot of certitudes regarding whose are the ways and instruments to do it.

3. In all the educational levels and ages, the prosociality can be taught and learned. It is very important to begin in early ages.

4. In the UAB, from 1985 we are developing programs to apply in transversely manner or integrated into the curriculum. Everything is based on a theoretical-practical model: UNIPRO. (Roche, R., 2002)

5. Our more recent experience demonstrates that before entering in class, the important thing is to improve the prosocial relationships among all the educational agents to constitute a good collective model.

6. The families can collaborate in these programs from the home.

Prosociality and empathy

One of the most important factors that several authors agree contributes to helpful and prosocial behaviors **is empathy** (Batson and Shaw, 1991; Eisenberg and Miller, 1987; Goleman, 1995; Hoffman, 1982, 1991; Staub, 1978; Mestre, Samper and Frías, 2002; This is a type of empathy experienced as the person's willingness to perceive and live the feelings and experiences of the other and respond with an affective reply that is the most appropriate to the situation, which entails having developed emotional and cognitive capacities that fall within the stage defined by Bar-Tal *et al.* (1982) as altruistic behavior.

This ability to recognize others' emotions is regarded by Goleman (1995) as fundamental for the development of emotional intelligence as well. Likewise, in samples of adolescents, Charbonneau and Nicol (2002) suggested a direct correlation between prosocial behavior and emotional intelligence that is conceptually associated with empathy, which in turn is linked to this same type of behavior. Thus, the ability to recognize one's own and others' emotions is seen as fundamental as the nexus between the expression of prosocial behavior and emotional intelligence.

Olson KR, Spelke ES (2008) affirms that an impressive empirical evidence reveals that the roots of prosocial behavior, including moral sentiments like empathy, precede the evolution of culture. The nonprofit Edge Foundation recently asked some of the world's most eminent scientists, "What Are You Optimistic About? Why?" In response, the prominent neuroscientist Marco Iacoboni, cites the proliferating experimental work into the neural mechanisms that reveal how humans are "wired for empathy."

DeWaal plausibly argues that human morality—including our capacity to empathize—is a natural development or inheritance of behavior from our closest evolutionary relatives. (de Waal, 2008; Gintis, 2004; Hauser, 2006)

If morality is rooted in biology Olson (2007) affirms that we now have an imminent marriage of hard science and secular morality in the most profound sense. (Jackson, P. L., Rainville, P., and Decety, J. (2006) ; Lamm, C., Batson, C., and Decety, J. (2007)

We know from neuroscientific studies and experiments on empathy through brain imaging that the same affective brain circuits are automatically mobilized upon feeling one's own pain and the pain of others. As Decety notes, empathy then allows us to "forge connections with people whose lives seem utterly (completely) alien from us." (Decety, 2006)

As demonstrated by Roberts and Strayer (1996), there is a directional link from emotional acuity or the ability to recognize one's own emotions to empathy, and from empathy to prosocial behaviors in children and young people in three age categories: 5, 9 and 13 years old. In this sense, we (Roche 1999, 2004) define the main goals of education with adolescents as the exercise of empathy and the progressive decentering of one's own psychological space. By working on values and attitudes that confirm and positively reinforce others, this leads to the development of basic skills for experiencing and living emotional intelligence in real life interactions, or what we call prosocial intelligence.

In addition to empathy, knowledge of and control over one's own and others' emotions, which is defined via a process of meta-cognition of emotions (Roche, 1999) another factor viewed as fundamental is the identification of prosociality as a significant, valuable content (Bendit, 2000). Acknowledging the intrinsic value of the other person and in one's responses, regardless of whether it is emotional, communicative, behavioral or simply an opinion, leads the people involved in the relationship to prioritize the reciprocity with respect

to the individual or subjective standpoint. It also activates the criterion of keener awareness of the importance of the feedback received, as well as respect for the richness that this feedback may mean for the quality of the relationships, mutual understanding and a greater frequency of positive alternate behaviors.

Based on the pioneering experiment by Solomon and Shaps (Solomon *et al.*, 1997) regarded as such internationally in the field of the applications of prosocial educational programs, several different types of programs have been developed with the goal of preventing destructive or violent behaviors and optimizing educational relationships at schools.

With regard to the programs generated in Spain, it is worth noting that since 1982 we (Roche) and associates have been working on research into prosocial behaviors and optimization programs for different social spheres that enable aggressive, destructive or violent behaviors to be modified by implementing behaviors that foster socialization. With this goal in mind, different alternatives have been developed for schools.

The PAPEC (abbreviation for the Program to Apply Prosociality in Schools in Catalonia; Roche and García, 1985), for example, allows entire schools to participate. In this case, the teaching staff agree to put the program into practice over a two-year period. Another example is the Integrated Program (Roche, 2002) which calls for the use of important spaces and times that reach up to six years of implementation and involve all the disciplines.

The structure of these programs provides useful instruments for measuring and confronting behavior whose specific steps to follow are broken down into phases and stages. The activities to be done in the classroom with the students, for example, are based on 10 of the 15 factors in the UNIPRO Model and are designed to get the most out of situations of everyday interaction in the classroom, at school.

The teachers are given guidelines for action according to the remaining 5 factors. The table shows all the factors in this model, which are not haphazardly placed. In effect, through their position in the table those addressed to students and those aimed at educators indicate a possible optimization of the contents in their implementation (for example, factor 1 with 11; and 9 with factors 14 and 15)

Prosocial inventories in context

Drawing up inventories of prosocial behaviors in the different spheres of action and life, in this case in the ones closest to adolescents, is an instrument that is one of the focal points of the program. This method of shared work has enabled us to identify lists of the most desirable or feasible behaviors in a spatial and temporal context linked to the classroom, the playground or the school's grounds in general, as well as the students' age.

The items on these inventories come from a progressive selection by conducting interviews with teachers and students; after having suggested representative behaviors from each category of prosocial action, they then rated the degree of representativeness of the final lists drawn up in a process of action research, or participatory research.

Following an avenue of research similar to ours, Bergin, Talley and Hamer (2003) conducted a study in a focus group in which collective interviews were performed with groups of adolescents. The participants discussed the interesting definition of generalization and types

of prosocial behaviors. The study performed by these authors shows a certain correlation between what was revealed in the groups and what takes place naturally in interactions, so the definition of prosocial behavior remains in the social sphere, and when it appears it is socially constructed.

This central and collective participation by adolescents and the positive effects it triggers is effectively yet another part of the methodology of applying the PMIP, create by Roche and LIPA.

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O2.1.4: case study discussion

The PATHS Programme for Schools (UK Version)

The PATHS Programme for Schools (UK Version) is designed to facilitate the development of self-control, emotional awareness and interpersonal problem-solving skill in children. It is a classroom-based program for elementary schools to reduce aggression and behavioral problems and also to enhance the educational process in the classroom. PATHS is nowadays available by grade level in Kindergarten, Grade 1, Grade 2, Grade 3, Grade 4 and Grade 5/6. The program aims on self-control, emotional understanding, positive self-esteem, relationships and interpersonal problem solving skills. PATHS have been successfully implemented in over 200 schools in UK from 2008 (London – 38 schools, England 9 schools, Wales 16 schools and 20 pre-schools, Scotland – 38 schools, Northern Ireland – 118 schools).

The program is designed for use by regular classroom teachers and other educators in a multi-year, universal prevention model. The part of the PATHS are also activities and tools for encouraging parent involvement and support such as parent letters, home activities assignments and provided information. It is ideal to start with this program as soon as children enter school, respectively in the last class of the kindergarten, and continue it up to the fifth grade. Lessons are designed for implementation in approximately 20-30 minutes in the interval 2 to 3 times per week. The curriculum provides detailed lesson plans, scripts, guidelines, and specific objectives for each lesson. However, the curriculum has considerable flexibility so that it can also be integrated with an individual teacher's style. PATHS lessons contain instructions on how to recognize and name feelings, express them, evaluate their intensity, control them, teaches understand the difference between feelings and ways of acting, delay pleasure, control sudden impulses, reduce stress, conduct self-talk, read and interpret social incentives, understanding others' perspective, solving problems and making decisions in gradual steps, have a positive attitude to life; they teach self-awareness are non-verbal and verbal communication skills.

