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**“Putting yourself in other people's shoes”:
from measures to applications**

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A Michela, andiamo

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Chapter 1

General Introduction

*“Do not sit at home,
Do not go to the forest,
But recognize mind
Wherever you are.”*

Saraha - Treasury of songs
c. 1st millenium AD

1. “Putting yourself in other people's shoes”: a multi-faceted daily ability

“Putting oneself in the other's shoes” refers to a typical human ability that connects and allows to recognize one's own and others' minds. Being able to “read” people’s mind contents help them to properly interact in social situations choosing, adapting and modulating behavior. It involves the ability to explain, describe and predict one’s own or another’s mental states and behaviors (Perner, 1991). Analyzing literature searching for a definition of this human ability, it’s possible to observe that there are different concepts, some of which are partially synonymous and explain different aspects of the same skill, that is the psychological understanding of the social world. The most important ones (Liverta Sempio, Marchetti, Castelli, Lecciso, Pezzotta, 2005): “Theory of Mind” (Premack & Woodruff, 1978; Wimmer & Perner, 1985), also named “Mindreading” (Baron-Cohen, Jolliffe, Mortimore & Robertson, 1997); “Perspective-taking” (Carpendale & Lewis, 2006; Moll & Meltzoff, 2011 Sullivan, Bennett, Carpenter, & Lewis, 2008); “ Reflective function” (Fonagy & Target 1997); “Mentalization” (Fonagy, Bateman, & Luyten, 2012).

The first construct considered is Theory of Mind, defined “the ability to attribute mental states such as desires, thoughts, beliefs, intentions emotions to self and others in order to predict their and others behaviour” (Premack & Woodruff, 1978; Wimmer & Perner, 1985). This is a mindreading ability (Kim et al, 2020; Sharp et al., 2011a, Sharp et al., 2011b), because allows you to understand your own and other people's mental states and helps to effectively orient behaviour within social situations. By mental states we mean those contents of the mind such as beliefs, desires, inferences, intentions that guide individuals' reasoning and behaviours. First studies on social cognition in chimpanzees were aimed at observing whether and how they were able to understand the behaviour of others - not only their peers, but also humans - by attributing desires and beliefs to them. Chimpanzees were shown tapes of people in struggle with goal-oriented behaviour on the one hand and attitudes without achieving a goal on the other. At the end of the tape the animals chose, among some photographs, the one that contained the resolution of the problematic situation. Premack and Woodruff found that these animals possessed a theory about the presence of a mind because of their consistent choice of the correct photographs, thus demonstrating their ability to interpret behaviour as an action aimed at achieving a goal (Gozzano, 2001). As for the development of the Theory of Mind thanks to Wimmer and Perner (1983), it was established the age at which children would be able to infer mental states. To arrive at this, starting from the work of the philosopher Dennett (1978), they developed a test aimed at measuring in the child, the presence and capacity of a "first order recursive thinking thought", that is "a thought in which one representation is included in another: I think you think X" (Battistelli, 1995). They wanted to demonstrate that, once developed such recursive thinking, the child would be able to attribute mental states to himself and others, thus being able to explain and predict behaviour and understand that there are mental representations that define the relationship between internal states and actions. They found that 4 - to 5 - year-old children can predict someone's action guided by a false belief (Wimmer & Perner, 1983). Only two years after the first order

recursive thinking was conceptualized, the two researchers brought to light the presence of a further level of expertise in the Theory of Mind: between six and seven years old, children would reach the "second order recursive thinking" (Wimmer & Perner, 1983). It means to have a metarepresentational thought included in another one, which would allow subjects to elaborate a thought about what others think and to be a functioning social individual in interpersonal relationships. This phase can be summarized with the expression: "I think you think Z that thinks X" (Battistelli, 1995). Although these are considered the milestones for the Theory of Mind development, this construct evolves and matures throughout life (Apperly, 2013) in a different way for each individual based on experience, knowledge and use of this ability in everyday life (Conway et al., 2019).

The literature has suggested several hypotheses to explain the mechanisms underlying mindreading skills (Liverta Sempio, Marchetti, Lecciso, 2005). The first theoretical perspective is the simulation one by Harris (1989; 1991; 1992; 1999), in which children understand their own mind, based on facts that happen to another person in the same situation that both are living together (Tirassa, Bosco & Colle, 2006). The simulation perspective explains that the ability to understand others desires, beliefs, thoughts would develop according to a process of mental simulation, where the child, owning an awareness of their mental states, would generalize them by analogy to other situations and actions. This perspective was reinforced by the discovery of mirror neurons (Gallese & Goldman, 1998, Rizzolatti et al., 1996): according to researchers, the understanding of others perspective is the result of the activation of the so-called "embodied simulation", i.e. the way mirror neurons are implemented (Gallese, 2007). Thanks to the embodied simulation, people recognize in what they see something that they experience, something they can get hold of. In this sense the meaning of other people's experiences is understood thanks to a direct understanding from the inside.

The second theoretical perspective on the development of mindreading ability is that of the theory-theory approach (Carey, 1995; Gopnik, 1993) by which through progressive learning the child builds, like a scientist, his knowledge based on the experience of the world and others. The internal states in this approach are considered postulated concepts, originating from a series of data from the external world, which must be processed in order to achieve the construction of new concepts. The third approach is the modularity one (Baron-Cohen & Leslie, 1985). According to this approach, innate and genetically determined modules exist: they mature with the growth and automatically active different types of information processing (Tirassa, Bosco & Colle, 2006). This approach first consisted of three modules: Toby (*Theory of Body Mechanism*) that allows the construction of a theory on physical objects, ToMM (*Theory of Mind Mechanism*) that allows to understand human states and intentions, and finally SP (*Selection Processor*) that helps to select the information to read others' minds (Baron-Cohen & Leslie, 1985). Subsequently, Baron-Cohen (1995) proposed the existence of four innate modules: ID, (*Intentionality Detector*), and EED (*Eye Direction Detector*) which, respectively, act as a detector of intention and direction of gaze; then the SAM, (*Shared Attention Mechanism*), which, integrating the two previous ones, allows to create triadic relationships between child, adult, object; finally, ToMM (*Theory of Mind Mechanism*), module responsible for the construction of the representation of mental states. Another strand of studies is opposed to the previous ones, as it considers that the ToM develops mainly thanks to interpersonal relationships, affectively connoted, located in the specific contexts of individuals' lives (Astington, 1996). In this perspective are placed, for example, studies concerning ToM's development in relation to language skills (Antonietti et al., 2006) or the construction of affective relationships (Fonagy & Allison, 2012) and also the works that investigate ToM in relation to family (Dunn et al., 1991) and school contexts (Marchetti & Liverta Sempio, 2004). The relationship between "putting oneself in other people's shoes" and relational contexts will be

explored later, as it characterizes the construct of mentalization that is the subject of the next paragraph.

Continuing in the investigation of the constructs that help to understand what it means “putting oneself in the others’ shoes”, we get to the perspective-taking. Perspective-taking is defined as the ability to assume the other's perspective, allowing one to deduce thoughts, emotions and perceptions of others in order to understand the world around them (Cigala, Mori, & Fangareggi, 2015; Carpendale & Lewis, 2006; Moll & Meltzoff, 2011; Sullivan, Bennett, Carpenter, & Lewis, 2008). Although this construct is similar to the Theory of Mind one, it focuses not only the cognitive ability to read other's mind, but also the emotional understanding skills. In fact, some studies have shown that having the perspective-taking ability allows you to care about others emotions to facilitate prosocial behavior or to change negative emotions present in others (Baron-Cohen, 2001; Weil, Hayes, & Capurro, 2011). It happens because, generally, people in social contexts do not only try to "read" others' cognitive states, but also the emotional ones, also considered predictors of behaviors. The outsourcing of the ability to understand one's own and others' behavior is defined as reflective functioning (Damiani, 2011). The reflective function, according to the perspective of Fonagy and Target (1997) is defined as “*the developmental acquisition that permits the child to respond not only other people's behavior, but to his conception of their beliefs, feelings, hopes, pretense, plans, and so on*”. It evolved to allow humans to predict and interpret others actions in a fast and efficient way, in the wide range of cooperative and competitive situations that characterize social life (Calaresi & Barberis, 2019; Fonagy & Allison, 2012). Differently from other more strictly cognitive constructs, the reflective functioning involves mainly the emotional aspects of the process of understanding other people's mental states and behaviors. To support and achieve the understanding of mental states, the reflective functioning is related to the management, the modulation and the emotion regulation (Calaresi & Barberis, 2019). To evaluate reflective functioning scientific literature developed self- report scales and questionnaire such as the

Reflective Functioning Scale (Fonagy et al., 1998), and the Reflective Functioning Questionnaire (RFQ), to specifically assess one's own mentalization ability (Fonagy, Target, Steele & Steele, 1998). The last construct considered is that of mentalization, which includes the previous constructs and dwells on their wide-ranging analysis, also taking into consideration the clinical field, as well as the link between the ability to "put oneself in other people's shoes" and the construction of interpersonal relationships from the emotional and affective point of view. The next paragraphs will be dedicated to a detailed analysis of this relevant construct.

2. Mentalization: historical evolution of the construct

Starting from an etymological analysis of the term "mentalization", there are two strands of studies that led to its genesis. First studies moved from the French context, in which some authors attribute the beginning of its common use to the Swiss neurologist and psychologist Édouard Claparède that in the little-known essay "*The mentalisation*" (1931), examines the possible circumstances in which awareness and intelligence intervene in behaviors. The inclusion of the word "mentalization" in the psychological field, more precisely in psychiatric literature, dates back to the second half of the previous century, when Green and most of all Marty (Marty, 1991; 1990), used it to highlight how in psychosomatic patients there were quantitative and qualitative alterations of representations of mental states (Debanné, 2018). This discovery was made, in a more implicit way, already by Sigmund Freud, who had observed how mental processes were the product of "the link between somatic energies and thought, that is, transforming something that is not mental into something mental" (Allen, Fonagy, Bateman, 2008, p. 8). As far as the Anglo-Saxon world is concerned, the term mentalization was included in the Oxford English Dictionary (Baldoni, 2014) as early as 1906, in particular underlining the hypothesis that having awareness of the mental world is not innate but derives from teaching or learning (Debanné, 2018). It is with the research work of Peter Fonagy that the roots of the term mentalization emerge,

by starting from the research of the most ancient usage of the word mentalization (Fonagy, 2014); by using "Google Ngram Viewer", a research browser, the author quantified the spreading of the mentalization word in the archived literature from Google Books (Debbannè, 2018), evidencing that already between 1880 and 1890 the use of this word reaches numerically the same of the contemporary usage. After a period of reduced diffusion, this term has been progressively mentioned between 1970 and 2000 until it reached a proliferation in recent years.

About a century later the emergence of the term mentalization, Christopheher Frith and his wife Uta (1987) and Fonagy, separately, arrive to set the basis for what is the contemporary theoretical formulation of mentalization. They both gave rise, to a broad context of empirical studies on the ability to think mental states. Starting from empirical work on schizophrenic patient disorders and children with autistic spectrum, the term mentalizing, conceptually overlapped and interchangeable with the term mentalization, became popular (Frit, 1992; Frit & Frith, 1999) thus entering the field of neuroscience and cognitive sciences (Debanné 2018). The Frith couple used the term in a completely cognitive way almost by overlapping the meaning with the Theory of Mind described in the previous paragraph. At the same time, Fonagy and his collaborators (Fonagy, Steele & Steele, 1991; Fonagy & Target, 1996, 2000, 2007; Target & Fonagy, 1996) explores the affective evolution of the term considering the perspectives derived from the attachment theory, developmental psychology and the approaches of cognitive and affective neurosciences (Debbannè, 2018; Fonagy et al, 2009). It was the researchers Allen, Fonagy and Bateman in 2008 who underlined the difference between mentalization and Theory of Mind. The term "mentalization" would correspond to a process concerning cognitive and emotional aspects of the person. The term "Theory of the mind" would refer to a competence focused solely on the cognitive side and focused mainly on the attribution and interpretation of other people's mental states, penalizing the reflection towards their internal contents (Allen, Fonagy, Bateman, 2010; Marchetti, Bracaglia, Cavalli, Valle, 2013). It is the redefinition of the concept of mentalization proposed

by the three authors that underlines the definition to which we refer nowadays. Allen, Fonagy and Bateman in 2008, redefine mentalization with the following words: "*When we mentalize we are engaged in a (mainly preconscious) form of imaginative mental activity, which allows us to capture and interpret human behavior in terms of mental states, such as needs, desires, emotions, beliefs, goals, intentions and motivations*" (in Midgley, Vrouva, 2014, p. 21). An activity that concerns the mind, which in order to function, according to Fonagy and others (1997), approaches the use of the cognitive process of attention and a form of imagination. In fact, in order to understand and interpret others' mental states we must first of all pay attention to them and, secondly, imagine what the other person might think or desire, because we can never be sure of knowing what is in someone else's mind. Likewise, this ability allows people to become aware of themselves and their mental processes.

3. The Mentalization development

The development of mentalization has been studied in relation to other milestones of developmental psychology. In order to understand one's own and others' mind, interactions but even more relationships are fundamental. Hoffer (1995) affirms that early caregivers relationship favors the typical development of mammals, including humans. The attachment theory formulated by John Bowlby (1969) analyzes the first interpersonal relationships between a child and a caregiver. These bonds, defined attachment bonds, are interpersonal relationships characterized by mutual affection, in which one of the subjects, typically the child, seeks protection, care and a safe base in the other, defined caregiver because it has the role of taking care of him. The attachment bonds are formed thanks to the adaptation of the child to the caregiver (mainly the mother) and are manifested in a series of behaviors, called attachment behaviors, activated by the child. Bowlby, first indicates that the attachment behaviors acted by the child, such as the closeness seeking or social smile, are matched by as many

behaviors of adults (touching, hugging). Attachment behaviors are activated when something in the child's environment makes him or her insecure: the purpose of this bond is precisely to make him or her experience safety. The child needs both closeness, therefore to stay in contact with his mother, and to develop the exploration, a capacity that allows the subject to discover new people and objects around him. These two needs are considered the opposite poles, because the closeness recalls the presence of the mother (or another caregiver, an educational figure of reference), while, for exploration, observe the surrounding environment. The mother is important from before the child is born and that she can establish a bond of attachment with him: through maternal sensitivity mothers are able to respond quickly to the child's signals and recognize the child's needs, able to face and manage conflict situations and show empathy.

The author also identifies attachment as a biological child predisposition towards the person who ensures his survival and taking care of him (Camaioni & Di Blasio, 2007). It is an innate condition to establish a special and deep bond with the mother from the very first hours of life; the mother is the one who provides her with nourishment and affection and satisfies her primary and secondary needs. *"Attachment is an innate behavioral system, which predisposes the child to seek proximity with the adult, which protects him from dangers and responds to those needs that due to his physiological immaturity is not able to satisfy independently"* (Maggiolini, 2017, p. 89). The bond of attachment is progressively created from the first months of life and around the end of the first year the child is able to create specific expectations with regard to the behavior he or she puts into practice in the relationship with the caregiver and at the same time the caregiver puts into practice with him or her. It happens because in his development child learn how to walk (experiencing the exploration behavior, important for this relationship) and to communicate in an increasingly competent way (such as experiencing social smiling, vocal and facial expression of needs). After the attachment bond is created, the child integrates a representative system of his bond called "internal working model" (Bowlby, 1973) that will guide him in the

construction of future bonds (Fonagy & Allison, 2014). The internal working model consist of all those behaviors, those representations of the world and of oneself that the child has experienced within his attachment history. They can be transformed when, in the course of life, one's own internal working models meet those of someone else, allowing new experiences and the formation of new representations of oneself and the world. These representations are characterized by different levels of security, derived firstly by maternal sensitivity, then by the emotional availability and sensitivity of new caregivers, for example teachers in childhood or affective partners in adulthood. Furthermore, they guide the construction of new relevant affective bonds (e.g. with their children; Van Ijzendoorn, 1995) and represent a prevent factor, if secure, or a risk factor, when insecure, for psychopathology (Fonagy & Allison, 2014) and social development (Lyons-Ruth & Jacobvitz, 2008). From what has been said so far the link that the attachment theory has with the mentalization is easily: to better understand children needs or to better answer to them, the caregiver has to apply mentalization ability. For Fonagy and Luyten (2009) attachment relationships are at the basis of children mentalization ability because in showing secure attachment relationships the mentalization development is showed, on the contrary non-secure ones could lead to low mentalization abilities. It is within secure attachment relationships, in fact, that the child is free to explore the caregiver's mind and to talk explicitly about cognitive and emotional states of mind, getting to know his own internal states. On the contrary, in bonds of insecure type, in which mental states are little treated, or distorted and manipulated by the adult, the child does not have the chance to explore others' minds, thus struggling to know his own. This is supported by studies on the relationship between mentality and attachment in the case of psychopathology, such as borderline personality disorders (Migdley & Vrouva, 2014), risk and self-harm behaviors (Marchetti, Bracaglia, Cavalli & Valle, 2013; Vrouva, Fonagy, Fearon & Roussow, 2010) or mistreatment and abuse. In these cases, in fact, authors find a difficulty to explore the mind and explicitly treat internal states, a

difficulty that seems to be related to the construction of insecure attachment bonds. Thanks to the mothers' mentalization, the child learns she/he has his own mind and experience her/his first mindreading in a safe bond. To a mother it's important imagining, considering and understanding that the future newborn is a human being endowed with a mind. This predisposition is called mind-mindedness and is defined as the mother's capacity to speak of mental states in reference to the child's experience, treating him or her as a subject endowed with mind and providing appropriate comments on what she/he is experiencing (Meins et al., 2006). The mind-mindedness construct refers to the concept of maternal sensitivity from the attachment theory. Studies related to this construct focus on the type of comments that the a mother makes in the attribution of mental states on the son (Kirk, Pine, Wheatley, Howlett, Schulz, & Fletcher, 2015). Starting from mentalization, made explicit through the use of language, the mother tries to comment the child mind experience (Meins et al., 2002). The other's mind representation is necessary for a good mother-child dyad and for the creation of a representation of this dyad (which begins its formation process already from pregnancy). It has also been studied how mentalization decreases the risk of misunderstandings in communication between family members, improves prenatal attachment, and thus improves interaction and promotes a secure attachment in postpartum (Pajuolo, 2015).

The perspective just presented underline how the mentalization, which is built in attachment bonds, is relevant throughout the lifespan. Specifically, its good functioning favors good adaptation from a social point of view, with skills that consider emotions, their regulation and people cognitive and relational abilities, it is also active when adults behaves as caregivers, building new attachments bonds in which support children mentalization.

4. This thesis

As we saw from the theoretical examination, mentalization can be defined as a lifespan construct because it develops from early childhood but does not stop evolving and has its complete definition until adulthood: its evolutionary trajectory is closely linked by context, interactions, experiences and cognitive and emotional development of individuals. The aim of this thesis is to study the ability to understand oneself and “put oneself in the shoes of the other” starting from adulthood, the age of maximum development of this ability. The first research concerns the Italian validation of a scale that evaluates mentalized affectivity, a construct that integrates in the emotion regulation process the mentalization ability, in adulthood. The second study verifies how the ability to “put oneself in the shoes of others”, consolidated in an evolutionary phase such as that of pre-adolescence, manifests itself within the attachment relationship between children and teachers. Finally, the third study verifies whether this ability can be improved in the school context and have an impact on relational and social constructs related to the decision-making processing in economic field, such as fairness, altruism and donation.

Chapter 2 is the psychometric validation of the Italian version of the Mentalized Affectivity Scale (MAS) developed by Greenberg and colleagues in 2017. Mentalized affectivity integrates the mentalization ability within the process of emotional regulation. It is a purely adult construct because the ability to be or not to be able to understand one's own emotional side and one's ability to “put oneself in the other's shoes” are fully developed. The scale in the original version is composed of 60 elements divided on the factors of Expression, Identification and Elaboration of emotions. In this validation study five factors named Emotional Processing, Expressing Emotions, Identifying Emotions, Control Processing and Autobiographical Memory have been found, helping to shed light on the complexity of the construct under investigation and opening to future exploration

in an intercultural perspective. The importance of having a validation in a different context from the one from which the scale originates allows you to take advantage of a new tool adaptable both in research activities and in the clinical field. This allows, through a single scale, to enrich the research on mentalization within a panorama in which it is, nowadays, challenging identify measures that evaluate the different facets of the construct at the same time.

Chapter 3 shifts attention from adulthood to late childhood, a period in which the ability to "put oneself in the other's shoes", whose foundations were previously acquired mainly in the family, is enriched in extrafamilial contexts, first of all at school. In fact, in the interpretative frame of mentalization, this competence is built in childhood within attachment relationships, which in the perspective of multiple attachments can concern family and extra-family caregivers (like the teacher; for the characteristics of extra-family caregivers see Howes & Spieker, 2008). The present research investigates the link among mentalization, teacher - child attachment relationship, and emotional regulation in ten-year-old children. The link among attachment security, mentalization, and affective regulation evidences the important role of emotion regulation in the interpersonal relationships between children and caregivers. The hypotheses are to ascertain whether the representation of the attachment bond with the teacher influences the style of mentalization and cognitive strategies of emotional regulation used by school aged children. Through an analysis of the results from the point of view of multiple attachments, we wanted to emphasize that teachers also play an important role in the children's construction of the self-representation and of their ability to regulate their emotions in stressful situations. The results seem to support the hypothesis that the representation of the teacher-child relationship has an impact on the mentalization of the child and the use of strategies to regulate emotions. Particularly, results are in line with the perspective proposed by Pianta (1999), according to which the attachment bond with the teacher is a protective factor for the child's development in the school context. This, in fact,

could also be due to the relationship that the representations of attachment have with mentalization and emotional regulation, both essential skills for a good adaptation in social contexts such as school. In addition, the representation of the teacher-child relationship has an impact on child's mentalization style and on the use of emotion regulation strategies: affective relationships with a non-familiar caregiver in extra-familiar context influences children's socio-emotional abilities contributing to a self-image-development, that concerns the ability to mentalize and to regulate one's emotions from a cognitive point of view.

Chapter 4 also focuses on the school context, proposing an application of the “put oneself in the other's shoes” ability in children between 8 and 10 years of age. Specifically, the research concerns the application of a training based on the perspective-taking ability aimed to improve children's skills related to three constructs: fairness, altruism, and intertemporal choice. In this case, the aim was to verify whether “putting oneself in the other's shoes” affects the above-mentioned relationship-type constructs, considered at the basis of the decision-making process in daily situations. Decision-making is considered a complex competence widely studied in both economic and psychological literature. In particular, in the psychological field it has been highlighted the impact that some psychological competences at the basis of social behaviour, such as fairness, altruism and intertemporal choice, have on the decisions (Castelli & Marchetti 2012; Marchetti et al., 2016). According to the literature, fairness plays a central role in our decisions because it concerns the way we judge and are judged by others when we allocate resources and this involves the ability to “put ourselves in other people's shoes” (Fehr & Smith, 1999). Altruism is important for daily decisions because, by through the perspective-taking people can to help others in achieving their goals and sharing valuable goods and information, providing an advantage both to oneself and to the other (Warneken & Tomasello, 2009). The intertemporal choice investigates the decisions made between choices that bring immediate benefit and choices that bring greater benefit in the future, classically

investigated through the paradigm of delayed gratification (for example, Berns, Laibson, Loewenstein, 2007; Marchetti, Castelli, Sanvito, 2009). This construct is related to mentalization because it requires individuals to understand mental contents in order to trade off costs and benefits in different time, applied in a different number of fields, for example savings, investments, education, health care and so on. The training used a conversational methodology to solicit the perspective-taking in participants: starting from a narrative stimulus, an expert guides a conversation in class on a specific topic on the narrative, promotes the assumption of other perspectives, activates and supports conversations and discussions among the children, helps the participants to build new knowledge based also on others point of view. The results showed the effectiveness of the training with regard to the constructs of fairness and altruism, showing that it is possible to train the perspective-taking ability in classroom and that this training, supporting the ability to “put themselves in the shoes of others”, has an impact on the basic components of the decision-making process. In this sense, the study opens up to important reflections regarding the multiple applications of perspective-taking even in childhood, where it can also become a relevant component for specific educational paths that focus on decision-making processes, such as the economic-financial one.

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CHAPTER 2

The Mentalized Affectivity Scale (MAS): Development and validation of the Italian version

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Abstract

This study proposes a psychometric validation of the Italian version of the Mentalized Affectivity Scale (MAS) developed by Greenberg and colleagues in 2017. The mentalized affectivity construct integrates mentalization ability in the process of emotional regulation. An adult sample (N=506) completed the 60-items MAS online version. In contrast to the three-factor structure of the original version, the Italian context, confirmatory and exploratory factor analyses with splitted sample (CFA= 258; EFA= 248), revealed a five-factor structure. The hierarchically structured MAS factors are: Emotional Processing (being able to process emotion in situations); Expressing Emotions (talking and knowing emotions); Identifying Emotions (awareness of emotions); Control Processing (to control emotional reactions and expression), and Autobiographical Memory (related to childhood experiences). We also verified the validity and reliability of the Italian version of the MAS by correlating the above five factors with measures of emotion regulation, reflective functioning, personality, well-being, and self-efficacy: The new 35-item MAS scale showed robust correlations with all the tested constructs. Our results confirm that the MAS is a useful measure to assess mentalized affectivity, with the Italian version showing a more complex structure than the original English one, thus enriching the literature about mentalization.

Introduction

Beginning from early childhood, people learn how to manage their emotions in everyday life in order to adapt properly to social situations (Greenberg et al., 2017). This ability, known as emotion regulation, is defined as *“the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one’s goals”* (Thompson, 1994 pp. 27). This refers to psychological processes involved in the use of specific strategies aimed at managing emotions. The clinical perspective has introduced the concept of affect regulation, which concerns not only emotion regulation as above defined, but also the ability to reflect on one's own and others' emotional inner states and to be aware of such mental contents (Jurist, 2005). Indeed, affect regulation is a rich psychological construct involving both cognitive and affective abilities. It develops from childhood to adulthood thanks to the contributions of biological predispositions, attachment relationships and mentalization. Fonagy and colleagues (2002) recognize that affect regulation has a biological base, consisting of a series of innate automatic mechanisms aimed at maintaining the equilibrium with the environment.

Throughout human development, this first form of affect regulation evolves in a more complex direction, mediated by increasingly higher cognitive skills: this process occurs thanks to the achievement of mentalizing skills, which in turn are shaped by attachment relationships. Mentalization is the ability to understand and interpret human behavior on the basis of mental states as intentions, emotions, desires, and beliefs (Bateman & Fonagy, 2004; Choi-Kain & Gunderson, 2008; Fonagy & Allison, 2012). It has been described as *“the process by which a brain becomes a mind”* (Jurist, 2005, pg. 428), as it concerns both the mind and the emotional world of oneself and other people (Solbakken et al., 2011; Valle et al., 2016; 2018). Mentalization abilities have an impact on affect regulation basic process, thus enabling the emergence of a

more sophisticated kind of affect regulation, named mentalized affectivity (Jurist, 2018, Jurist, 2005; Fonagy et al., 2002).

Mentalized affectivity concerns the identification and self-reflection on emotions. It refers to the typical adult ability to make sense of one's own affective experience, activating a reflection on it, and using one's own awareness about it. In fact, in mentalized affectivity, affect regulation refers to the capacity of being aware of one's own affect by remaining within that affective state, and to attribute a meaning to that state by referring to past experiences, either real or imagined. Then, mentalized affectivity supports individual's affective experience through a representation of current and future affective experiences in the light of the meaning attributed to the past events. According to Greenberg and colleagues (2017) and Jurist (2018), mentalized affectivity consists of three components: "Identifying emotions", "Processing emotions", and "Expressing emotions". "Identifying emotions" does not only mean being able to recognize and to name emotions, but also being aware of their meaning in the situations in which they occur or, later on, when rethinking about past experiences. "Processing (or modulating) emotions" means knowing how to manage emotions, for example modifying their intensity, or refining them in the light of new experiences. Finally, "Expressing emotions" refers to two levels, one related to the inward expression, and one related to communication to others. The first level evokes the concept of reflective functioning, and conceives the individual as able to experience one's own emotions without necessarily showing them to others. The second level refers to the capacity to communicate one's own internal states considering others' internal world. In this last case, "Expressing emotions" means being able to put other people in the position to understand and be involved in what we feel, both implicitly and explicitly, by verbalizing them, describing or simply being aware of their disclosure.

In order to evaluate these three components of mentalized affectivity, Greenberg and colleagues created the *Mentalized Affectivity Scale* - MAS (Greenberg et al., 2017 , Italian translation in Jurist, 2018), a 7-points Likert scale in which respondents indicate their degree of agreement to 60 statements. A principal-components analysis (PCA) with varimax rotation showed that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .95, and that the 60-items scale explained the 43% of the variance (Greenberg et al., 2017). Moreover, the hierarchical analysis revealed a three-factors scale structure: Identifying, Processing, and Expressing. Examples of the Identifying-factor items are: “Understanding my emotional experience is an ongoing process” or “I am curious about identifying my emotions”. For the Processing-factor, some items are “When I am filled with a negative emotion, I know how to handle it” or “I am good at controlling my emotions”. Finally, for the Expressing-factor, some examples are “People tell me I am good at expressing my emotions” or “I often keep my emotions inside”.