Learning is promoted in a multi-method manner through the combined use of visual, verbal, and kinesthetic modalities. It is important to ensure that the children are able to transfer skills acquired through PATHS during they all day and in a variety of situations. The program also includes activities and strategies to generalize new skills to be used outside the classroom, including the involvement of parents. There is an instruction manual for teachers, which consists of six sections with lessons, pictures, photos, posters, pictures of faces expressing certain feelings and more material. Of course, it is also possible to add their other own material according to individual users wishes. A part of the program is a tutorial guide for teachers where it is children's homework material or letters to contact parents.

The program is composed of three parts:

1) preparedness and self-control
- 12 lessons that focus on being able to be prepared and developed basic self-control)
2) feelings and relationships
- 56 lessons on teaching emotional and interpersonal understanding
3) cognitive problem solving
- 33 lessons with 11 steps to formal solving interpersonal problems

Main results and impact of the program

- Reduction of aggressiveness
- Improvement of the recognition of others' feelings
- Better ability to resolve peer conflicts
- Better ability to identify the feelings and problems of others
- Higher degree of empathy
- Reducing ADHAD symptoms
- Better acceptance of authority
- More concentration and social competence
- Better results in reading, writing and mathematics
- Better solutions to social problems
- Higher emotional understanding and self-control

Training and technical assistance

The training programme usually takes a place right at school or at school district. There can be employees of more than one school included on one training. The first training workshop consists of two days scheduled with pause of 8-12 weeks. The first day of workshop provides teachers/trainees with the theoretical part, research, models and implementation planning. In a 8-12 weeks pause, teachers gain initial experience with the curriculum and then the second day of training comes. The second day of training is more about interactive learning experience, problem solving and model lessons. The group of participants is limited for 30 people. It is recommended to consider additional training activities to achieve the best results in implementation. Ongoing consultation and booster visits are available in the PATHS programme. More about this can be found on https://www.blueprintsprograms.org/.

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Strong Kids Programme

The Strong Kids Social and Emotional Learning (SEL) program consist of 12 lessons. The lessons are designed to achieve maximum impact on cognitive, affective, and social functioning within a relatively brief period of time and relatively little preparation and training. The program is designed for children from preschool age to 9-12 class, which means adolescents.

Lessons and content

SEL programmes, such as the Strong Kids in the United States, incorporate a range of methods to promote resilience; facilitate the development of social and emotional competence; teach social, emotional, and life skills; and prevent negative life outcomes

Lesson 1 – emotional strength training
Lesson 2 and 3 – understanding your feelings
Lesson 4 – understanding other pepole's feelings
Lesson 5 – dealing with anger
Lesson 6 and 7 – clear thinking
Lesson 8 – solving people problems
Lesson 9 – letting go of stress
Lesson 10 – positive thinking
Lesson 11 – creating strong and smart goals
Lesson 12 – finishing up

It is a prevention-based curriculum that has been developed by a team of health education and mentoring experts. A user buys a set of lessons (1-12) that contain instructionals, a review and introduction of the lesson and key concepts, a range of examples to define and teach the concept, opportunities to practice and integrate skills through activities, opportunities for generalization and maintenance of skills and it is based on prevention. The program will take 10 weeks to be included in the existing learning framework.

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O2.2: practical part

In this section of the P.A.T.H. model there will be described some activities that teachers can do and/or can make their pupils do; they will reflect the sub-domains expressed in O2.1 (i.e. cognitive, with particular focus on attention, awareness and self-control; emotive, with focus on emotions knowledge and managing; prosociality).

Activities for pupils are calibrated to meet needs and abilities of two different students age ranges: pre-school pupils (3 to 5 years old) and primary school pupils (6-10 years old).

O2.2.1: activities on attention, awareness and self-control

As explained in the previous chapter of this manual, it is possible to improve children's abilities in the so called executive functions thanks to repeated exercises and activities. This improvement reflects in the ability of young people to control their behaviour, avoiding potentially dangerous behaviours, such as substance use. Hence, these exercises represent an indirect, but nevertheless validated tool to prevent misuse and, consequentially, addiction.

Moreover self-control is the ability to manage desires and impulses in order not to compromise the achievement of a goal, the skill that has overarching effects on an individual's ability to tolerate unmet want or needs, handle disappointments and failures and work towards success

Self-control is an important skill that allows us to regulate behaviour in order to achieve our long-term goals. Research has shown that self-control is not only important for goal attainment. People with greater willpower tend to do better in school, have higher self-esteem, and better physical and mental health.

However, self-control is a complex skill in which other skills are involved:

1. Introspection. To control self-control, it is necessary to first recognize the emotional states and stop before reaching the point of no return. What is essential is the capacity for self-observation or introspection.

2. Impulsive block. At a later time it is necessary to block the impulses, so as to be able to think of a better response. The ability to think is a story that can be stimulated even at an early age.

3. Self-reinforcement. Finally, it is important to understand that self-control is not an inexhaustible capacity, it must go hand in hand with the capacity for self-motivation. It means that the child feels better than his steps, must perceive that he is moving in the right direction, so it is necessary to premise and congratulate him on his successes. In order to improve all these skills, this group includes activities to enhance every specific subdomain through specific kind of activities: games and fun (impulsive block, attention, self reinforcement), self-awareness (awareness, introspection), calming (impulsive block, awareness) and mindfulness (introspection, self-reinforcement, awareness); therefore, for each exercise it is first of all indicated (in brackets) the related category; then it is possible

to find a brief explanation, time needed to do it in an average-size class (i.e. more or less 20 pupils) and the suggested frequency with it should be done to observe consistent improvements.

Activities for pre-school pupils (3-5 years old)

Simon says (games and fun)
Duration: 5-10 mins
Suggested frequency: Once a week
Procedure: It is a game designed for three or more players. One player takes the role of "Simon" and issues instructions (usually physical actions such as "jump in the air" or "stick out your tongue") to the other players; each instruction should be executed only when it is preceded by the phrase "Simon says".
Players are eliminated from the game by either following instructions that are not immediately preceded by the phrase, or by failing to follow an instruction which does include the phrase "Simon says". It is the ability to distinguish between genuine and fake commands, rather than physical ability, that usually matters in the game; in most cases, the action just needs to be attempted.
The object for the player acting as Simon is to get all the other players out as quickly as possible; the winner of the game is usually the last player who has successfully followed all of the given commands. Occasionally, however, two or more of the last players may all be eliminated at the same time, thus resulting in "Simon" winning the game.
The game is well embedded in popular culture, with numerous references in movies, music, and literature.

How is the inside weather? (self-awareness)
Duration: 5 mins
Suggested frequency: Twice a week
Procedure: The goal of this technique is to promote children emotional awareness, making sure that they develop introspection skill. During the first trials children have to be guided, so it is important to sit next to them and ask them how they feel in that moment. For instance, you can ask to each child: "What is the weather in there?".
If a child feels relaxed and calm she/he can say that the sun is shining, if she/he is worried she/he can say that there are clouds and if she/he feels very tense, that it is going to start raining.
The idea of this technique is that you observe the "weather" that it does inside her/him but without sticking to those moods. In this way she/he will learn to quickly identify the signs of anger, worries and sadness, increasing his/her emotional awareness.

Hissing breath (calming)
Duration: 2 mins
Suggested frequency: Daily
Procedure: Hissing breaths help kids to connect with their inner self and to relax them, both physically and mentally. Teach to the kids to breathe in through the nose. Make them inhale a deep breath, and then ask them to exhale through the mouth, while making a hissing sound like a snake. Prolonging the exhalation will help the kids relaxing and feeling better.