As it can be seen from the examples above, answering to the items of the MAS requires a mentalization process about one’s own positive and negative emotions. This process focuses both on one’s own personal experience in emotion management (e.g. “I am good at distinguishing between different emotions that I feel”), and on the tendency to take the point of view of other people in relation to oneself (e.g. “I am open to other people’s view of me because it helps me to better understand myself”). The involvement of mentalization in emotion regulation made the MAS scale an innovative tool in the international panorama, with translations in 10 different languages (Jurist & Sosa, 2019). In fact, as already highlighted by Greenberg and colleagues (2017), several tasks assessing other constructs close to mentalized affectivity have been created over the past years, but they are able to capture only certain aspects of the larger construct of mentalized affectivity. For example, the *Emotion Regulation Questionnaire* (ERQ; Gross & John, 2003 in the Italian version of Balzarotti et al., 2010) is a 10 items tool on a 7-point-Likert scale detecting the use of two different emotion regulation

strategies: cognitive reappraisal, rethinking a situation in order to modify its emotional meaning, and emotional impact and expressive suppression, referring to modifying or reducing emotional behavior. In this case, there are some similarities between the cognitive reappraisal tested by the ERQ and the Processing factor of the MAS, as well as between the expressive suppression factor of the ERQ and the negative pole of the Expressing factor of the MAS, but the component of the Identification factor is lacking in the ERQ while it is present in the MAS. Well known measures developed so far to assess mentalization are the Reflective Functioning Scale (Fonagy et al., 1998), based on the Adult Attachment Interview, and the Reflective Functioning Questionnaire (RFQ), the first self-report measure developed to specifically assess one's own mentalization ability (Fonagy et al. 2016).

These measures test mentalization in terms of reflective functioning, whereas the MAS entails mentalized affectivity. In fact, although reflective functioning and mentalized affectivity are similar constructs, as they both imply the ability to reflect on oneself, the first one seems to regard mainly the reinterpretation of the past during critical life situations (Falkenström et al., 2014), whereas the second one is focused on the capacity to live current emotional experience. This difference is also evident analyzing the structure of the RFQ, which has two subscales, Certainty and Uncertainty in mentalization. High scores on the "Certainty" subscale are related to hypermentalizing in reflective functioning, i.e. an "over-mentalizing" attitude where the attributed mental states do not correspond to reality. High scores on the "Uncertainty" subscale lead to hypomentalizing, which indicates a poor understanding of one's own and others' mental states (Morandotti et al., 2018). So, the RFQ seems to be particularly sensitive to assess the distortions of mentalization (Sharp & Venta., 2013), whereas the MAS aims at capturing mentalization along the continuum of typical and atypical functioning. Therefore, we think that the development of an Italian version of the MAS is desirable, in order to have a useful tool for research and

intervention on mentalization in the Italian context along with the other above-mentioned measures already developed in the past years.

Aims

In the light of the increasing interest in mentalized affectivity and in its evaluation, we aim to test the psychometric validity and the reliability of the Italian version of MAS in a cohort of Italian adults. Specifically, we aimed to:

1. test the factorial validity (with confirmatory factor analysis - CFA) and the hierarchical structure of the model proposed by Greenberg et al. (2017). We hypothesize that the Italian version of the MAS would reduce into three distinct factors based on the mentalized affectivity theory, as in the original version of the scale;
2. test the assessment's reliability and concurrent and convergent validity by examining associations with the MAS and its socio-affective correlates: the emotion regulation, tested with the Emotion Regulation Questionnaire, and the reflective functioning, tested with the Reflective Functioning Questionnaire. In the first case (MAS and ERQ), since the two measures assess the same construct (albeit with a difference related to mentalization aspects), we hypothesize a relationship between them. In the second case (MAS and RFQ), since both constructs involve mentalization skills (according to the mentalized affectivity model), we hypothesize the existence of associations between these two competences;
3. examine the psychological correlates of mentalized affectivity including personality measures and well-being (such as life satisfaction and self-efficacy). In line with the results obtained by Greenberg and colleagues (2017), we hypothesized that high levels of mentalized affectivity may correlate with some personality traits, such as openness to experience and

extraversion (both related to the emotional experience), and with high levels of well-being.

Methods

Participants

The total number of participants was 779. The final sample was comprised only those who completed 80% of the survey. There were 506 participants (223 (44.1%) were male) aged between 18 and 69 years ($M = 31.8$ years ($SD=13.4$ years)). The number of participants is lower than the original paper ($N=2,840$; Greenberg et al., 2017), but has similar characteristics with regards to gender (male=901, 42%) and age (mean age= 31.58; $SD=11.90$; range 18-65 years). Participants were mostly employed ($N= 323$, 63.8%), single ($N= 362$, 71.5%), living with relatives ($N= 252$, 49.8%) with a high school educational level ($N=336$, 66.4%). Other sample characteristics are presented in Table 1. The only inclusion criteria to take part to data collection was to be on a legal age, i.e. over 18 years.

Table 1. Sample characteristics

Sociodemographic characteristics			
Age, mean \pm SD	31.8 \pm 13.4	Employment status	N (%)
		Employed	323 (63.8)
Gender	N (%)	Unemployed	81 (16.0)
Male	223 (44.1)	Homemaker	12 (2.4)
Female	283 (55.9)	Retired	15 (3.0)
		Retired with some work	1 (0.2)
Educational level	N (%)	activities	74 (14.6)
No title	2 (0.4)	Student	
Primary school	1 (0.2)		N (%)
Middle school	37 (7.3)	Residence type	60 (11.9)
High school	336 (66.4)	Only with spouse or partner	96 (19.0)
Graduate school	104 (20.6)	With spouse or partner and	51 (10.1)
Postgraduate school	26 (5.1)	children	8 (1.6)
		By themselves	252 (49.8)
Marital Status	N (%)	Only with children	1 (0.2)
Single	362 (71.5.)	Only with other family	38 (7.5)
Married	128 (25.3)	members	
Divorced/Separated	14 (2.8)	In a protected structure	
Widowed	2 (0.4)	Other	

Procedures

Data were collected through an online survey hosted on the Qualtrics platform. Once the study protocol was implemented and completed, a link to the survey was presented to university courses in the Psychology of the Department of Human and Social Sciences of the University of Bergamo, and of the Faculty of Education of the Catholic University of the Sacred Heart of Milan. The same link was sent to personal contacts and to other contacts of the participants through a snowball sampling method. In addition to providing a link to the survey, participants were presented with all of the necessary information, including the purpose of the study, the instructions, the duration of the survey, which was estimated in about 30 minutes. In the first page of the survey, participants were informed about personal data processing, and only those who gave their informed consent were included in the data collection. Furthermore, all participants were treated in accordance with the ethical guidelines for research provided by the Declaration of Helsinki (World Medical Association, 2013), American Psychological Association (APA, 2017), and by Italian Psychological Association (AIP, 2013). The study was approved by the local ethical committee of the Department of Psychology of the Catholic University of the Sacred Heart of Milan, according to APA ethical standards. Participants provided some socio-demographic information first, then they completed the Mentalized Affectivity Scale in the Italian translation provided in Jurist (2018). In order to test the validity of the scale, other questionnaires concerning personality, emotional regulation, perception of satisfaction with life, self-efficacy and reflective function were included.

Measures

Sociodemographic information. All participants were asked to provide sociodemographic information such as gender, year of birth, education level, marital status, employment status, and residence type.

Personality. Personality has been assessed through the *Ten Item Personality Inventory* (TIPI; Gosling et al., 2003), in the Italian version of Chiorri and colleagues (I-TIPI; Chiorri et al., 2014). The Italian version of the scale was freely downloaded from Samuel Gosling's website

(http://homepage.psy.utexas.edu/homepage/faculty/gosling/scales_we.htm).

The I-TIPI is a self-report scale that investigates five dimensions of personality. The scale is developed using descriptors from Big Five instruments. The five personality dimensions are (Chiorri et al., 2015): Extraversion (E), being able of preserving the species reproduction thanks to the ability to adapt to the social contexts; Agreeableness (A), having an optimistic view of human nature and get along well with people; Conscientiousness (C), being able to arrange personal things, be methodical and considered by others reliable; Neuroticism (N), related to anxiety and depression, defined as emotional instability, and Openness to Experience (O), be willing to experience with new things and have many and varied interests (Power & Pluess, 2015). Each dimension consists of two items, in a total of 10 items with a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The scoring is calculated by summing the two items for each factor. The minimum and the maximum scores range from 2 to 14. Cronbach's α for each factor is: Extraversion α 0.661; Agreeableness α 0.199; Conscientiousness α 0.456; Neuroticism α 0.496 and Openness to Experiences α 0.457.

Emotion regulation. The *Emotion Regulation Questionnaire* (ERQ; Gross, 2015 in the Italian translation by Balzarotti et al., 2010), is a self-report scale that evaluates the emotional regulation of participants. It is a 7-point Likert scale from 1 (I strongly disagree) to 7 (I strongly agree) consisting of 10 items representing the emotional regulation strategies of cognitive reappraisal (6 items) and expressive suppression (4 items) (Balzarotti et al., 2010). Scoring is obtained by creating an overall score from the two scores obtained in the subscales. The minimum and the maximum scores range from 10 to 70. Cronbach's α for the

cognitive reappraisal subscale is 0.847, while Cronbach's α for the suppression subscale is 0.747.

Life Satisfaction. *Satisfaction with Life Scale* (SWSL; (Diener et al., 1985 in the Italian version of Di Fabio & Busoni, 2009) is a self-report scale that assesses respondents' perception of satisfaction with their lives. It is 5-items scale designed to measure global cognitive judgments of one's life satisfaction. Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale that ranges from 1 (I strongly disagree) to 7 (I strongly agree). The scoring is obtained by summing the scores of each of the 5 items and it ranges from a minimum of extreme dissatisfaction (5) to a maximum of extreme satisfaction (35). Cronbach's α 0.855.

Self-Efficacy. General Self-Efficacy - GSE (Schwarzer, Jerusalem, 1995; in the Italian version of Sibilgia, Schwarzer, Jerusalem, 1995) evaluated through a self-report scale the perception that subjects have of their sense of self-efficacy referring to personal agency. It has 10 items on a 4-point Likert Scale from 1 (not all true) to 4 (exactly true). Scoring is evaluating summing up all the answers, from a minimum score of 10 to a maximum score of 40. Cronbach's α 0.868.

Reflective Functioning. The *Reflective Functioning Scale* (RFQ; Fonagy et al., 2016, in the Italian version retrieved from the Psychoanalytic Unit of University College of London by Fonagy

<https://www.ucl.ac.uk/psychoanalysis/research/reflective-functioning-questionnaire-rfqme>).

The short version of the scale was used: an 8-items self-report scale assessing reflective functioning from 1 (strongly disagree) to 7 (strongly agree). This scale has two scales: Certainty and Uncertainty in mentalization, evaluated on a 7-point Likert scale. Scoring is obtained summing up the items belonging to the two scales, 6 for Certainty (range 0-18) and 6 for Uncertainty (range 0-18). Cronbach's

α for the Certainty subscale is 0.689, while Cronbach's α for the Uncertainty subscale is 0.656.

Statistical Analysis

Data analyses were performed using Jamovi statistical software [The jamovi project (2020). jamovi (Version 1.2) (Computer Software). Retrieved from <https://www.jamovi.org>]. For the sample characteristics, mean values and standard deviations (SDs) for continuous variables were calculated; for categorical/nominal variables, frequencies and percentages were computed. Skewness and kurtosis of the MAS items were first checked to assess normal distribution; West, Finch, & Curran (1995) recommend concern if skewness > 2 and kurtosis > 7.

The factorial validity of the MAS, considering the model proposed by Greenberg et al. (2017), was assessed with confirmatory factor analysis (CFA). Hu and Bentler's guidelines (Hu & Bentler, 1999) for various fit indices were used to determine whether the expected model fits the data. The chi-square test statistic was employed, but considering its sensitivity to sample size, other fit indices were evaluated: (a) the comparative fit index (CFI ≥ 0.90 indicates a good fit); (b) the root mean square error of approximation (RMSEA ≤ 0.08 indicates an acceptable fit); and (c) the standardized root mean square residual (SRMR ≤ 0.08 indicates an adequate fit).

As is often the case, scales translated in different languages and analyzed in different cultural contexts, may not have the same latent factor structure of the original version: in this case, it is appropriate to examine the latent structure of the assessment through an exploratory factor analysis (EFA), followed by a new confirmative factor analysis (CFA). Since this is the case of this study, we examined the latent structure of the MAS through an exploratory factor analysis (EFA), followed by a new confirmative factor analysis (CFA). The total sample was

later randomly divided into two halves. The first sample was used to perform an EFA (SAMPLE A, $n = 258$), and the second was used to perform a CFA in order to validate the EFA structure (SAMPLE B, $n = 248$).

On Sample A, the Kaiser Meyer Olkin (KMO) and the Bartlett's test of sphericity were run in order to be sure that the correlation matrix could be subjected to analyses (KMO should be > 0.5 ; Bartlett's test of sphericity should be significant). The Cattell scree test (judging the elbow of a scree plot) and the Kaiser-Guttman criteria (eigenvalue greater than one) were used to identify the number of factors to be extracted using EFA. EFA with the Oblimin oblique rotation was used to analyze the items on the MAS. Oblique rotation was used because the factors extracted from the MAS are likely to correlate with each other. In the first step, all 60 items were included. Subsequent factor analyses were conducted in a stepwise fashion, in order to eliminate items until a stable factor solution emerged. Loadings in the .40 range or above are generally considered the cut-off on substantial loadings (Floyd & Widaman, 1995; Netemeyer et al., 2003); for this reason, items that had a factor loading $<|.40|$ were excluded, and, after the first step, items that loaded at $>|.40|$ on more than one factor were excluded. Moreover, in order to obtain a more refined and clear-cut solution, those items who showed a loading higher than $|.40|$ on the intended factor, but also a ratio higher than 2 among the primary loading and the highest secondary loading (i.e., the primary loading was two times the highest secondary loading).

On Sample B, CFA was conducted. Maximum Likelihood (ML) was used as an estimation method. Hu and Bentler's guidelines for various fit (Hu & Bentler, 1999) indices were used to determine whether the expected model fit the data.

Cronbach's alpha coefficients were performed on the total sample to examine internal consistency. Cronbach's Alpha below .60 are unacceptable (Nunnally & Bernstein, 1994).

To examine the hierarchical structure of the scale, the one-component through five component solutions was explored using the procedure proposed by Goldberg (2006). First, a single component was specified in a PCA and then, in four subsequent PCAs, we specified two, three, four, and five orthogonally rotated components. The component scores were saved for each solution. Next, correlations between component scores at adjacent levels were computed.

The concurrent validity of the MAS scale was evaluated by correlating the MAS factors with age, education, personality, emotion regulation, life satisfaction, self-efficacy and reflective functioning with the Pearson's r correlation coefficient. Following Cohen's guidelines (Cohen, 1988) we interpreted correlations as measures of the effect size. Correlations were considered weak ($|0.10| < r < |0.29|$), moderate ($|0.30| < r < |0.49|$) or strong ($|0.50| < r < |1|$). Furthermore, t -tests were used to test the difference among profiles of the MAS factors due to gender. Missing values were treated via listwise deletion.

Results

Descriptive analysis of MAS items

The descriptive analysis of the MAS items is presented in Table 2. The average scores of the responses to the 60 items from all the participants ranged from 60 to 420 and were split into three factors scores (Expressing from 14 to 98; Identifying from 24 to 168 and Processing from 22 to 154) (SD MIN=1.15–SD MAX=1.38). Moreover, in line with recommendations by Bulmer (Bulmer, 2012), the results showed that all items had a normal distribution (skewness MIN=-1.56 skewness MAX=0.83; kurtosis MIN=-1.26–kurtosis MAX=2.68).

Table 2. Mean, standard deviation, skewness and kurtosis of the 60-item MAS version.

	MEAN	STANDARD DEVIATION	SKEWNESS	KURTOSIS
1. I often think about how the emotions that I feel stem from earlier life experiences (e.g., family dynamics during childhood).	5.27	1.40	-1.10	0.70
2. I can express my emotions clearly to others	4.61	1.71	-0.48	-1.01
3. I am good at understanding other people's complex emotions.	5.39	1.28	-1.11	1.01
4. I use tools I have learned to help when I am in difficult emotional	5.11	1.40	-0.92	0.42
5. I can see how prior relationships influence my current emotions.	5.60	1.22	-1.26	1.68
6. I can still think rationally even if my emotions are complex.	4.97	1.58	-0.69	-0.42
7. I am able to wait to act on my emotions.	4.62	1.69	-0.40	-0.90
8. I put effort into managing my emotions.	5.29	1.42	-1.19	1.07
9. It is hard for me to talk about my complex emotions.	4.88	1.82	-0.63	-0.77
10. When I am filled with a negative emotion, I know how to handle it	4.17	1.61	-0.22	-1.06
11. I often know the reasons why I feel the emotions I do.	5.17	1.44	-0.92	0.14
12. Understanding my emotional experience is an ongoing process.	5.72	1.29	-1.14	1.11
13. I am often confused about the emotions that I feel.	3.59	1.75	0.27	-1.08
14. I am able to adjust my emotions to be more precise.	3.71	1.54	-0.05	-0.75
15. It is hard for me to manage my emotions.	3.75	1.68	0.16	-1.05
16. Knowing about my childhood experiences helps to put my present emotions within a larger context.	4.76	1.56	-0.55	-0.48
17. It is easy for me to notice when I am feeling different emotions at the same time.	4.71	1.40	-0.57	-0.23
18. I often think about my past experiences to help me understand Emotions that I feel in the present.	5.11	1.44	-0.92	0.30
19. I am able to keep my emotions to myself if the timing to express Them isn't right.	5.26	1.70	-0.93	-0.10
20. I often keep my emotions inside.	4.96	1.79	-0.65	-0.77
21. I can easily label "basic emotions" (fear, anger, sadness, joy, and surprise) that I feel.	5.68	1.34	-1.30	1.52
22. I am good at increasing emotions that I want to feel more.	3.93	1.61	-0.01	-0.83
23. I am good at controlling my emotions.	4.56	1.62	-0.46	-0.85
24. When I express my emotions to others, it is usually jumbled.	3.89	1.77	0.04	-1.20
25. When I am filled with a positive emotion, I know how to keep the feeling going.	4.35	1.45	-0.20	-0.50
26. I am good at controlling emotions that I do not want to feel.	3.29	1.69	0.55	-0.73
27. I am quick to act on my emotions.	4.23	1.63	-0.15	-0.90
28. It helps me to know the reasons behind why I feel the way that I do.	5.57	1.26	-1.23	2.02
29. I am aware of recurrent patterns to my emotions.	5.38	1.32	-1.14	1.25
30. People tell me I am good at expressing my emotions.	4.07	1.61	-0.11	-0.62
31. If I feel something, I prefer not to discuss it with others.	4.00	1.75	-0.03	-1.11
32. It takes me a while to know how I am really feeling.	3.86	1.71	-0.01	-1.15
33. I try to understand the complexity of my emotions.	5.12	1.34	-0.73	0.26
34. It is important for me to acknowledge my own true feelings.	5.97	1.20	-1.56	2.68
35. I often figure out where my emotions stem from.	5.09	1.36	-0.83	0.21
36. If I feel something, I would rather not convey it to others.	4.41	1.67	-0.24	-0.88
37. I often look back at my life history to help inform my current emotional state and situation.	5.14	1.45	-0.74	-0.034
38. I am open to what others say about me to help me know what I am feeling.	5.08	1.43	-0.79	0.037
39. People get confused when I try to express my emotions.	3.43	1.53	0.31	-0.61
40. Sometimes it is good to keep my emotions to myself.	5.51	1.38	-1.09	0.94
41. I am good at distinguishing between different emotions that I feel.	5.14	1.32	-0.86	0.28

42. I am curious about identifying my emotions.	5.32	1.36	-0.70	-0.02
43. If a feeling makes me feel uncomfortable, I can easily get rid of it.	3.38	1.60	0.42	-0.80
44. I often know what I feel but choose not to reveal it outwardly.	4.88	1.57	-0.55	-0.51
45. If I feel something, it often comes pouring out of me.	3.82	1.75	0.11	-1.12
46. I try to put effort into identifying my emotions.	5.06	1.42	-0.75	0.08
47. I can pinpoint childhood experiences that influence the way that I often think and feel.	5.04	1.55	-0.71	-0.20
48. If I feel something, I will convey it to others.	4.22	1.57	-0.31	-0.73
49. Thinking about other people's emotional experiences helps me to think about my own.	4.87	1.56	-0.85	0.002
50. I can see how prior relationships influence the relationships that I have now.	5.37	1.33	-1.00	0.77
51. It is helpful to think about how my emotions stem from family dynamics.	5.34	1.42	-1.14	1.06
52. I am open to other people's view of me because it helps me to better understand myself.	5.17	1.39	-0.87	0.34
53. I rarely think about the reasons behind why I am feeling a certain way.	2.96	1.65	0.80	-0.28
54. It's important to understand the major life events that have had an impact on my behavior.	5.75	1.15	-1.32	2.28
55. I am not aware of the emotions I'm feeling when in conversation.	2.67	1.46	0.83	-0.07
56. I am more comfortable "talking around" emotions I am feeling, rather than talking about them directly	3.89	1.82	0.05	-1.26
57. I can quickly identify my emotions without having to think too much about it.	4.58	1.56	-0.46	-0.74
58. I am able to understand my emotions within the context of my surroundings.	5.05	1.24	-0.70	0.19
59. I can tell if I am feeling a combination of emotions at the same time.	4.90	1.31	-0.74	0.23
60. I am interested in learning about why I feel certain emotions more frequently than others.	5.58	1.27	-1.16	1.34

Confirmative factor analysis

A confirmative analysis with varimax rotation was run using Greenberg and colleagues' criteria (Greenberg et al., 2017; Devine et al., 2014). The CFA fits statistics of the three factors model exhibited a poor fit ($\chi^2(1710) 5337,50$, $P \leq 0.001$; CFI 0.60; RMSEA 0.07; SRMR 0.12).

Factor Structure of the Mentalized Affectivity Scale. Exploratory Factor Analysis

Data from Sample A and 60 items were used in these analyses. The Bartlett's sphericity test ($\chi^2 = 7605$, $p < .001$) and the KMO=0.84 have ensured that the correlation matrix could be subjected to factor analysis. The Cattell scree test and the Kaiser-Guttman criteria indicated that a five-factor solution was the most appropriate. EFA was then conducted, with five factors extracted. The initial pool of 60 general items, after subsequent factor analyses conducted in a stepwise

fashion, was reduced to 35. The following twelve items were excluded, because their loadings were lower than .40: “I am good at understanding other people’s complex emotions.”; “I use tools I have learned to help when I am in difficult emotional situations.”; “I can see how prior relationships influence my current emotions.”; “I put effort into managing my emotions.”; “It is easy for me to notice when I am feeling different emotions at the same time.”; “I am good at increasing emotions that I want to feel more.”; “When I am filled with a positive emotion, I know how to keep the feeling going.”; “I am quick to act on my emotions.”; “I am aware of recurrent patterns to my emotions.”; “I am open to what others say about me to help me know what I am feeling.”; “Thinking about other people’s emotional experiences helps me to think about my own.”

The following twelve items were excluded because they showed a ratio higher than 2 among the primary loading and the highest secondary loading: “I can express my emotions clearly to others.”; “It is hard for me to manage my emotions.”; “I often think about my past experiences to help me understand emotions that I feel in the present.”; “I am able to keep my emotions to myself if the timing to express them isn’t right.”; “People tell me I am good at expressing my emotions.”; “I often look back at my life history to help inform my current emotional state and situation.”; “People get confused when I try to express my emotions.”; “I can see how prior relationships influence the relationships that I have now.”; “It is helpful to think about how my emotions stem from family dynamics.”; “I rarely think about the reasons behind why I am feeling a certain way.”; “It’s important to understand the major life events that have had an impact on my behavior.”; “I am more comfortable “talking around” emotions I am feeling, rather than talking about them directly.”

Table 3. Component loadings for 35-item MAS.

	Factors					Std Est.
	1	2	3	4	5	
41. I am good at distinguishing between different emotions that I feel.	0.783					0.772
57. I can quickly identify my emotions without having to think too much about it.	0.759					0.725
35. I often figure out where my emotions stem from.	0.709					0.691
58. I am able to understand my emotions within the context of my surroundings.	0.697	-0.274				0.739
32. It takes me a while to know how I am really feeling.	0.647					-0.584
11. I often know the reasons why I feel the emotions I do.	0.589					0.599
55. I am not aware of the emotions I'm feeling when in conversation.	-0.542				0.221	-0.487
59. I can tell if I am feeling a combination of emotions at the same time.	0.537		0.254			0.486
13. I am often confused about the emotions that I feel.	-0.533	0.208	0.231			-0.536
21. I can easily label "basic emotions" (fear, anger, sadness, joy, and surprise) that I feel.	0.480					0.528
44. I often know what I feel but choose not to reveal it outwardly.		0.780				0.696
31. If I feel something, I prefer not to discuss it with others.		0.730				0.788
20. I often keep my emotions inside.		0.723				0.700
36. If I feel something, I would rather not convey it to others		0.703				0.621
48. If I feel something, I will convey it to others.		-0.655			0.238	-0.689
45. If I feel something, it often comes pouring out of me.		-0.577				-0.466
40. Sometimes it is good to keep my emotions to myself.		0.484				0.389
9. It is hard for me to talk about my complex emotions.	-0.220	0.466				0.589
33. I try to understand the complexity of my emotions.			0.738			0.653
46. I try to put effort into identifying my emotions.			0.688			0.722
42. I am curious about identifying my emotions.			0.679			0.751
34. It is important for me to acknowledge my own true feelings.			0.665			0.692
60. I am interested in learning about why I feel certain emotions more frequently than others.			0.632			0.581
12. Understanding my emotional experience is an ongoing process.			0.544			0.340
28. It helps me to know the reasons behind why I feel the way that I do.			0.406			0.502
10. When I am filled with a negative emotion, I know how to handle it.				0.738		0.712
6. I can still think rationally even if my emotions are complex.				0.686		0.573
26. I am good at controlling emotions that I do not want to feel.				0.600		0.584
7. I am able to wait to act on my emotions.				0.578		0.495
23. I am good at controlling my emotions.	0.219	0.233	-0.217	0.538		0.740
14. I am able to adjust my emotions to be more precise.				0.463	0.229	0.417
43. If a feeling makes me feel uncomfortable, I can easily get rid of it.				0.444		0.505
16. Knowing about my childhood experiences helps to put my present emotions within a larger context.					0.703	0.634
47. I can pinpoint childhood experiences that influence the way that I often think and feel.					0.621	0.852
1. I often think about how the emotions that I feel stem from earlier life experiences (e.g., family dynamics during childhood).					0.587	0.660

Note. 'Principal axis factoring' extraction method was used in combination with a 'oblimin' rotation

The pattern of factor loadings from the five-factors exploratory measurement model for the MAS scale with 35 items is given in Table 3. The first extracted factor explains 12.85% of the variance after rotation. It showed loadings from ten items evaluating a self-assessment of one's ability to be aware of one's own emotions. This factor can be named "Emotional Processing". The second extracted factor explains 10.64% of the variance after rotation. It showed strong loadings from eight items assessing the way people try to express and communicate their emotions with others, i.e. externalizing them. This factor can be labelled "Expressing Emotions". The third extracted factor explains 9.53% of the variance after rotation. It showed loadings from seven items assessing people ability to identifying and labelling their emotions. This factor can be called "Identifying Emotions". The fourth extracted factor explains 7.80% of the variance after rotation. It showed strong loadings from seven items assessing people's ability to cognitively control their emotions. This factor can be named "Control Processing". The fifth extracted factor explains 4.89% of the variance after rotation. It showed loadings from three items assessing people memories about personal childhood emotion experiences. This factor can be labelled "Autobiographical Memory". The total variance explained by the five factors extracted was 45.7%. As shown in Table 2, no item displays a loading lower than .40. The extent of cross-loading between factors was moderate; the size of this secondary loading was usually small, below .30.

Factor Structure of the Mentalized Affectivity Scale. Confirmatory Factor Analysis

CFA was conducted separately on data from Sample B using the 35 items; item selection to load on CFA factors was based on EFA loadings. Table 3 presents the standardized factor loadings in Sample B. The fit of the CFA model to the data from the 248 subjects was acceptable ($\chi^2 (584) = 1076.00$ $p <.001$; RMSEA=.058; SRMR =.074). Loadings from the CFA were comparable with those found in the EFA, identifying the five factors.