Stuffed animal (calming)
Duration: 5 mins
Suggested frequency: Once every two weeks
Procedure: Let the children lay down on their back and put a stuffed animal on their belly. Let them breathe in and move the stuffed animal up, then breathe out and bring the stuffed animal back down. This helps to teach kids how to use their belly to take big deep breaths. Anr alternative is to use a weighted stuffed animal.

Mindfulness techniques can be introduced to children at an early age, which will help them to develop self-awareness and mastery over their feelings*:*

Superhero pose (mindfulness)
Duration: 2 mins
Suggested frequency: Once every two weeks
Procedure: One easy way for children to dip their toes into mindfulness is through body poses. To get your kids excited and involved in the activity, tell them that doing fun poses can help them feel strong, brave, and happy.
Have the kids go somewhere quiet and familiar, a place they feel safe. Next, tell them to try one of the following poses:
- *The Superman:* this pose is practiced by standing with the feet just wider than the hips, fists clenched, and arms reached out to the sky, stretching the body as tall as possible.
- *The Wonder Woman:* this pose is struck by standing tall with legs wider than hip-width apart and hands or fists placed on the hips *(Karen Young, 2017).*
 Ask to kids how they feel after a few rounds of trying one of the poses previously described. You may be surprised.

Spidey Senses
While on the subject of superheroes, this can be a related "next step" to teach kids how to stay present in the moment.
Instruct your kids to turn-on their "Spidey senses," or the super-focused senses of smell, sight, hearing, taste, and touch that Spiderman uses to keep tabs on the world around him. This will encourage them to pause and focus their attention on the present, opening their awareness to the information their senses bring in (Karen Young, 2017).
This is a classic mindfulness exercise and encourages observation and curiosity—great skills for any human to practice.

Magic castle (mindfulness)
Duration: 10 mins
Suggested frequency: Once a month
Procedure: A natural way to introduce children to mindfulness is through guided imagery. Guided imagery is a meditative process that uses visualization and imagination to bring awareness to the mind-body connection.
Children can easily access this healing process because they're naturally imaginative. By diving into a vivid story they gain tools to deal with stress, pain or difficult feelings. It's a wonderful way to connect with your child as they learn to listen to their inner wisdom and access their own power of healing.
Guided imagery can be beneficial for a variety of issues and the process can be tailored to suit each child's specific needs. It can help reduce stress in all children, but it can also help with specific issues like sleep problems, test anxiety, back-to-school jitters or illness.

It can enhance coping skills, encourage self-esteem, increase creativity and boost the immune system.

Regarding more serious, pathological situations, guided imagery is recognized as a form of treatment for anxiety, depression, learning disabilities, Attention Deficit Disorder, and as a tool useful to help patients to be prepared for surgery and other medical procedures.

A state of relaxation is induced and the teacher guides the imagination by describing:

A journey into a magical world, where it is possible to perceive the beauty of a place created in an individual's mind. A secret garden where is it possible to observe animals, fantastic, fragrant flowers and majestic plants. A place in which it is possible to perceive light and heat.

This peaceful guided relaxation scripts were written by Mellisa Dormoy of ShambalaKids, especially for Green Child Magazine:

"Tonight let's go to a magical place with our imagination.

Just close your eyes and allow your body to begin to relax. We're going to a cozy castle high in the clouds. This is a special, magical castle… where dreams come true…. Where we can relax and just enjoy peaceful, cozy moments. Imagine now floating comfortably on a soft white cloud. It feels so good just to rest and relax here. When you're ready, imagine that the cloud brings you to the entrance of a beautiful castle. This is the Castle in the Clouds. Step inside. The only sound is the soothing crackling sound of fire in the fire places. It warms the castle and you feel so comfortable and good here.

There is a feeling of happiness and goodness in this place. The whole castle is filled with the relaxing smell of lavender and it calms you even more. You feel lucky to be here and experience the warmth and peace in this place.

Now, walk down the halls of this special castle. Notice one door that seems to invite you inside. A feeling of welcome washes over you. Peek into the room and see your own name above a very soft pillow bed. The bed must be magical because as soon you sit down on it… it welcomes you to fall back into it and just relax all your worries away. You cannot think of anything else right now except how wonderful and peaceful it feels here… how good you feel inside. You know this is your special place and you can come here whenever you want, just by thinking about it. You feel all the stress and worry leave your body immediately… Calm, tranquil feelings wash over you. This is your place of peace. You know that no matter what is happening around you, you are welcome here to relax and feel peace. Look up now and notice a beautiful brilliant star visible in the heavens, then another, then another. You realize you are lying on a soft bed now under the open sky. Soon the velvety black sky is completely lit with shining stars like diamonds. The view is so beautiful and serene that you can't take your eyes off the stars.

You might feel an urge to stretch your hand and touch the sky. Give it a try – who knows what can happen in a magical castle. As you stretch out your hand, to your amazement you can actually touch the stars. Choose a star and simply pluck it out of the sky – it's okay. Now you see some writing on the star as you look closer. It has your name on it. It mentions a time when you were a little nervous about something, or felt stressed by a situation, but instead you choose to face your fear and handled the situation bravely.

The star you hold in your hand was created to honour your achievement. A warm rush of happiness and pride overwhelms you. All these stars are your achievements! You study the whole sky carefully. So many stars, so many achievements! You promise yourself that you will continue to work hard to get these stars of glory in the sky of your heart. Feeling immense feelings of peace, calm and happiness filling up your heart and soul, you peacefully carry on with your sleep tonight".

Activities for primary school pupils (6-10 years old)

Wacky relays (games and fun)
Duration: 10-15 mins
Suggested frequency: Once a week
Procedure: Two children carry an object of choice (ball, pencil, stuffed animal, etc.) down a path and back using designated body parts between the two children. For example, the children carry a tennis ball pushing against each other with the ball between their backs. You can do this activity with two children each time, just for fun, or with several pairs for a competitive relay!
HOW TO CHANGE IT UP: Here are some ideas for different ways to carry the object. -Elbow to elbow
-Shoulder to shoulder
-Chin to chin
-Knee to knee
-Finger to finger
-Palm to palm
-Back to back
-Forehead to forehead
-Cheek to cheek
-Hip to hip
-Head to head
Be creative!! And remember, the larger is the object, the easier is the activity: use smaller objects to make it more challenging for grown-up children.

Stop technique (self-awareness)
Duration: 1 min
Suggested frequency: Whenever it is needed
Procedure: It's an effective technique for a clear thought process to control impulsive behaviour. It helps older children to self-regulate, and it works brilliantly during emotional meltdowns and challenging situations.
Core Marbles:
Stop what you are doing.
Think about what you are going to do.
One choice. Does it make the situation better or worse?
Pick the behaviour that makes the situation better.

Mindful steps (self-awareness)
Duration: 10 mins
Suggested frequency: Once a week
Procedure: This activity is best completed outdoors and, if suitable, students may like to walk barefoot.
Give students a clear boundary about where they can and cannot walk during this activity. Each student selects a small area where she/he can walk in a line for about 5 or 6 steps and then come back to where she/he started, without getting into another person's way. Begin this practice with three deep breaths. Then give your pupils the following instructions: "Take 5 or 6 steps in one direction, turn slowly and then take 5 or 6 steps back to where you started".

While walking, students should bring their awareness to their breath and their body. You can help them with some suggestions:
– What does the ground feel like under your feet?
– Which part of your foot touches the ground first when you take a step?
– Does your body feel heavy or light today?
– Are you slouching when you walk?
– Is your back up quite straight?
– Try not to change the way you walk, but instead just notice how your body naturally moves.

Elephant breath (calming)
Duration: 2 mins
Suggested frequency: Daily (alternated with *Breathing hands*)
Procedure: Say to kids to stand with their feet wide apart. Tell them to dangle their arms in front like an elephant trunk. Then tell them to breathe in through the nose and raise their arms high above their head. Tell them to breathe out through the mouth swinging the arms down. Repeat the breathing exercise three times.