Hierarchical structure

The hierarchical structure of the one-component through five component solution was conducted using the procedure proposed by Goldberg (2006) on the total sample of participants. The resulting hierarchical structure is displayed in Figure 1. Items that loaded highest on the one-component solution (FUPC) represented Processing Emotions and Identifying Emotions, which are related to the awareness of emotions and to the ability to recognize them, including “I am good at distinguishing between different emotions that I feel”, “I am able to understand my emotions within the context of my surroundings”, and “I often figure out where my emotions stem from”. Items in the two-component solution appeared to represent “Emotional and cognitive processing” and “Identifying and Expressing” dimensions of mentalized affectivity. Items that loaded high on the “Emotional and cognitive processing” dimension were “I am good at distinguishing between different emotions that I feel”, “I often figure out where my emotions stem from”, and “I am able to understand my emotions within the context of my surroundings”. This component remained virtually unchanged in the three-component solution. Items that loaded high on the “Identifying and Expressing” dimension were “If I feel something, I will convey it to others”, and “If I feel something, I prefer not to discuss it with others”, and “I am curious about identifying my emotions”. In the three-component solution, the “Identifying and Expressing” dimension split into two subcomponents that differentiated “Identifying present and past” affects from “Expressing” affects. Items that loaded highly on the “Identifying present and past” affects were “I am curious about identifying my emotions.”, and “I try to put effort into identifying my emotions”. Items that loaded highly on the “Expressing” dimension were “If I feel something, I prefer not to discuss it with others”, “I often know what I feel but choose not to reveal it outwardly”, “I often keep my emotions inside”. In the four-component solution, both “Identifying present and past” and “Expressing” dimensions remained virtually unchanged; the “Emotional and cognitive processing”

component split into two subcomponents that differentiated “Emotional Processing” affects and “Control Processing” affects. Items that loaded highly on the “Emotional Processing” were "I am good at distinguishing between different emotions that I feel", "I can quickly identify my emotions without having to think too much about it", and "I am able to understand my emotions within the context of my surroundings"; items that loaded highly on the “Control Processing” were "When I am filled with a negative emotion, I know how to handle it", "I am good at controlling emotions that I do not want to feel", and "I can still think rationally even if my emotions are complex". Finally, at the fifth-component solution “Emotional Processing”, “Expressing”, and “Control Processing” dimensions remained unchanged. “Identifying present and past” split into two subcomponents that differentiated “Identifying” and “Autobiographical memory”. Items that loaded highly on the “Identifying” were "I try to put effort into identifying my emotions", "I try to understand the complexity of my emotions", and "I am curious about identifying my emotions", and items that loaded highly on the “Autobiographical memory” dimension were "I can pinpoint childhood experiences that influence the way that I often think and feel", "Knowing about my childhood experiences helps to put my present emotions within a larger context", and "I often think about how the emotions that I feel stem from earlier life experiences (e.g. family dynamics during childhood)".

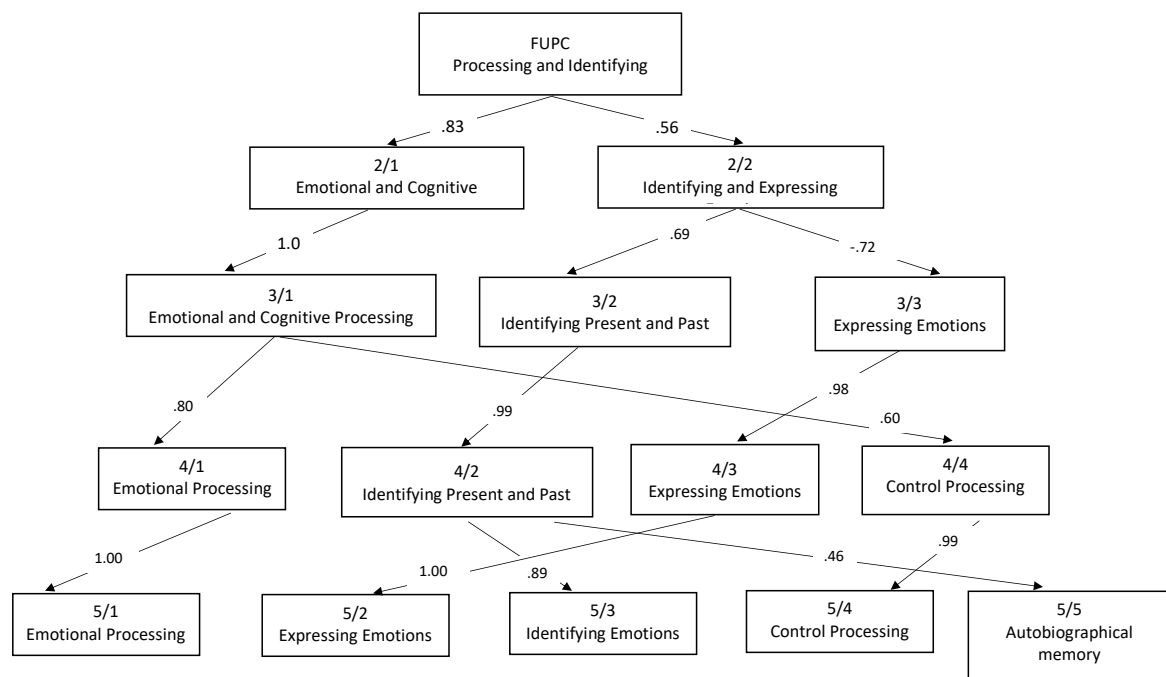


Figure 1. Varimax principal components derived from ratings for 35-items of the MAS.

Note. The figure begins (top box) with the First Unrotated Principal Component (FUPC) and displays the genesis of the derivation of the 5 components obtained. Text within each box indicates the label of the factor. Arabic numerals within boxes indicate the number of factors extracted for a given level (numerator) and the factor number within that level (denominator; e.g., 2/1 indicates the first component in a two-component solution). Arabic numerals within the arrow paths indicate the Pearson product-moment correlation between a component obtained early in the extraction and a later component. For example, when expanding from a two-component solution to a three-factor solution (rows 2 and 3), we see that Factor 2/2, “Identifying and expressing emotions” splits into two new factors, “Identifying present and past” (which correlates .69 with the parent component) and “Expressing emotions” (which correlates -.72 with the parent component).

Reliability of the Mentalized Affectivity and Correlations among Factors

All the factor scores showed an acceptable distribution; skewness and kurtosis showed normal distribution (SkewnessMIN=-0.72 SkewnessMAX=0.21; KurtosisMIN=-0.42 KurtosisMAX=0.58).

The analysis of reliability performed on the data collected from all participants showed that the scale has adequate internal consistency for all factors. All Cronbach's alphas were adequate: "Emotional Processing" =.86, "Expressing Emotions" =.84, "Identifying Emotions".82, "Control Processing" =.79, "Autobiographical Memory". =.75. As long as concerned correlations among the five factors, "Emotional Processing" and "Identifying Emotions", "Expressing Emotions" and "Control Processing", "Identifying Emotions" and "Control Processing" are not linked, whereas all the other factors show significantly positive correlations.

Convergent validity

Convergent validity was assessed with correlations between the five mentalized affectivity factors, and the ERQ and the RFQ subscales.

Table 4. Convergent correlations with the Reflective Functioning and Emotion Regulation.

	<i>Mentalized Affectivity Components</i>				
	Emotional Processing	Expressing Emotions	Identifying Emotions	Control Processing	Autobiographical memory
RFQ_C	0.392***	0.052	0.037	0.379***	-0.028
RFQ_U	-465***	-0.075	0.030	-0.503***	0.016
ERQ_CR	0.129***	0.080	0.275***	0.342***	0.242***
ERQ_ES	-0.252***	-0.727***	-0.236***	0.126***	-0.093*

N = 506;
*p < .05;
***p < 0.01

Note. RFQ_C: Reflective Functioning Certainty subscale; RFQ_U: Reflective Functioning Uncertainty subscale; ERQ_CR: Emotion Regulation Cognitive reappraisal subscale; ERQ_ES: Emotion Regulation Expressive suppression subscale.

As it can be seen in Table 4, Emotional Processing is positively strongly correlated with the ERQ Cognitive reappraisal and RFQ Certainty subscales, and negatively strongly correlated with the ERQ Expressive suppression and RFQ Uncertainty subscales. Expressing emotions is strongly negatively correlated with the ERQ Expressive suppression subscale. Identifying emotions is strongly positively with ERQ Cognitive reappraisal subscale, while it is negatively strongly correlated with the ERQ Expressive suppression subscale. Control Processing is positively strongly correlated with both scales of the ERQ Cognitive reappraisal and with the RFQ Certainty, while it is negatively strongly correlated with the RFQ Uncertainty subscale. Finally, Autobiographical Memory is strongly positively correlated with ERQ Cognitive reappraisal subscale, and is negatively correlated with ERQ Expressive suppression subscale.

Demographics, Personality, well-being, Life Satisfaction and Self-Efficacy

Correlations between mentalized affectivity factors and the other measures are displayed in Table 5.

Table 5. External correlates of mentalized affectivity.

	Mentalized Affectivity Components				
	Emotional Processing	Expressing Emotions	Identifying Emotions	Control Processing	Autobiographical memory
Demographics					
Age	0.129**	0.071	-0.058	0.196***	-0.018
Education	0.096*	0.143**	0.203***	0.018	0.008
Personality					
Openness	0.095*	0.181***	0.151***	0.106*	0.004
Conscientiousness	0.339***	0.069	0.037	0.250*	0.053
Extraversion	0.103*	0.386***	0.134**	0.025	0.039
Agreeableness	0.167***	0.022	0.188***	0.194***	0.064
Neuroticism	-0.289***	0.022	0.082	-0.480***	0.076
Life Satisfaction					
SWLS	0.284***	0.151***	0.031	0.253***	0.070
Self-Efficacy					
GSE	0.421***	0.104*	0.099*	0.525***	0.027

N = 506;
*p < .05;
***p < 0.01

Demographics. Emotional Processing is moderately positively correlated with age, and weakly positively correlated with education. Expressing Emotions and Identifying Emotions are respectively correlated moderately and strongly positively with education. Finally, Control Processing is strongly positively correlated with age.

Personality. As for personality scales, Emotional Processing is strongly positively correlated with Conscientiousness and Agreeableness traits, weakly positively correlated with Openness and Extraversion traits, while it is strongly negatively correlated with Neuroticism. Expressing Emotions is strongly positively correlated with Openness and Extraversion; Identifying Emotions is strongly positively correlated with Openness and Agreeableness traits, and moderately positively correlated with Extraversion; Control Processing is strongly positively correlated with Agreeableness, weakly positively correlated with Openness and Conscientiousness traits, and strongly negatively correlated with Neuroticism. Finally, Autobiographical Memory is not correlated with the others measures.

Life satisfaction. Emotional Processing, Expressing Emotions and Control Processing are strongly positively correlated with SWSL.

Self-Efficacy. Emotional Processing and Control Processing are strongly positively correlated with the GSE, while Expressing Emotions and Identifying Emotions are weakly positively correlated with this scale.

Discussion

The present research tested the factorial validity of the Italian version of the MAS in an Italian sample. Moreover, we tested the reliability, concurrent and convergent validity by examining associations with the MAS and its socio-affective correlates, such as emotion regulation and reflective functioning. Finally, we explored possible links among mentalized affectivity as tested with the MAS and other measures of personality, emotion regulation, life satisfaction, self-

efficacy and reflective functioning. Referring to the factorial structure of the Italian version of the MAS, the confirmative factor analysis did not confirm the original three-factors structure. As is often can be the case, scales translated in different languages and analyzed in different cultural contexts, may not have the same latent factor structure as the original version: then, we conducted an exploratory factor analysis, followed by a new confirmative factor analysis, to examine the latent structure of the Italian version of the MAS. Following these steps, we delineated a new five-factors structure: Emotional Processing, Expressing Emotions, Identifying Emotions, Control Processing and Autobiographical Memory. Cultural differences could help to explain the difference from the original version.

Research in studying cultural differences in the construct of mentalized affectivity and the growing interest in cultural differences in mentalization may provide a helpful path for the interpretation of our results. In a recent review, Aival-Naveh and colleagues (2019) proposed that mentalizing development could be interpreted from different perspectives: a universalist one, that highlights the role of innate aspects of mentalization; a relativist one, that underlines the importance of the context in mentalization development; an intermediate one, that relies between the other two perspectives. This last hypothesis seems suitable with the mentalized affectivity theoretical model proposed by Greenberg and colleagues (2017), because it assumes the existence of basic psychological processes, similar across cultures, which are affected during human development by specific cultural factors (a relevant cultural factor can be, for example, the possibility to establish attachment relationships in extrafamilial contexts, e.g. at school; see Antonietti et al., 2014; .

Also following the theoretical model proposed by Greenberg and colleagues (2017), the biological bases of mentalization develop during infancy and childhood through parental attachment and early social experiences, which are

deeply influenced by culture, and then generate mentalized affectivity. Regarding mentalization, Aival-Naveh and colleagues (2019) proposed a macro-difference between individualistic vs. collectivistic cultures: in the individualistic/Western cultures, mentalization is mainly oriented on the self, whereas in the collectivistic/Eastern cultures, mentalization abilities develop firstly with the aim to understand others. Notwithstanding the above arguments, research in this area are still limited and do not analyze specific cultures. In our case, although Anglo-Saxon and Italian culture can be both considered Western cultures, i.e. individualistic cultures, it is possible to speculate about the existence of some differences in mentalistic and affective development that can have an impact on a complex skill such as mentalized affectivity. Specifically, the cognitive vs. affective dimensions indicated by Aival-Naveh and colleagues (2019) as important dimensions of mentalization, could be involved. In fact, the hierarchical model that we proposed has showed that in the Italian version of the MAS structure, the Processing dimension is split into two components, Emotional Processing and Control Processing. In the first case, the Emotional Processing factor refers to the emotional awareness, and includes the experience of complex emotions and the ability to recognize their origins, whereas the Control Processing factor refers to the ability to manage emotions through cognitive strategies. This result seems to highlight an interesting specificity in the Italian sample, differentiating two emotional elaboration processes related to a purely emotional aspect and to a cognitive aspect. At the same time, in the Italian version we individuated a new factor, Autobiographical Memory, derived from the split of the Identifying dimension related to the present and to the past. This factor confirms the theoretical model of the mentalized affectivity, according to which the memory of past events is necessary to attribute a meaning to current emotional states. So, the Italian version of the MAS seems to represent a detailed description of the mentalized affectivity dimensions, as it identifies and emphasizes the specificity of the broad factors considered in the original version.

In order to assess the reliability and the concurrent and convergent validity, we examined the links between the MAS factors and emotion regulation and reflective functioning constructs, confirming our hypothesis. In fact, referring to the emotion regulation, results showed positive correlations between the cognitive reappraisal and four of the five MAS factors: Emotional Processing, Identifying Emotions, Control Processing and Autobiographical Memory. As suggested by Greenberg and colleagues (2017), the cognitive reappraisal strategy assessed by the ERQ is similar to the Processing factor assessed by the MAS, in both emotional and cognitive aspects. Moreover, the correlations among the use of this emotion regulation strategy and Identifying Emotions and Autobiographical Memory confirm the main role of the ability to recognize, remember and deploy emotions in mentalized affectivity, in order to be able to attribute new meanings to present experiences. At the same time, the lack of a link between cognitive reappraisal and expression of affects further underlines that emotion regulation measures do not completely overlap with the MAS, because mentalized affectivity involves more emotional components than the emotion regulation construct (Jurist, 2018).