Back to back (mindfulness)
Duration: 10 mins
Suggested frequency: Once every two weeks
Procedure: Students work in pairs for this partnered breathing activity.
Sitting tall, with their back resting against their partner's back, they begin a mindful breathing.
Encourage students to notice their partner's breath.
– Is it shallow or deep?
– Fast or slow?
– Can they feel their partner's back moving as they breathe?
After a while, students may find that their breath falls into sync with their partner.
Or it may not! These are all talking points for bringing awareness to the breath, in the present moment.
 (Jennifer Cohen Harper, Little Flower Yoga)

Calm Jar (mindfulness)
Duration: 5-7 mins
Suggested frequency: Whenever it is needed
Procedure: This is a tool that use a familiar object (bottle) as a way to explicitly teach how mindfulness can help to calm us when we are feeling stressed, anxious, sad or angry.
Preparation
Fill a bottle or jar with water, leaving 2-3 cm of space at the top.
Add a generous amount of glitter glue to the bottle (or a combination of PVC glue and regular glitter).
Seal the bottle well!
You may like to make one large bottle to use as an example for whole-class instruction, or a set of bottles that can be used by individuals or for small group rotations.
Directions
Shake the bottle well to mix the glitter, water and glue.
Share the following words with your students:

"'Imagine that the glitter is like your thoughts when you're stressed, mad or upset. See how they whirl around and make it really hard to see clearly? That's why it's so easy to make silly decisions when you're upset – because you're not thinking clearly. Don't worry this is normal and it happens in all of us (yep, grown-ups too).
[Now put the jar down in front of them.]
Now watch what happens when you're still for a couple of moments. Keep watching. See how the glitter starts to settle and the water clears? Your mind works the same way. When you're calm for a little while, your thoughts start to settle and you start to see things much clearer."
"you can also give this jar to me, if you are thinking I am losing control"

Breathing hands (mindfulness)
Duration: 2 mins
Suggested frequency: Daily (alternated with *Elephant breath*)
Procedure: Say to students:
"Use the index finger on your other hand to trace the outline of your star hand.
Take a deep breath in as you move to the top of your thumb.
Breathe out as you move down between your thumb and first finger.
Take another breath in as you move to the top of your first finger.
Breathe out as you move down between your first and second finger.
Repeat until you have taken five slow, deep breaths".

Body scan (mindfulness)
Duration: 10 mins
Suggested frequency: Once every two weeks
Procedure: This is a fantastic "take home" activity for students: for instance, it can be particularly useful to do a body scan to help relax before sleeping, or in potentially stressful situations.
Students lay on the floor, with their eyes closed if they are comfortable (some of them may prefer to look at the ceiling).
Encourage students to pay attention to their feet for 5 or 10 seconds.
Questions to ask during a body scan:
– How does this body part feel?
– Is it cold or warm?
– Does it feel tight or relaxed?
– Is all or part of that body part that touches the floor?
– What about sensations given by clothes? How does that feel like?
Move on to their toes, then ankles, then calves and knees. Continue body part by body part until you reach the head.
Question how each part of the body feels to bring students' awareness to their body in the moment, as a sort of "fascio Luminoso", guided by children's attention, that scan different body districts.
If there is tightness or stress, children can imagine breathing the stress out of that part of the body with each exhale.

ACTIVITIES ON ATTENTION, AWARENESS AND SELF-CONTROL

KINDERGARDEN SCHOOL (3-5 YEARS OLD)

ACTIVITY	DURATION	SUGGESTED FREQUENCY
1. Simon says	5-10 minutes	Once a week
2. How is the inside weather?	5 minutes	Twice a week
3. Hissing breath	2 minutes	Daily routine
4. Stuffed animal	5 minutes	Once every two weeks
5. Superhero pose	2 minutes	Once every two weeks
6. Spidey Senses		
7. Magic castle	10 minutes	Once a month

PRIMARY SCHOOL (5-10 YEARS OLD)

ACTIVITY	DURATION	SUGGESTED FREQUENCY
1. Wacky relays	10-15 minutes	Once a week
2. Stop techinque	1 minutes	Whenever it is needed
3. Mindful steps	10 minutes	Once a week
4. Elephant breath	2 minutes)	Daily (alternated with Breathing hands)
5. Back to back	10 minutes	Once every two weeks
6. Calm Jar	5-7 minutes	Whenever it is needed
7. Breathing hands	2 minutes	Daily (alternated with Elephant breath)
8. Body scan	10 minutes	Once every two weeks

O2.2.2: activities on emotions

Substance use and abuse, that can evolve in an addiction, is related (especially during the thorny transition phase from childhood to adolescence) to a strong propensity to carry out potentially risky behaviours, that is due to a low self-control level and to a non-controlled emotivity (Pogarsky e Shmueli, 2006). As explained in the previous pages, the improvement of children and adolescents in the emotion management and regulation represent an indirect way to decrease the inclination through risky behaviours, acting a prevention factor. However, reinforce emotional competences in children doesn't only represent a preventive factor in the field of substance use, but it assumes a preventive value in regulating the inner balance and in consolidating the protective factors against disharmonies development.

The early acquisition of emotional skills allows children and young people to have greater ability to control and regulate their emotional state, to be better able to calm down when they are agitated; to be more attentive and concentrated; to be relate better with others even in difficult social situations, typical of childhood; to better understand other people and establish more solid friendships with peers; to have a good academic performance and develop emotional intelligence.

The child's emotional competence is given by its ability to recognize, understand and respond coherently to the others' emotions and to regulate appropriately the expression of his own emotional experiences to the context.

In choosing and adapting the various activities on emotions in the PATH model, we referred, in particular, to three components of emotional competence: emotional expression, emotional understanding and regulation of emotions.

This section includes activities to enhance these three specific skills of emotional competence: for each exercise it is indicated which skill develops; then it is possible to find a brief explanation, needed materials, time needed to do it in an average-size class (i.e. more or less 20 pupils) and the suggested frequency with it should be done to observe consistent improvements.

After the explanation of each activity, you will find a table summarizing the activities with indications of duration and suggested frequency.

Activities for pre-school pupils (3-5 years old)

Free activities to explain emotions
The first objective to be achieved in the children of pre-school is the knowledge of emotions. For this, considering the different activities that characterize the pre-school, it was decided to leave space for the teachers to choose the activities they consider most appropriate to present the theme of emotions to children.

For example, one session can be structured in this way:
1. **Tales**: during a circle time the teacher can start reading a story presenting an emotion. The story will lead children on a path focused in the recognition of basic emotions.
2. **Emotion picture cards**: the teacher can show the picture representing emotion and asks if the children know what feeling the face is showing. The children imitate the emotion, first copying the facial expression and then include how the whole body can show certain feelings. These acts of imitation will reinforce the concept and help the children to remember this new word of emotion.
3. **Creative re-elaboration through laboratory teaching:** the teacher can design workshops that allow a creative re-elaboration of learned contents associating the emotional theme with expressive forms to create individual or collective products. For example: musical workshop (to use melodies evoking the different emotions; to create choreographies that make different emotional states; …); theatrical workshop (role-play experiences; tales dramatization; emotions puppets; …).

Backpack
Emotional Skills: Recognition and identification of emotions
Materials: backpack, emotion picture cards, notebook on which both parents and teacher can take notes of children's answers and monitor their emotions in a given period of time.
Duration and frequency: 2-5 minutes; daily routine
Procedure: In this activity children have to prepare their backpack with the help of their caregiver before going to school. They will choice and fill them with card representing the faces of emotion. Once they arrive at school they will show teachers the emotional face in line with their mood. This activity allows both parents and teachers to monitor the daily mood of children and to underline if there has been a positive or negative change in them.

How I feel today?
Emotional Skills: Recognition and identification of emotions
Materials: Emotion picture cards
Duration and frequency: 5 minutes; daily routine
Procedure: This activity follows the backpack activity and it part of the daily routine. When the children arrive to school, they take from their backpack the emotion picture card chosen with their caregiver at home and they put them on a poster with children's name.

The sound of emotions
Emotional Skills: Identification of emotions and associate it with a sound
Materials: facial signal disk
Duration and frequency: 5 minutes; once a week
Procedure: Children connected emotions and feelings to particular sounds and syllables. The teacher shows one facial signal disk and the children has to answer with a sound or

syllables: angry signal disk- a long AAAAAAAAAAAAAH, happy signal disk – JEEEEEE, sad signal disk-UUUUUUUUUUUU OR IIIIIIIIIIIIIIIII to simulate crying, scared signal disk – RRRRRRRRRRRRRR to simulate shivers of fear.

Children also connected feelings to different rhythms selected by classical music and represented that feelings with movements of body.

Anger-the body blowing up as if full of anger and then sudden movements of arms and legs to simulate fits of anger.

Happiness- light and quick movements like flying or jumping

Sadness – arms that fall down, legs that bend and all the body closed down like an egg

Fear – motionless, arms along the body to simulate the paralysis due to fear.

Activities for primary school pupils (6-10 years old)

The appeal of emotions
Emotional Skills: Recognition and identification of emotions
Materials: Class register, a notebook on which the teacher can take notes of pupils' answers and monitor their emotions in a given period of time.
Duration and frequency: 4-5 minutes; daily routine
Procedure: During the appeal, at the beginning of the lessons, when the teacher calls the students by name, they will not respond with the traditional "present" but with a number (from 1 to 10) that indicates how they feel or their emotion. Lower numbers indicate a negative emotional state, while higher numbers indicate a positive state. During the appeal, the teacher should not comment; only at the end of the appeal the teacher will give students the opportunity to reflect on their answers and on your emotional state. When emotional states are low, the teacher can ask that if the child wants to talk about why he feels that way; so if he wants to talk about it, it will allow him to bring the problem to light and to consider creative options to deal with it. After a brief discussion, the lesson can begin. The teacher will monitor the emotional state of the class and the students at the end of each month and will talk about it with them. This will create an environment in the classroom where students feel comfortable and can express emotions and ideas.

How I felt today?
Emotional skills: Recognition and identification of emotions
Materials: Palettes that represent the faces of emotions built by each child.
Duration and frequency: 10 minutes; daily routine
Procedure: At the end of the school day, the last 10 minutes of the lessons are dedicated to detecting any changes in children's moods. Then the pupils are invited, one at a time, to raise their palettes representing the emotion. This activity allows to monitor the daily mood of children and to underline if there has been a positive or negative change in them.

Mailbox
Emotional skills: Recognition and identification of emotions; emotion management.
Materials: A coloured cardboard box in the shape of letter box made by pupils
Duration and frequency: 15 minutes; once a week
Procedure: The students together with the teacher decorate a cardboard box to make it look like a mailbox. Children will post anonymous notes with emotions and feelings experienced on special occasions. Anyone can report episodes, make complaints about classmates' behavior and report problems, so that the whole class can discuss them and think about ways of dealing with situations come out. The students decide whether or not

to sign their messages. They will write and send their messages from one lesson to another, read them together with the teacher once a week. No names will be mentioned in the discussion, unless the student wants to; the teacher will underline that all children share similar problems sooner or later and that everyone needs to learn to deal with them. While talking about how it feels, children have the opportunity to come up with new solutions for these discomforts.

The cube of feelings
Emotional skills: Recognition and identification of emotions; ability to verbalize emotions; development of empathy.

Materials: cardboard large nut which bears on the words faces as "sad", "excited", "disappointed", "happy" or a drawing with the corresponding facial expression of the mood.
Duration and frequency: 15 minutes; once a week
Procedure: Once a week the teacher will arrange the children in a circle and make the cube of feelings run between them. The children in turn will throw the nut and describe, according to the emotion extracted, a time when they felt that feeling[1]. An exercise designed in this way gives confidence in connecting feelings to words and encourages the development of empathy. In fact, when children feel that others have tried their own feelings, it turns more easily share the interior condition of the other children.

The jar of gratitude
Emotional skills: self-esteem growth; increased optimism; improving relationships with others
Materials: jar, colored sheets
Duration and frequency: 5 minutes; daily for the children/ once a month for the teachers
Procedure: Teacher will invite the children to write every day on colored sheet something for which they are grateful that day. Slowly the jar of gratitude will be filled and it will be a joy for the children to see it colored with small notes left by each one of them. The sheets will be read once a week together with the teacher.

Guess how you feel
Emotional skills: Recognition and identification of their own and others' emotions; emotion management; development of empathy
Materials: coloured sheets
Duration and frequency: 15 minutes; once a month
Procedure: Teacher reads a story in which the protagonist feels a certain emotion and she writes what he feels on one of the coloured sheets intended for this activity.
The teacher then invites each child to write how they thinks that the character feels. Later the teacher will read what the character feels and list his reasons.
Finally, the teacher will compare the sentences to see if the children really understood the mood of the character; the teacher will then read what the other students have written and ask them what were the assumptions that prompted them to elaborate their hypotheses. The teacher thus starts a conversation about the emotions came out.

---

[1] It's important to avoid making the request asking the child to report an episode "that made him feel" sad, angry, happy, ..., because it would convey an incorrect conception of emotions (the external event causes the emotion), but be careful to use expressions such as an episode "where you feel" ...

ACTIVITIES ON EMOTIONS

KINDERGARDEN SCHOOL (3-5 YEARS OLD)

ACTIVITY	DURATION	SUGGESTED FREQUENCY
8. Activities to explain emotions	Free	Free
9. Backpack	5 minutes	Daily routine
10. How I feel today?	5 minutes	Daily routine
11. The sound of emotions	5 minutes	Once a week

PRIMARY SCHOOL (5-10 YEARS OLD)

ACTIVITY	DURATION	SUGGESTED FREQUENCY
9. The appeal of emotions	5 minutes	Daily routine
10. How I felt today?	10 minutes	Daily routine
11. Guess how he feels	15 minutes	Once a month
12. Mailbox	5 minutes (for the children)	daily for the children
	15 minutes (for the teacher)	once a week for the teachers
13. The cube of feelings	15 minutes	Once a week
14. The jar of gratitude	5 minutes (for the children)	daily for the children
	15 minutes (for the teacher)	once a week for the teachers

O2.2.3: activities on prosociality

As already detailed in the previous sections of the manual, the incorporation of prosociality skills in the PATH project provides very powerful resources for equipping children with positive behaviors

This inner growth pathway initially starts from a training aimed on decentering the self in favor of the other, increasing children's abilities for initiative, creativity and assertiveness (abilities that can be later generalized in other areas besides interpersonal and group prosocial relationships).

Following these specific trainings:

- Children experiment an amplification of their resources, taking conscience and awareness of his/her possibilities and experimenting a direct satisfaction coming from the practical application of his/her ideas. This also represents a projection of the value of the self.
- Through prosociality skills enhancement it is possible to moderate dependent trends and prevent violence and antagonist behaviors, cutting down the circles of negativity
- There will be an improvement of the climate within the group, since these exercises promote positive reciprocity, solidarity, empathy and good communication
- Pupils will acquire positive control of negative emotions.

The following exercises/activities/games are divided into the usual two age ranges. Moreover, for each one it is indicated the specific prosocial skill/area that they aim to develop/increase.

Activities for pre-school pupils (3-5 years old) and primary school pupils (6-10 years old)

Prosocial actions (prosocial metacognition)
Duration: 30 mins (15+15 mins)
Suggested frequency: Once
Procedure: Make a list of the 4 principal prosocial actions (helping, sharing, comforting, good listening). For each one, think real-life examples.
Then create a representation among the participants for each action (training).
Be sure to take some pictures during this representation. Then, collect them and stick them to the wall, as a reminder of the prosocial actions that should always be performed

Frequent feedbacks (cognitive and emotional empathy)
Duration: 1 mins
Suggested frequency: Whenever it is needed
Procedure:
- Paraphrasing what was said by the interlocutor.
- Sometimes waiting for compliance (conformity) to that paraphrase by the interlocutor.