As regards the construct of reflective functioning, our results provide evidence that both emotional and cognitive dimension of the processing evaluated with the MAS are positively related to the tendency to hyper-mentalize and negatively related to the tendency to hypo-mentalize. In the theoretical perspective proposed by Greenberg and colleagues (2017), the processing dimension indicates the tendency to modulate, refine and regulate emotions, i.e. the tendency to think about emotions, a trait directly involved in the mentalization ability. We can assume that people with an “over-mentalizing” attitude are able to focus on emotions, in terms of awareness and control, i.e. Processing, whereas people with a “hypo- mentalizing” attitude are not focused on their own emotions, so that they are not able to recognize and manage these internal states.

Moreover, we found several links among four of the five MAS factors and the others constructs examined in this study. Specifically, as regards personality, the results showed that Emotional Processing and Control Processing are positively related to almost all the personality characteristics, and negatively with Neuroticism. Moreover, Expressing and Identifying components of the mentalized affectivity are related to Openness, Extraversion and Agreeableness personality characteristics. Although the link between mentalization and personality is already well-known in the literature, especially for what concerns personality disorders (just think about borderline personality disorder; Fonagy et al., 2005; Fonagy et al., 2016), recently Karterud and Kongerslev (2019) proposed the Temperament-Attachment-Mentalization-Based theory of personality: in this perspective, the authors suggested that the above-cited constructs represent innate or experiential components of the personality, intrinsically linked, as they contribute to personality construction through emotion regulation abilities. So, this theory aims at explaining both typical and pathological personality in a structure echoing that of mentalized affectivity one: in both cases, the authors assume the existence of inner developmental bases that allow the subject to live relational experiences, such as attachment relationships, that impact on their ability to manage emotions. We can hypothesize that also the mentalized affectivity is a component of the adult personality, which derives precisely from the encounter of mentalizing and emotion regulation skills. At the same time, correlations among four of the five factors of the MAS (excluded the Autobiographical Memory), life satisfaction and self-efficacy confirm, as in Greenberg and colleagues (2017), the important role of mentalized affectivity in individual well-being: being able to properly process, identify and express emotions allow the understanding of themselves and of others, favoring individual well-being and the ability to face effectively events.

The lack of links between the Autobiographical Memory factor and the others scales is not surprising: although personal memories play an important role in mentalized affectivity, we have to remember that this construct is mainly oriented

to the present, because it refers to the capacity of being aware of one's one affect by remaining within that affective state (Fonagy et al. 2005): probably, when responding to questions about personality, life satisfaction and self-efficacy, people tend to refer to their present experience and to put their past ones in a second place.

As far as personal information is concerned, only Processing factors correlate with age. Mentalized affectivity is an ability that is built in adulthood, and probably the components linked to affective processing are the most complex: in fact, expressing, identifying and remembering emotions are skills already acquired in childhood (in the case of expressing, even innately), whereas processing is a complex one that integrates emotional and cognitive skills and that implies a certain level of awareness. It is conceivable, therefore, that it is precisely this component of mentalized affectivity the one most evident in adulthood. With regards to the cultural characteristics, we found a correlation between the educational level and Emotional Processing, Expressing Emotions and Identifying Emotions factors. These three factors involve the ability to think about one's emotions and reflect on their origin, monitor oneself and one's abilities and name emotions appropriately, all activities related to the metacognitive and self-regulatory reasoning and to accompanying linguistic skills. People with a high level of education develop more metacognitive and self-regulatory skills, and have a better language property than those who have less years of study behind them; this can affect their propensity to be aware of their emotions, how to name them and how to manage them.

Conclusion

In this paper we proposed the validation of the Italian version of MAS, finding a more articulated factorial structure than the original scale. Specifically, the original Processing factor is split into the two components of emotion and

cognition, and the new factor of Autobiographical Memory emerged, thus highlighting an important component of mentalized affectivity that in our sample is well distinguished from the other ones. We also verified the validity of this factorial structure, and we confirmed the relationship of the mentalized affectivity construct with other psychological correlates, highlighting the role of the mentalized affectivity in the individual well-being. Taken altogether, our findings show that the Italian version of the MAS could be considered a useful tool in the Italian context, both for research activities and clinical practices, enriching the complexity of the construct of mentalization and the variety of tasks devised to test such important ability for social life.

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Chapter 3

Attachment representation, mentalization, and cognitive emotion regulation strategies at school

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Abstract

The present work investigates the link between attachment relationships, mentalization, and emotional regulation in 10-year-olds children. The aim is to verify if children – teacher attachment relationship could influence children’s mentalization style and cognitive/emotional regulation strategies. For this purpose, 110 children were tested with the Separation Anxiety Test-School Version (Liverta Sempio, Marchetti, & Lecciso, 2001), the Mentalizing task (Sharp, Croudace, Goodyer, 2007) and the kids’ version of the Cognitive Emotion Regulation Questionnaire (Garnefski, Kraaij and Spinhoven, 2001). The results show that Self-Reliance component of the attachment representation with teacher predicts both the negative scale of mentalization and the propensity to use the emotional regulation strategy of “Positive Refocusing”. Likewise, the Avoidance scale and the Total scale of the Separation Anxiety Test-School Version also influence the use of the cognitive emotion regulation strategy “Putting into Perspective” and of “Positive Refocusing,” respectively. Results are discussed within the theoretical framework of multiple attachment theory, confirming the hypothesis that affective relationships with professional caregivers—namely school teachers—play an important role in constructing self-representation and the abilities to regulate emotions in stressful situations.

Introduction

Attachment and mentalization: behavioral and representational levels

Attachment and mentalization are two core constructs at the basis of the children's development, and they are studied both independently and by focusing on their mutual relationship (Gergely & Unoka, 2008; Jurist & Meehan, 2009). Literature on attachment and mentalization evidences a similar developmental trend starting from a behavioral level, characterized by a non-verbal meeting of minds between infant and caregiver, to the achievement of a representational, individual and verbal level.

The first examined construct - attachment defines an affective relationship between a child and her/his caregiver, mainly the mother. According to attachment theory, in infancy this relationship is conceived as a spatial theory, because is determined by the movements the two partners perform towards each other (Bowlby, 1969). Attachment relationship is built thank to the proximity between mother and child, that varies in exploration and attachment moments, and thanks to the contacts between the two partners, indicating mother sensitivity to child's needs (Bowlby, 1969). Behavior centrality in the attachment relationships is highlighted also by the Strange Situation, the main procedure used to observe and classify attachment relationships as secure, anxious-resistant insecure and anxious-avoidant insecure (Ainsworth, Blehar, Waters, & Wall, 1978). To individuate dyads' attachment style, the observer encodes many baby's micro-behaviors (hand movements, direction of gaze, position changes, etc.), considered as patterns of regulatory and adaptive gestures useful to obtain caregiver's attention and proximity. Growing-up, the child internalizes these behavioral patterns and creates a complex representation of the attachment relationship, named Internal Working Model (Bowlby, 1980). This model involves one's own and the partner representation in an affective relationship and a more general world representation of the relationships among individuals. The Internal

Working Model (or models, according to different theories; for example, Howes et al., 1999) becomes a guide to interpret relational world, to decide how to behave in social context, to choose a new partner and so on. Thanks to the Internal Working Model, people can attribute meanings to their affective experiences, that are verbally expressed through narratives (Bretherton, 1995). The most important tasks related to attachment relationships in adults and children evaluating Internal Working Model as verbally expressed are: for adults the Adult Attachment Interview (George, Kaplan, & Main, 1996); for children and adolescents the Separation Anxiety Test (Hansburg, 1972; Klagsbrun & Bowlby, 1976) or the Child Attachment Interview (Privizzini, 2017; Target, Fonagy, & Shmueli-Goetz, 2003; Venta, Shmueli-Goetz, & Sharp, 2014).

The second construct here considered is mentalization, defined as “the process by which we realize that having a mind mediates our experience of the world” (Fonagy, Gergely, Jurist, & Target, 2002, pg. 3), or an imaginative activity that allows us to understand and interpret human behaviors in terms of mental states (Allen, Fonagy, & Bateman, 2008). Mentalization is an ability daily used to understand and to interpret one's own and others' behaviors. It could be considered as an activity, mentalizing, that means to think about one's own and other's minds (Allen, 2003), and as a series of contents, people's internal states (such as thoughts, feelings, desires and so on) (Allen & Fonagy, 2006). Mentalization involves both a cognitive and an affective component; the first is related to all mental processes concerning cognitive contents (for example, self-reflexive thinking and perspective-taking), the second is related to emotional and affective processes (e.g attachment relationships, intersubjectivity, empathy). Using their mentalization abilities, people move along a continuum of awareness: implicit mentalization is used when they apply their automatic procedural knowledge to interpret social situations and behaviors, the explicit one is used when they intentionally reason and speak about mental states. In the first case, mentalization is considered a pre-reflective function, active during interpersonal

exchanges to interpret and act quickly on others' behaviors (Allen, 2003; Bateman & Fonagy, 2012), in the second one a symbolic, narrative, and conscious process. Although the development of attachment relationships and mentalization has been studied independently, in the last decades literature showed that they are strongly linked in infancy and childhood. Referring to infancy, a recent model individuates an implicit level of mentalization, named "embodied mentalizing", which is observed in the physical relationship between parent and preverbal child (Shai & Fonagy, 2014). During the pre-verbal phase, parents body moves are a way to communicate infant's internal states comprehension: as in a dance, infant adapt herself/ himself to the parent's behavior, and she/he experiences first forms of intersubjectivity and mentalization. In fact, parent's bodily disposition suggests her/his interest in infant's body and mind, and stimulates her/him to mentalize in order to collaborate with him. According to Fonagy and Campbell (2017), this type of communication cannot be separated from self and other representations: thanks to the touch, parents communicate infant's physical needs comprehension, then infants build their first knowledge about the world (a place in which their needs could be satisfied) and in turn infants use this knowledge in communications with others. According to this model, the parent embodied mentalizing is the basis of the caregiver sensitivity (Shai, Fonagy, 2014) and is the core of parent mentalizing, classically operationalized as the parent's ability to tell about child's internal states (parental reflective functioning; Slade, 2005) or to address appropriate mind-minded comment to the infant (mind-mindedness; Meins et al., 2003). All the above-mentioned aspects contribute to the attachment relationship formation: parents with high mentalization abilities are more sensitive to the child's needs, use more mentalistic comments during interactions with their children and tend to build more secure relationships with them.

Once language skills have been acquired, the attachment relationship represents the affective environment in which a child could experience her/his own and others' mind thanks to verbal communication with parents: daily conversations

about mental contents, more frequently and precise in the secure than in insecure attachment relationships, are considered the most important way to understand minds (Fonagy & Campbell, 2016). Fonagy and Luyten (2009) consider attachment relationships at the basis of children mentalization ability, showing that secure attachment relationships support mentalization development, and non-secure ones could lead to the formation of low mentalization abilities. Recently, Simpson and Belsky (2016) argue that attachment relationship is an indicator of the child's environment nature: a responsive caregiver, speaking about mental states and showing a real interest in child's internal life, reassures the child that she/he is taking care of her/his survival and offers her/him the chance to mentalize without limits or obstacles (Fonagy & Campbell, 2017). A non-responsive caregiver points out the environment has limited resources, and warns the child that a non-mentalizing attitude may be adaptive (Fonagy & Campbell, 2016). Then, in a secure affective environment the child has the chance to mentalize and to use one's own and others mind exploration to build adequate representations of her/his social experiences.

Emotion regulation: behavior and representation

Emotion regulation is defined as “the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals” (Thompson, 1994, p.27). This process develops during childhood and begins as a co-regulation process early in parent-child relationships, these latter considered as one of the most important context for development and organization of child's emotions (Cooke, Kochendorfer, Stuart-Parrigon, Koehn, & Kerns, 2018). Growing up, children learn to regulate their emotions in ever more individual way; also thanks to neural maturation (Schorer, 2004), at the end of the first year some spontaneous forms of emotion self-regulation appear, although still in an unconsciously and non-strategically form (Rothbart, Ziaie, & O'Boyle, 1992).

According to Calkins and Hill (2007), in the second year of life children learn to control their arousal levels and becomes more autonomous in manage their emotions. Between 3 and 5 years, an explicit awareness of emotion regulation strategies emerges (Denham et al., 2002; Lemerise & Arsenio, 2000), also as a result of the enhancement of social competences (Wimmer & Perner, 1983), and children can apply ever more numerous behavioral emotion regulation strategies. During middle childhood, children increase their emotion regulation repertoire and move from the application of mostly external and behaviorally oriented strategies to the adoption of internal and cognitive ones (Garnefski, Rieffe, Jellesma, Terwogt, & Kraaij, 2007), defining their cognitive way of managing the intake of emotionally arousing information (Thompson, 1991). About at the age of nine, children learn to regulate their emotions using cognition, representations, or thoughts about themselves and their own or other's feelings; the use of cognitive emotion regulation strategies is accompanied by the ability to reflect on the emotional experiences and to activate adaptive and functional behaviors in different situations.

Both literature about attachment theory and mentalization attribute a central role to the emotion regulation. Regarding to the attachment theory, several evidences show that in a secure attachment relationship the caregiver acts adaptive emotion regulation behaviors with the child (Jurist, 2018): this caregiver is sensitive to child's signals, she/he models her/his attention to emotional experiences and appropriately modifies the environment to meet child's needs (P. Fonagy, Steele, Steele, Moran, & Higgitt, 1991). Moreover, in a secure attachment relationship family caregiver may teach specific strategies for regulating emotions, for example modeling calm and reflective coping, and relying referring to others for assistance (Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000; Laible & Thompson, 1998). In this way, children who develop secure Internal Working Models consider themselves as capable of applying adaptive coping strategies both in negative situations (Gaylord-Harden, Taylor, Campbell, Kesselring, & Grant, 2009) (as the case of problem solving coping strategy, considered as

process to discover, analyze and solve problems), and in the challenging situations (Seiffge-Krenke & Beyers, 2005) (as the case of the cognitive reframing coping strategy, considered as a way to look differently to a stressful situation in order to reframe its experience). This underline that affective relationship quality promotes the development and the use of emotion regulation strategies also outside the specific relationship, in situations in which the caregiver is absent (Calkins & Hill, 2007).