Recognize the emotion or feeling that the interlocutor may have (cognitive and emotional empathy)
Duration: 1 mins
Suggested frequency: Whenever it is needed
Procedure: When the situation allows it, the teacher can ask some questions to recognize emotions in others:

- Antipathy-Sympathy
- Envy / jealousy-Admiration
- Guilt-Serenity
- Shame / shyness-Assertiveness
- Joy-Sadness
- Fear-Security

Videos and tales (Prosocial models on TV)
Duration: 30 mins.
Suggested frequency: Once every two weeks.
Procedure: Teacher selects some short and brief videos or tales (i.e. from YouTube) with different prosocial and anti-social emotions, or representing prosocial actions.
Then the class look at the videos, learning to recognize and pointing out prosocial behaviors and actions.

*Roleplay **(**Performance of prosocial actions)*
Duration: 15 mins
Suggested frequency: Once a month.
Procedure: Working in pairs, children represent some of the prosocial actions seen on the previous activity.

Activities for primary school pupils (6-10 years old)

Study and work on prosocial adjectives (positive evaluation of the other)
Duration: 30 mins.
Suggested frequency: Once.
Procedure: make a list or repertoire of praise adjectives among classmates that should be used when describing others.

Prosocial models on TV (prosocial actions focusing and discussing)
Duration: 45 mins.
Suggested frequency: Once a month.
Procedure: Select, with the help/contribution of pupils, some movies or TV-series that they like to watch and learn to see and point out prosocial behaviors and actions performed by characters.
Dedicate class sessions to discuss them among students, trying to understand their importance and their feasibility in pupils' everyday life.

Activity cards 1 (performance of prosocial actions)
Duration: 30 mins
Suggested frequency: Once, at the beginning of the project.

Procedure: Answer the question reported in a card saying "*In what and how I would like others to help me*".

Activity cards 2 (performance of prosocial actions)
Duration: 30 mins.
Suggested frequency: Once a month.
Procedure: Answer the question reported in a card saying "What things can help others, and how could I help?"; in answering this questions, pupils should consider the 5 categories of prosocial actions:
- o Help and Care for others,
- o Giving and sharing,
- o Good Listenig,
- o Conciliate and bring peace and harmony
- o Comfort others

Thermometer of prosocial actions (prosocial actions focusing and discussing)
Duration: 15 mins.
Suggested frequency: Once at the beginning of the project, then once a month (to compare and highlight possible changes/enhancement).
Procedure: Make a mural that will be sticked on the wall (each child has control and a direct report of prosocial actions he/she has done during the day).

ACTIVITIES ON PROSOCIALITY		
KINDERGARDEN SCHOOL (3-5 YEARS OLD)		
ACTIVITY	*DURATION*	*SUGGESTED FREQUENCY*
12. Prosocial actions	30 minutes	Once
13. Frequent feedbacks	1 minutes	Whenever it is needed
14. Recognize the emotion or feeling that the interlocutor may have	1 minutes	Whenever it is needed
15. Videos and tales	30 minutes	Once every two weeks
16. Roleplay	15 minutes	Once every two weeks
PRIMARY SCHOOL (5-10 YEARS OLD)		
15. Study and work on prosocial adjectives	30 minutes	Once
16. Prosocial models on TV	45 minutes	Once a month
17. Activity cards 1	30 minutes	Once, at the beginning of the project
18. Activity cards 2	30 minutes	Once a month
19. Thermometer of prosocial actions	15 minutes	Once, at the beginning of the project

O2.3: evaluation kit tools - Subtask leader: UAB

We decided to insert in the present manual some tools that can be used by teachers (direct targets of the PATH project) to evaluate eventual improvements of their pupils (indirect targets) in the three different sub-domains (i.e. cognitive, with particular focus on attention, awareness and self-control; emotive, with focus on emotions knowledge and managing; prosociality) that could be trained and enhanced through exercises and activities described in O2.2.
Ideally these evaluations should be done pre e post.
It is important to highlight that these tools would give results that haven't to be intended as a scientific, rigorous evaluation, but as an important tool that teachers can use to give objective indications [both within the P.A.T.H. project and outside it] of the class progression, identifying for each pupils group strength points and major criticalities.

O2.3.1: tools to evaluate self-control

a) Tool for pre-school pupils (3-5 years old) and primary school pupils (6-10 years old)

Bivalent Shape Task (BST)
The task measures the children's ability to suppress irrelevant information, training children's self-control to operate until high-demanding cognitive processes have been carried out.
During the test, that is typically delivered with a dedicated, open source software (PEBL, http://pebl.sourceforge.net) participants have to determine whether a shape (shown at the center of the screen) is a circle or a square. Once he/she has decided, the answer is given clicking (with mouse, on the keyboard or on the screen) on small, coloured shapes presented at the bottom of the screen (see Fig O2.3.a)

Press button that matches shape
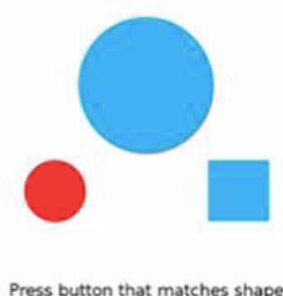
Fig O2.3.a: a trial of the BST task

Circles are always responded to with the left response, and squares are always responded to with the right response. However, these response cues are shaded in either red or blue. In all cases, colour is irrelevant and not used to make the decision:the stimulus shape is presented either in red, blue, or an unfilled black outline. Thus, three basic trial types exist: congruent trials, neutral and incongruent (see O2.3.b)
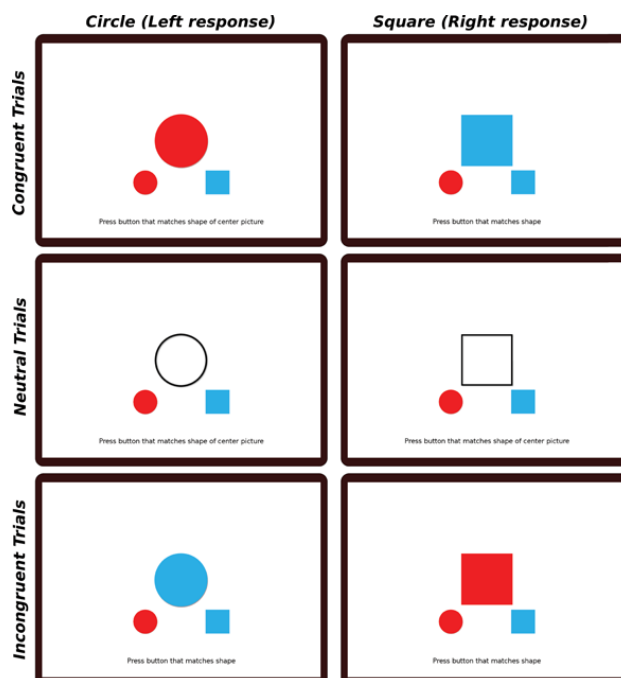
Fig O2.3.b: the three different trial types, explained for both shapes

The task is divided into 5 blocks, as follow:

1. *Practice*. A block of practice trials are given at the start of the task, with one example of each type of stimuli (6 trials)
2. *Neutral*. The neutral block consists of black outlines of circles and squares with no fill colour to present distraction from the task of matching the shape. (20 trials)
3. *Congruent*. The congruent block consists only of stimuli that match a single target in both shape and colour. That is, only red circles and blue squares are used. (20 trials)
4. *Incongruent*. The incongruent block consists of stimuli that match in shape but not in colour. That is, only blue circles and red squares appear as targets. Instructions remain to match the shape. (20 trials)
5. *Mixed*. The mixed block consists of all six targets, (congruent, incongruent and neutral). The mixed block contains half as many targets of each type as appeared in the earlier homogeneous blocks. (30 trials)

BST was developed with specific parameters (i.e. number of blocks, number of trials for each block, maximum time to answer for each trial, set at 3 seconds), however it is very adaptable and, for this reason, suitable also for very young children (however, it is important to use the very same parameters in the two different evaluation sessions, so before and after the program is delivered to children). If needed (i.e. if PCs and laptops are not present within the school), it is possible to realize also a non-informatic version of the task (with cards); however, in this case teachers have to write down correct/incorrect answers, and manually counting time in order to set the "response deadline".