Links between emotion regulation and mentalization could be found already in infancy, in the activation of co-regulation between the baby and the caregiver. The process at the basis of this dyadic emotion regulation is named “affective regulation”: parents tend to reply to child’s emotions by a mirroring activity (P. Fonagy et al., 2002), consisting in replying her/his emotions in a congruent and marked way. This behavior indicates parent has individuated child’s emotion, but she/he doesn’t feel the same internal state (Gergely & Watson, 1999). Caregivers able in this type of mirroring help children in understanding differences between one’s own and others’ internal world, fostering the development of a social sense of agency (Gergely, 2001). Recently, Jurist (2018) affirms that the comprehension of mentalization and emotional regulation link is only at the beginning and this sense of social agency is the first step in the development of a more mature sense of self. According to the author, although children are not yet aware of the underlying mechanisms, it is possible to affirm that mentalization, that is elicited in specific affective relationships, is linked to the emotion regulation and helps child to understand their emotions and to reflect on regulatory strategies.

Multiple attachments in school relationships

From the attachment perspective, already in 1969 Bowlby hypothesized children could build more than one attachment relationship with other caregivers different from the family ones. Considering this hypothesis, an important theoretical and practical question concerns the identification of figures that may

potentially become attachment partners and their personal characteristics (Cassibba, 2003; van Ijzendoorn, Sagi, & Lambermoon, 1992).

Howes and Spieker (2008) focused on the conditions that promote a caregiver as an attachment figure, and individuated three criteria: caregiver has to take care of child's physical and emotional needs, caregiver has to participate continuously in child's life, and caregiver has to be emotionally involved with the child. Professional caregivers— such as teachers and educators— are the most likely figures that can get involved in attachment relationships with children during the first years of life. In line with this perspective, Pianta (1999) supported the idea that teachers are important caregivers and that they can promote attachment relationships during the school years. The author proposed the theory of developmental systems: an ecologically oriented systems theory according to which children are embedded in organized and dynamic systems that include multiple proximal and distal levels of influence. The teacher-child relationship constitutes a proximal system, characterized by mutual influences that has a direct impact on child's emotions, behaviors, and school well-being (Pianta, Hamre, & Stuhlman, 2003). From this perspective, first child has Internal Working Models built in her/his family relationships, and at school the teacher through her/his sensitivity may confirm or transform these relational models, subsequently influencing child's behaviors and relationships. As the age increases (for instance, Ruzek et al., 2016), the model expands itself to include other factors, such as social-motivational factors, socialization, social support and interpersonal relationships. Nevertheless, the importance of emotional support, sense of relatedness and attachment relationship still remains the central elements of the model (Sabol & Pianta, 2012). More recently, Pianta and colleagues (Pianta, Downer, & Hamre, 2016) demonstrated that teachers' sensitivity to individual needs, the ability to support positive behavior, language stimulation and cognitive development are the most important cues of classroom quality and predict students well-being from pre-kindergarten (3–4 years) through third grade (8–9 years).

In light of the links evidenced between attachment, mentalization and emotion regulation and of the possible affective role of teachers in pupils' relationships, we decided to analyze these developmental aspects in middle childhood, an age named by Mah and Ford-Jones (2012) "the forgotten years," because of the limited attention devoted to it so far. We decided to analyze representational level of attachment relationships, mentalization and emotion regulation because during middle childhood, children regulate their behavior basing it on their representations.

Aims and Hypotheses

This research aims to individuate the between the attachment representation with teacher, the mentalizing style and the cognitive emotion regulation strategies in 10-year-old children. We hypothesize that the attachment relationship teacher has built over four years influences cognitive emotion regulation strategies that children apply in school situations; moreover, we hypothesize that this attachment relationship influence children's ability to mentalize schoolmates' minds in the school environment.

Materials and methods

Participants

One hundred and ten 10 years old children participated in the study. We excluded two children who did not complete all the tasks, so the final sample is composed of 108 children (Mean age = 122.80 months; S.D. = 3.99 months; Min = 116 months; Max = 140 months; Females = 52). We chose children at the end of primary school because we supposed they had built attachment relationships with some teachers over the past four years of school (C. Howes & Spieker, 2008). Each child was tested individually in a quiet room at school. The test session lasted about 25 minutes. Participants had neither been referred to social services

nor identified has having learning or socio-relational difficulties. Informed consent was obtained from each participant by her/his parents. The research was conducted according to APA ethical standards and obtained the approval of the local ethics committee.

Tasks

Separation Anxiety Test-School Version

The original version of the Separation Anxiety Test (SAT) (Peter Fonagy, Redfern, & Charman, 1997) assesses children's internal working models of their relationship with parents. Instead, the aim of the Italian SAT-School Version (SAT-SV), elaborated by Liverta Sempio, Marchetti, and Lecciso (2001), is to evaluate children's internal working models about their relationships with teachers. The SAT-SV is a semi-projective test composed of six items constituted by one short story with a related picture describing a separation between a teacher and a child. Three of these separations have "high intensity" and the remaining three have "low intensity," depending on how long teacher was away from child (for example, a separation of one morning in the first case and a separation of two months in the second case). At the end of each item, the researcher asks the participant to identify the character emotion (having the same name of the participant), to justify the origin of this emotion, and to anticipate what he/she would have done to cope with the situation. The coding system evaluates all the children answers for each item, and places them in different categories (from 1 to 21). Each category receives a score along two scales: the three items proposing low-intensity separations receive a score on the Self-Reliance scale, considered the child's ability to express self-confidence about managing the mild separation, (SAT-SV-SR; score 1-4), the three items proposing high-intensity separations receive a score on the Attachment scale (SAT-SV-AT; score 1-4), and all items receive a score on the Avoidance scale (SAT-SV-AV; score 1-3). Combining these scores, each child receives a final total score (SAT-SV-TOT) in the range of 6-36:

higher scores correspond to a more secure internal working model. Two independent coders coded the SAT-SV, and inter-rater reliability was assessed for 20% of the SAT-SV (Cronbach's alpha = .89).

Mentalizing Task

The Mentalizing Task (MT; Sharp, Croudace, Goodyer, 2007; Italian version by Di Terlizzi, 2010) evaluates children's mentalizing response styles in everyday life situations at school. The task includes 15 stories and vignettes about social situations that may happen to a child at school. At the end of each story, the researcher asks the child: "Imagine you are [the character]. If you were this child, what do you think the other kids would thinking about you?" The child can choose among three options: overly negative, overly positive, or rational. The answers sum related to each option represents the total score in the respective scale (0–15 for all scales). The overly negative scale (MT-N) indicates a mentalizing cognitive style characterized by a global, negative, and stable self-attribution of social situations causes (i.e., "They would think nobody likes me"), typical of children with depression and anxiety symptoms (Barrett, Rapee, Dadds, & Ryan, 1996; Quiggle, Garber, Panak, & Dodge, 1992). The overly positive scale (MT-P) indicates a cognitive mentalizing style characterized by a global, positive, and stable self-attribution of social situations causes (i.e., "They would think I'm cool not to play silly games with the rest of the kids"), typical of aggressive children (David & Kistner, 2000) idealizing their own competence in interpersonal relationships. The rational scale (MT-R) indicates a neutral, non-self-referent, non-stable type interpretation of social situations (i.e., "They would think I'm just sitting down to think and have a rest"), typical of children with a helpful, functional, and adaptive coping style.

Cognitive Emotion Regulation Questionnaire-Kids version

The Cognitive Emotion Regulation Questionnaire developed by Garnefski, Kraaij and Spinhoven (2001) evaluates nine cognitive coping strategies that people use

after having experienced negative life events. The kids version of this questionnaire (CERQ-k) was developed for children aged from 9 to 11 (Garnefski et al., 2007). It suggests that child thinks about a negative event of his/her life, and then is asked to fill in a questionnaire: “When something unpleasant happens to you, what do you usually think?” The questionnaire is composed of 36 items: the answer categories for each item range from 1 (*almost never*) to 5 (*almost always*). Items evaluate nine cognitive emotion regulation strategies (four items for each strategy); the total score for each strategy ranges from 4 to 20. The strategies evaluated are: Self-blame (CERQ-k-SB; the tendency to blame yourself for negative experiences), Other-blame (CERQ-k-OB; the tendency to blame others for negative experiences), Acceptance (CERQ-k-AC; the tendency to accept what you have experienced and to accept yourself to what has happened), Planning (CERQ-k-PL; the tendency to think about which decision to make and how to handle the negative event), Positive Refocusing (CERQ-k-PR; the tendency to think about joyful and pleasant situations instead of thinking about the actual negative event), Rumination (CERQ-k-RU; the tendency to think about feelings and thoughts associated with the negative event), Positive Reappraisal (CERQ-k-PRe; the tendency to attribute a positive meaning to the negative event in terms of personal growth), Putting into perspective (CERQ-k-PP; the tendency to play down the seriousness of the event or to emphasize its relativity when comparing it to other events), and Catastrophizing (CERQ-k-CA; the tendency to think or explicitly emphasize the negative aspects of an experience).

Results

Table 1 reports the descriptive statistics for the explored variables. The variables related to the SAT-SV do not have a normal distribution, so non-parametric analyses were conducted.

Table 1 - Descriptives statistics *MIN* *MAX* *Mean* *SD*
N=108

	<i>MIN</i>	<i>MAX</i>	<i>Mean</i>	<i>SD</i>
SAT-SV-AT	3	12	10,05	2
SAT-SV-SR	4	12	7,01	1,73
SAT-SV-AV	5	12	7,80	1,59
SAT-SV-TOT	10	36	27,13	4,05
MT-N	0	9	3,89	1,91
MT-R	0	11	7,08	2,03
MT-P	0	8	3,88	1,76
CERQ-k-RU	0	16	7,49	3,15
CERQ-k-AC	0	15	6,36	3,55
CERQ-k-PR	0	16	6,56	4,93
CERQ-k-PL	0	15	8,22	3,25
CERQ-k-PRe	1	15	6,65	3,02
CERQ-k-PP	0	16	8,21	3,74
CERQ-k-OB	0	16	2,48	3,11
CERQ-k-SB	0	15	5,52	3,25
CERQ-k-CA	0	16	4,98	3,48

To explore the links among the SAT-SV and the other two tasks, MT and CERQ-k, we conducted non-parametric correlations among related variables. Regarding links among SAT-SV and other tasks, results evidence that SAT-SV-AT positively correlates with CERQ-k-OB ($\rho=.246$; $p<.05$), SAT-SV-SR positively correlates with CERQ-k-PR ($\rho=.234$; $p<.05$) and SAT-SV-AV negatively correlates with CERQ-k-PP ($\rho=-.242$; $p<.05$). Moreover, SAT-SV-SR is negative correlated with MT-N ($\rho=-.206$; $p<.05$) and SAT-SV-TOT is positively correlated with CERQ-k-PR ($\rho=.225$; $p<.05$). Based on these results, we carried out linear regressions with the three SAT-SV as independent variables; we are going to describe the significant models obtained. The first one verified the predictive effect of the SAT-SV-SR on the MT-N ($\beta = -.190$; $F = 3.96$, $p < .05$; $R^2 = .036$; $R^2_{Adj} = .027$), the second one verified the predictive effect of the SAT-SV-SR on the CERQ-k-PR ($\beta = .578$; $F = 4.54$, $p < .05$; $R^2 = .042$; $R^2_{Adj} = .033$), the third model confirmed the predictive effect of the SAT-SV-AV on CERQ-k-PP ($\beta = -.241$; $F = 6.47$, $p < .05$; R^2

= .058; R2Adj = .049), and the fourth the predictive effect of the SAT-SV-TOT on the CERQ-k-PR ($\beta = .219$; $F = 5.24$, $p < .05$; $R2 = .048$; $R2Adj = .039$).

Discussion

This work investigated the influence of the attachment relationship with teacher on mentalization abilities and cognitive emotion regulation strategies in ten-years-old children. We will firstly discuss the correlations observed, then we will discuss the predictive nature of attachment on the mentalization abilities and cognitive emotion regulation strategies.

The Self-reliance scale negatively correlated with the Overly Negative scale of the Mentalizing task: children who are more confident in their resources to deal with the separation from teacher are less likely to believe that others consider them negatively in a school environment. In the SAT-SV children activate self-reliance in low-intensity separations, when teacher goes away from the child for a brief period. In this case, a self-confident child acts a series of strategies to cope with these situations, because she/he believe in her/his abilities and she/he is self-confident. Then, this child has a positive self-image and probably believes that the schoolmates share the same opinion. At the same time, a child characterized by a low self-reliance is a child with a negative self-image and a low self-esteem, and it is likely that she/he thinks schoolmates could individuate her/his lacking ability to manage difficult situations. The self-reliance scale also positively correlates with the cognitive emotion regulation strategy of positive refocusing, defined as the tendency to think about joyful and pleasant situations instead of thinking about a negative event. Positive refocusing, or distraction, is an emotion-focused coping strategy considered adaptive when used for a limited time (Lazarus & Folkman, 1984; Marchetti, Di Terlizzi, & Petrocchi, 2008), because allows to reduce stress level and to go back thinking about the problematic situation with greater calm. In this case, it is possible to hypothesize that children having a high

trust in one's ability to manage separation are children with a positive self-image, then they are able to temporarily shift their attention in order to moderate the stress and to continue to work properly (for example, she/he continues to study or to play with friends). The link between positive refocusing strategy and Internal Working Model is confirmed by the positive correlation between this strategy and the total score of SAT-SV: children with a secure Internal Working Model at school tend to use this coping strategy to reduce stress in negative moments of life (Cooke et al., 2018). Literature concerning infancy has shown that, in the Strange Situation procedure, children with a secure attachment are able to focus their attention on toys or the environment during the caregiver absence (Ainsworth, Blehar, Waters, & Wall, 1978). At the same time, children with a less secure Internal Working Model tend not to positive refocus their attention, as insecure infants in the Strange Situation procedure that persist in searching the parent (anxious children) or apparently in ignoring it (avoidant children). Our results seem to confirm that also in the middle childhood, children with a secure Internal Working Model use the adaptive strategy of positive refocusing in the cognitive sense, and that the use of this strategy is linked to the representation of the relationship with the teacher. Children with high scores in the Attachment scale of the SAT-SV have high score in Other-blame scale of CERQ-k. In the SAT-SV, having high scores in the Attachment scale means being able to express the discomfort felt due to the caregiver departure. This negative emotion is generated by the caregiver decision to go away for a long time, and the child can't do anything to avoid this situation. We may suppose that children expressing discomfort recognize their impossibility to change the situation and they correctly attribute the cause of the separation to the caregiver, as it happens in the case of external locus of control (Rotter, 1966). Mikulincer and colleagues (2003) state that secure individuals, characterized by the tendency to display the distress experienced in negative situations, apply adaptive and useful coping strategies to manage a stressing situation; on the contrary, non-secure individual

may use maladaptive coping strategies and may apply primitive defenses that distort the reality perception. Likewise, our results show that children with a high level of attachment can correctly individuate the other's as a source of negative emotions, and they do not usually distort reality to reduce the stress experienced. Finally, correlational results evidence that Avoidance scale scores negatively correlate with the Putting into Perspective scale of the CERQ-k: children who are avoidant in attachment relationship with teacher may not be able to individuate positive aspects of situations by comparing to events that have happened to another person. It may be possible to speculate that comparing one's own and other situations requires to be focused on the situation itself, to have it clearly in mind, and to analyze one's own and other's negative events in order to individuate positive and negative aspects. One of the children avoidant characteristic is the difficulty to represent one's own negative internal states, and this characteristic can be extended to the representation of other's negative internal states; thus, making the comparison with the stress of another person may be rather challenging, if not impossible.