References:
Mueller ST, Esposito AG (2014) *Computerized Testing Software for Assessing Interference Suppression in Children and Adults: The Bivalent Shape Task (BST)* J Open Res Softw. 2014 May 23; 2(1): e3.

O2.3.2: tools to evaluate emotions knowledge/managing
    a) Tool for pre-school pupils (3-5 years old)

To evaluate Emotions knowledge in pre-school pupils (3-5 years old) we propose the **Affective Knowledge Test** (AKT; Denham, 1986; Denham, Zoller, & Couchoud, 1994)**.** It's an interactive assessment measuring the child's ability to accurately label and interpret emotions. The assessment is divided in two parts:
- verbal and nonverbal emotion recognition;
- identification of emotion given contextual information.
-

According to the objectives of PATH project, we use only the first part of the assessment to evaluate emotions knowledge in pre-school pupils.

The **first part** evaluates children's abilities to label emotions through emotional facial expressions and to recognize emotional facial expressions through verbal labels.
The teacher presents to the child schematic representations of emotional expressions (APPENDIX 1). The evaluation includes these emotions: happy, sad, angry, and afraid.
The teacher presents the faces in random order, he/she asks the child *"**How does he/she feel?**" and* the child verbally identifies each face.
The teacher writes the child's score in the appropriate box on the coding sheet (ANNEX 2):

a. Score **2** points for the correct emotion
b. Score **1** point for an incorrect emotion that is within the same emotional valence (e.g., "crying" for Sad, "scared" for Angry, etc.)
c. Score **0** points if the child says an emotion with the opposite valence (e.g., "surprised" for Scared, etc.)

The teacher then presents the faces in a new random order and asks the child to ***Point to the*** *(fill in emotion)* ***face"*** or "***Show me the*** *(fill in emotion)* ***face"*** as the experimenter provides a verbal label.
The teacher writes the child's score in the appropriate box on the coding sheet (ANNEX 2):

a. Score **1** point if the child points to correct face
b. Score **0** point if the child points to an incorrect face with the opposite valence.

    b) Tool for primary school pupils (6-10 years old)

Emotional competences checklist

This checklist evaluates the main abilities in managing emotions. It was developed by Di Pietro in Rational Emotional Education theory (Di Pietro, 1992). In particular, it evaluates eight skills group in the context of emotional competence.

The idea was to adapt the questionnaire to PATH model considering only the skills that this model aims to develop / increase in children 6 to 10 years:

1. *recognition of the main emotions*
2. *reactions to prohibitions or unpleasant requests*
3. *reactions to feared situation*
4. *reaction to provocation and prevarication*
5. *pro-sociality*

The questionnaire is easy to complete. It is based on teachers' observation. We want to note the importance of the teacher evaluating the results achieved by children in the PATH implementation. Teachers are a natural part of the school environment and their role as observers of their students' behaviour has many advantages. In fact, their observations are less prone to child reactivity than independent observers' ratings (Hay, Nelson, & Hay, 1977).

The interpretation does not make use of scores but is based on a qualitative analysis of the competences.

0 = Completely absent skill
1 = Partially acquired skill
2 = Completely acquired skill

Teachers will have to complete this questionnaire at the beginning and end of PATH model experimentation.

In the Annex 5 you can find the questionnaire to use within the PATH model.

References:

Camodeca M, Coppola G (2010). *Competenza socioemotiva e difficoltà di relazione in età prescolare: Un approccio multi-informatore.* In E. Baumgartner (a cura di), Gli esordi della competenza emotiva. Strumenti di studio e di valutazione: 51-74.

Denham SA (1986). *Social cognition, prosocial behaviour, and emotion in pre-schoolers: Contextual validation.* Child Development 57(1): 194-201.

Denham SA (2006). *The emotional basis of learning and development in early childhood education.* In B. S. Spodek, O. N. (Ed.), Handbook of research on the education of young children (2nd ed): 85-103. Mahwah, NJ: Erlbaum.

Denham SA, Zoller D, Couchoud, EA (1994). *Socialization of preschoolers' emotion understanding.* Developmental Psychology 30(6): 928-936.

Di Pietro M (2002) *L'ABC delle mie emozioni. 8-13 anni. Programma di alfabetizzazione socio-affettiva secondo il metodo REBT.* Edizione Erickson. Trento

O2.3.3: tools to evaluate prosocial abilities

a) Tool for teachers pre and post.

SMAP - Scale Measurement Adult Prosocialness (Annex 6)

It is a classic questionnaire, widely used in research on applied prosociality in education although the authors intend to consider it as generic for adults and for children, in its two respective versions. The items are quite well suited to the concept of prosociality, although it does not cover all its dimensions.
Its use is simple because it has no negative questions, so its 16 items on a scale of 1 to 5, receives a minimum score of 16 (16x1) points up to a maximum of 80 (16x5).
Its main weak aspect is that it is a self-administrated questionnaire; however, in its pre and post use, it can be an effective measure of progress.
The ideal moments in which the SMAP should be used are:
- pre-test: at the very beginning of the teacher formation about these topics;
- post-test: at the end of the application of the PATH model within their class(es).

b) Tool for teachers

PIE - Prosocial Impact Evaluation (Annex 7)
Prepared by Robert Roche for PATH.

Auto-cognitive-behavioural questionnaire of 17 items, not validated, but used with slightly different versions in different courses (disciplines, post degree, etc.) by LIPA and that in pre-post format and applied in anonymous mode can account for the assessment that a participant gives to this own progress in their learning in dimensions such as
  o *Degree of acceptance*
  o *degree to adherence to values (prosociality),*
  o *degree of acceptance to the central concepts and*
  o *degree of intentionality in their willingness to apply in a given area as well as a certain perception of their own self-efficacy*

The pre-post format can show possible progresses in a period of no less than 3 months, especially if a presumably influential intervention or program has taken place at this time. So, again, a pre-test could be done at the very beginning of the teacher formation, and a post-test at the end of the PATH program.

c) Tools for teachers reporting about the progress of their students and themselves

IPD - Prosocial Impact for Teachers (Annex 8)
Prepared by Robert Roche for PATH

Everything said regarding the previous questionnaire is applicable to IPD as well.
It is a questionnaire of 17 items that is relatively similar in its objectives to PIE: it tries to ask the teachers about their own cognitive, intentional, behavioural progress, but it focuses on the progress observed in their students.

References:

Caprara, Steca, Zelli y Capanna (2005) *A new mesure scale for measuring adults' prosocialness*
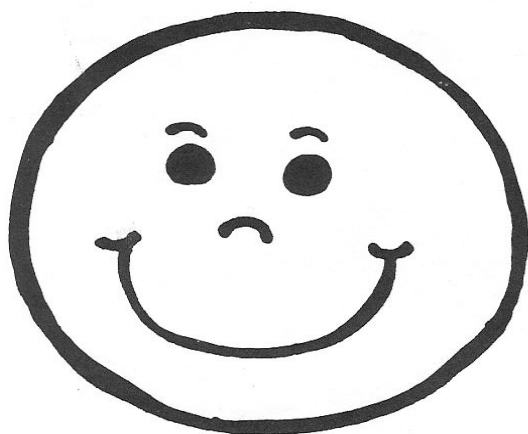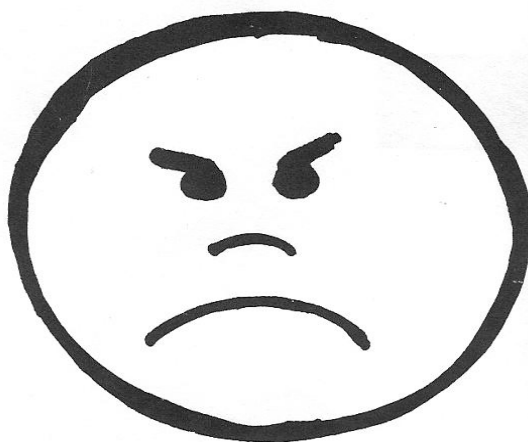European Journal of Psychological Assessment 21: 77-89.

Affective Knowledge Test Faces

The 4 Emotion Faces

sad   mad

happy   scared

Coding Sheet Test Faces

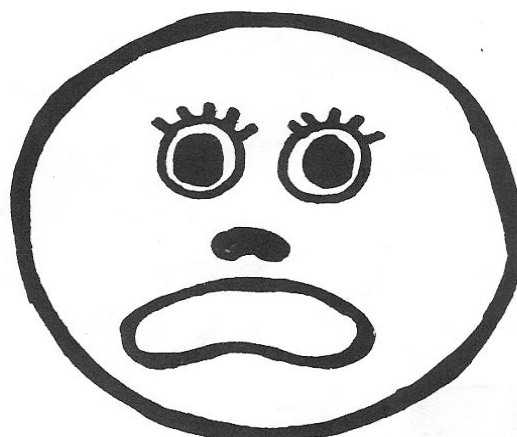| Child name or ID	Expressive: "How does he/she feel?"				Receptive: "Point to the _____ face."			
	Happy	Sad	Scared	Angry	Happy	Sad	Scared	Angry
	Note: Score **2 = correct emotion** **1 = same-valence emotion** **0 = wrong emotion**				**Note: Score** **1 = correct emotion** **0 = wrong emotion**			

PATH EMOTIONAL COMPETENCES CHECKLIST

CHILD'S NAME_____DATE _____

0 = Completely absent skill

1 = Partially acquired skill

2= Completely acquired skill

1. RECOGNITION OF THE MAIN EMOTIONS

a)	He/ she recognizes emotions from facial expression and gestures.	0	1	2
b)	He/ she recognizes emotions related to certain behaviors.	0	1	2
c)	He/ she names the main emotions.	0	1	2
d)	He/ she can indicate synonyms and antonyms of the main emotions.	0	1	2
e)	He/ she recognizes that emotions can vary in intensity.	0	1	2

2. REACTION TO PROVOCATION

a)	He/ she recognizes the damage of addressing people with insulting labels.	0	1	2
b)	He/ she tolerates being teased.	0	1	2
c)	He/ she bears annoying situations.	0	1	2
d)	He/ she relieves neurovegetative reactions related to states of strong emotional activation.	0	1	2

3. PROSOCIALITY

a)	He/ she collaborate by giving up a little comfort when resources are limited	0	1	2
b)	He/ she recognizes that collaborating makes it easier to achieve certain results.	0	1	2
c)	He/ she feels positive feelings to his/her companions.	0	1	2
d)	He/ she provides or offers help when the situation requires it.	0	1	2

NOTE

_____

_____

_____

_____

_____

SMAP - Scale Measurement Adult Prosocialness

Alias or 3 final numbers of the Identity Document:
Group or class:
Center:
City:

The following statements describe a large number of common situations.
There are no 'right' or 'wrong' answers; the best answer is the immediate, spontaneous one.
Read carefully each phrase and mark the answer that reflects your first reaction.
Please read carefully each of these phrases and answer each one by placing a cross in the column that best describes how you act. Thank you.

1 = never/almost never true
2 = occasionally true
3 = sometimes true
4 = often true
5 = almost always/always true

		1	2	3	4	5
1	I am pleased to help my friends/colleagues in their activities					
2	I share the things that I have with my friends					
3	I try to help others					
4	I am available for volunteer activities to help those who are in need					
5	I am emphatic with those who are in need					
6	I help immediately those who are in need					
7	I do what I can to help others avoid getting into trouble.					
8	I intensely feel what others feel					
9	I am willing to make my knowledge and abilities available to others					
10	I try to console those who are sad					
11	I easily lend money or other things					
12	I easily put myself in the shoes of those who are in discomfort					
13	I try to be close to and take care of those who are in need					
14	I easily share with friends any good opportunity that comes to me					
15	I spend time with those friends who feel lonely					
16	I immediately sense my friends' discomfort even when it is not directly communicated to me.					

PROSOCIAL IMPACT EVALUATION (PIE)

R.Roche (2019)

Alias or 3 final numbers DNI:

Center: **Group:**   **Date:**

Mark with a cross the answer according to your level of agreement to the content of the following statements:

	Strongly disagree	Desagreement	Medium grade	In agreement	Strongly agree
1. I believe that the aspects treated in the program are desirable.					
2. The values of the program are not applicable in everyday life.					
3. The methodology of the program is applicable in my job.					
4. Knowing this program has not meant any change in my way of thinking.					
5. The values proposed by the program are desirable.					
6. I think I would have to do more prosocial behaviors.					
7. I have not noticed any change in my way of acting ..					
8. I have a more prosocial disposition in my way of acting					
9. I have changed some aspect of my behavior to better.					
10. I am introducing prosociality in my professional field					
11. I plan to act even more prosocially.					
12. I think I'll get it					
13. I'm sure I'll get it					

14. My desire to act in a prosocial way (Mark with a cross):

        They have increased

        They have stayed the same

        They have decreased

15. **I have increased the prosocial actions (Mark only with a cross the situations in which it has happened)**

The couple

The family

Co-workers

People in the workplace

Friendships

The neighbors

Parties / Unions

Needy strangers

The associations, NGOs.

....

16. **Since I act prosocial I have noticed differences in:**

In myself

The couple

The family

Co-workers

The neighbors

Parties / unions

Work climate

The associations, NGOs.

....

17. There have been prosocial behaviors around me during the application of the program:

Many

Enough

Some

Few

None

Which would you highlight? ....

IPD- Prosocial Impact for Teachers
R.Roche (2019)

Teacher's name:
Place:
Group name:
Number of group members:

Mark the answer according to the level of agreement with the content of the following statements:

	Strongly disagree	Disagree	Medium grade	Agree ment	Strongly agree
1. I think that the aspects dealt with in the experience are of interest to children					
2. I think that the aspects dealt with in the experience are of interest to teachers					
3. I believe that the values of experience are applicable to the daily life of children					
4. I believe that the values of experience are applicable to the daily life of teachers					
5. I believe that the methodology of experience can be recreated in other contexts and for other purposes					
6. Knowing this program has meant changes in my way of thinking					
7. The values proposed by the experience are desirable for children					
8. I have noticed changes in the way of children's thinking					
9. I notice that children manifest a more prosocial disposition in their way of acting					

10. I notice that as a teacher I manifest a more prosocial disposition in my way of acting and in my environment					
11. Children have changed aspects of their behavior					
12. Children manifest, based on this experience, that they act in a more prosocial way					
13. I think children will get to act more in a prosocial way					
14. I am sure that children will be able to act in a more prosocial way					

(_Put a cross in the corresponding choice)_

Ahead with your actions in a prosocial way:

- o   **Have increased.**
- o   **They have stayed the same,**
- o   **Have decreased**

Children say they have increased prosocial actions:

- o   **in their families,**
- o   **with friends,**
- o   **companions,**
- o   **neighbors,**
- o   **teachers,**
- o   **strangers or needy**

Pro-social behaviors have occurred in children during the application of the program:

- o   **Many**
- o   **Any**
- o   **Few**
- o   **Any**

Which would you highlight?

Partners

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www.sitd.it

Universitat Autònoma de Barcelona
www.uab.cat

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www.hertin.cz

Paradigma
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Zakladni Skola Ostrava
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