These results are partially confirmed by the linear regressions we carried out. The first linear regression model evidences a negative predictive effect of the Self-reliance scale on the Overly negative scale of the Mentalizing task. Internal Working Models are considered representations of self, other, and the world (Bowlby, 1973). We may suppose that trusting oneself and one's own abilities in relationship with the teacher implies the construction of a positive self-image as a person able to manage difficult situations, that the child attributes not only to herself/himself, but also to peers in the same school setting. Moreover, as recently indicated by Fonagy and Campbell (2017), the attachment relationship with parents contributes from infancy to build a representation of the child's environment nature, and indicate the possibility to mentalize other minds in difficult situations (P. Fonagy & Campbell, 2016). We can suppose that the construction of a secure attachment relationship with the teacher at school

involves the same mechanism: children who in the school years had built this type of attachment relationship have a positive self-image as pupils and consider school a positive environment in which it is possible to mentalize others' minds without distortions; then, they extend this positive self-image also to the schoolmates, and they tend to mentalize their mind without falling into an error of devaluation of the self. Furthermore, both components of the Self-reliance scale and of the total security of the Internal Working Model predict the use of the Positive Refocusing cognitive emotion regulation strategy. The literature shows that the use of the behavioral level of this strategy (i.e., distraction) is typical of children with a secure attachment. In the Strange Situation (Ainsworth et al., 1978), during the separation from mothers, children with a secure attachment relationship engage in activities and games, in order to distract themselves until the caregiver return. In the same way, older children with a secure Internal Working Model referred to the relationship with the teacher learnt to regulate their emotions in stressing situations applying adaptive coping regulation strategies (Mikulincer et al., 2003): in this case, they are able to use an emotion-focused coping strategy, refocusing their attention, and distracting themselves for a little time to lower the level of stress and to continue in daily activities (Lazarus & Folkman, 1984).

Finally, children with a high level of avoidance in the attachment relationship with the teacher use the regulation strategy of putting into perspective less frequently than children with a low level of avoidance. Highly avoidant children are not able to represent and accept one's own negative internal states and emotions related to the separation from the caregivers. During the construction of an Internal Working Model, this trait also extends to the representation of the other's mind, so children tend to refuse to think also to other's negative internal states and emotions. We may hypothesize that this type of Internal Working Model limits both the possibility to bear in mind the negative mental states of oneself and of the other, and to weigh up positive and negative aspects of the experienced

situation. Moreover, it is possible that a child with an avoidant representation of her/his attachment relationship with the teacher live in an environment not encouraging the expression of negative emotions. Given that the child spends a lot of time at school, she/ he may have learned that to put on others' perspective is impossible or useless, then she/he doesn't adopt this coping strategy.

In conclusion, our results seem to support the hypothesis that the representation of the teacher-child relationship has an impact on child's mentalization style and on the use of emotion regulation strategies. These results support the idea that the affective relationship with a non-familiar caregiver in extra-familiar context influences children's socio-emotional abilities and contribute to the development of a self-image that concerns not only that relationship, but also the ability to mentalize and to regulate one's emotions from a cognitive point of view. We could also speculate that the impact of the attachment relationship representation with teacher on mentalization and emotion regulation in children could be at the basis of the protective function played by a positive attachment at school, relevant for the pupils' well-being in general, and especially for children who live in family situations at risk (Pianta, 1999).

This study has some limitations that need to be carefully considered in the interpretation of the results. First, we have considered child's attachment representation of the relationship with the teacher, but we did not evaluate the role of the attachment representation in the relationship with the parents, which it is likely to have a role in the construction of the attachment to educational partners. Moreover, we focused our attention on the representational level, without investigating the link between this level (representation of attachment, mentalization, and cognitive emotion regulation strategies) and child's behavior. Future research should consider both these variables in order to investigate in a more complete way the relations among the three complex constructs here examined.

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Chapter 4

Learning To Wait And Be Altruistic: Testing A Conversational Training In Economic Education For Primary School Children

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Decision making, training, altruism, intertemporal choice, investment, fairness, school-age children

Abstract

Individual economic competence is important but increasingly challenging to manage due to the growing complexity of the nature of economic decisions people must make and the substantial impacts of some of these decisions on their lives. Decision-making ability develops from childhood and is closely related to specific economic components and prosocial behaviour such as fairness sensitivity, altruism, and delay of gratification. However, while there are financial-education programs for children and young people focusing on financial products, few studies have examined training for the psychological abilities underlying economic decision-making. To promote those psychological skills that contribute to making decision-making more socially effective, we designed and tested a conversational-based training program for primary school children using reflective thinking. A total of 110 (male = 47) children aged 8 to 10 years (mean age = 9.71 years) from two schools in Northern Italy participated in the study with 55 children in a training group and 55 in a control group. All participated in pre-tests measuring their socio-economic background and economics-related skills and abilities. The training group were told stories relaying values of fairness, altruism, and delayed gratification. Both groups participated in task-based post-tests relating to fairness, altruism, and delayed gratification. Results revealed that children in the training group showed significant improvement at the post-test in altruistic and investment behaviour, showing the training efficacy, suggesting that similar programs could be implemented in elementary schools as foundational teaching of economics and fiscal responsibility.

Introduction

Economic education has become an increasingly important issue in the last decade, due to the numerous changes in the economic and social context. Several studies, both in institutional and academic contexts, have aimed at investigating economic and financial phenomena, particularly financial literacy (Atkinson & Messy, 2012; Lusardi & Mitchell, 2014). Research results highlight that a lack of economic-financial knowledge may be disadvantageous to people lives (Choi, Laibson, & Madrian, 2011; Rooij, Lusardi, & Alessie, 2012; Lusardi & Mitchell, 2014). In fact, lower levels of economic-financial knowledge, as in the case of women, have an impact on the active participation within the economy, also within the household (Hung, Yoong & Brown, 2012). Moreover, as public policies in many countries shift a greater burden of long-term financial decision-making to individual consumers, people with low levels of economic-financial knowledge may then be disproportionately vulnerable (e.g. young people, women, people with low incomes and/or low educational attainment). On the other hand, high levels of financial literacy result in positive economic outcomes (Grohmann et al., 2015), i.e. planning for retirement, paying bills on time, budgeting, saving, and setting financial goals (Hilgert et al., 2003). As reported by Lusardi and Mitchell (2014), people financial literacy positively correlates with day-to-day financial management skills, the participation in financial markets and investments and the capacity to undertake a retirement planning.

The knowledge of these impacts highlights the need for providing children and young people with effective financial education programs since an early age to prepare them for understanding and experiencing the complex economic and financial occurrences (Atkinson & Messy, 2012; Aprea, 2015; Lombardi & Ajello, 2017;). Moreover, promoting economic and financial knowledge and skills in childhood could help to prevent gender differences, typical of adulthood (Bucher-

Koenen et al., 2017), identified since the early adolescence (Lührmann et al., 2015).

In order to make out the way to structure specific interventions, it is necessary to refer to the broad financial literacy definition proposed by the *Organization for Economic Co-operation and Development* (OECD, 2014), that combines three aspects: considering knowledge of financial concepts; financial capacity (the ability to apply this knowledge in real life); and financial inclusion (describing the opportunities and motivations for inclusion in various financial scenarios). We concentrated on the second aspect which directly connects to decision-making—a psychological process very relevant to improve good financial literacy. In fact, both the first definition of financial education (OECD, 2005) and the most recent literature identifying the key features of existing financial education programs (Amagir et al., 2018) focusing on the importance of being able to make appropriate economic and financial choices to achieve positive economic behaviours. Decision-making is a complex process, involving a number of psychological constructs. Three of the most important decision-making constructs studied in the economical field are fairness sensitivity, altruism, and the ability to delay a gratification; as for childhood, literature focuses on the importance of developing and educating decision making skills in order to better manage goods, money and to become able to understand adults' economic world (Van't Wout, Kahn, Sanfey, & Aleman, 2006; Castelli, Massaro, Bicchieri, Chavez, & Marchetti, 2014; Marchetti, Castelli, Massaro, & Valle, 2016; Castelli, Massaro, Sanfey, & Marchetti, 2017; Lombardi, Di Dio, Castelli, Massaro, & Marchetti, 2017). Fairness can be defined through the inequity aversion concept as outlined by Fehr and Schmidt (1999), i.e. people's tendency to resist inequitable outcomes. In economic transactions, in which the co-involvement of others is taken into account, fairness sensitivity can lead people to give up possible profits in order to re-establish equity. This behaviour is considered a strategic approach to economic decision-making, because basing a transaction on fairness increases

over time the chance of reciprocity. An individual can currently give up part of her/his assets to another knowing that in the future she/he will be treated fairly, thus gaining an advantage. This is highlighted by the main research task evaluating fairness sensitivity, the *Ultimatum Game* (UG), an economic interactive game involving two players that have to share an amount of money made available by the researcher; the Proponent decides how much to share with the Receiver. The latter may accept or refuse. If she/he accepts, the sum is divided as proposed; if she/he rejects, neither player receives anything. Receivers sensitive to fairness accept fair offers, in which the amount of money is similar for the two players, and refuse unfair offers, in which one of the players receives significantly more money than the other. This “inequity aversion” develops in two steps: around 3–4 years of age, children show aversion to disadvantageous inequity by rejecting offers that provide for a lower good for oneself and a higher good for the other player. At around 8 years of age, children show aversion to advantageous inequity, rejecting offers that provide for a higher good for oneself and a lower good for the other player (Fehr, Bernhard, & Rockenbach, 2008; Smith, Blake, & Harris, 2013). Thus, the baseline for fairness shifts from an egoistic/egocentric perspective, oriented to maximize profit without considering others’ perspectives and the fairness norm during the UG, to an equal/multicentric perspective, which allows children to play in both roles considering the partner perspective on the fairness norm (Castelli, Massaro, Sanfey, & Marchetti, 2010).

Altruism is considered a predisposition of human beings to help others achieve their goals and to share valuable goods and information (Warneken & Tomasello, 2009a): in the economic field, altruism provides others with goods, services and information (Warneken & Tomasello, 2009b). During their development, children learn to act altruistic behaviours on the basis of their own culture’ social norms, expecting of being reciprocated and thinking to their social reputation. Altruism is central for human species survival and development because it’s characterised by behaviour that can result an immediate individual disadvantage, but which, in

the long term, improve the society well-being and consequently also one's own. The sharing behaviour that characterizes altruism is studied by the *Dictator Game* (DG).-This game differs from the UG in which the Proposer decides how much to offer to the Receiver, who is obliged to accept this offer. Literature shows that children start helping others and share with others already during the second and third year of life, also independently of parents' feedback or material rewards (Warneken & Tomasello 2009; 2013), then propensity to altruism becomes stable at early school-age (Benenson et al., 2007).

Furthermore, the ability to manage time is another aspect at the basis of daily economic decisions, because people are often called to make decisions between choices that have an immediate benefit and choices that have a greater benefit in the future. This type of decision is named "intertemporal choice" and in the economic field regards the behaviour to act when choices in the present influence future availabilities; intertemporal choices require individuals to trade off costs and benefits in different time periods and are applied in a different number of fields, for example saving, investment, education, health care and so on. Classically investigated through the delay of gratification paradigm (Berns, Laibson, & Loewenstein, 2007; Marchetti, Castelli, Sanvito, & Massaro, 2014), the ability to wait for a higher award is a topic that has affected developmental psychology, because it is a predictor, showed by longitudinal studies, of a number of important capacities and outcomes, such as school context adaptation (McIntyre et al., 2006), attainment of academic achievement (Bembenuddy & Karabenick, 2004), high salaries and good job positions in adult life (Casey et al., 2011). This ability surfaces at preschool age (a turning point in the ability to delay a gratification is around four years) (Moore, 2009) and continues to develop until 8-10 years of age, when children start to show a greater capacity to inhibit an immediate impulse in order to obtain future gains (Lemmon & Moore, 2007; Posner & Rothbart, 2007). Starting from these premises, in this research we tested the possibility of promoting more effective economic decision-making both

from a personal and a social point of view through a conversational training, created ad hoc, about fairness, altruism, and delayed gratification.

Why a conversational training for decision-making components?

The decision-making process and its components are considered crucial for the construction of good financial literacy. In a recent review of financial-literacy education programs for children and adolescents, Amagir and colleagues (2018) suggest that most elements of these programs aim to improve financial literacy and financial capability. In terms of literacy, existing programs teach basic concepts and content of the adult economic and financial world providing, for example, knowledge and understanding of planning and budgeting, saving, spending, and credit. Authors examined a number of these programs, but they argue that an educational approach based exclusively on knowledge has limited effectiveness (Perry & Morris, 2005). In order to obtain a significant improvement in financial literacy, is important to consider financial capability. Hence, some existing programs focus training on some of personal aspects involved in economic and financial decision-making process (i.e. self-confidence, perseverance, and “economic thinking”, but also mathematic competency), transferable skills, willingness to invest in oneself to achieve economic improvements, and problem-solving skills. To become a good decision-maker (which for us means making effective decisions on a personal level that are socially acceptable from an interpersonal point of view) is important making adaptive long-terms decisions, depending on a person’s planning skills, ability to wait (termed “patience” in economic studies), and capacity to delay a gratification, all of which are abilities studied in psychology as processes underlying the development of individuals’ social skills. Moreover, a large part of daily decisions affects other people and have strong implications for interpersonal relationships. This type of decisions aims at constructing and maintaining positive interpersonal relationships and are the basis of the prosocial behaviour—behaviour that is

costly to the individual and benefits others at the individual or group level (Yamagishi et al., 2012); examples include altruism, charitable donations, and helping behaviours. It is possible to classify factors of different types of training aimed at improving a prosocial decision-making process and, consequently, prosocial behaviour. Böckler and colleagues (2018) identified three factors that constitute prosocial behaviour that can be trained: *altruistic motivated prosocial behaviours* (demonstrating individual desire to enhance other's well-being even at a cost to oneself and evaluated through, for example, the donation task or the DG); *norm motivated prosocial behaviours* (the tendency to enforce social norms using costly punishment) evaluated through second and third-party punishment tasks (a variation of the UG); *self-reported motivated prosocial behaviours* (perceiving oneself as moral and helpful) evaluated through self-reported scales. Trainings aimed at improving these prosocial behaviours focus on individual affective components, such as compassion, gratitude, prosocial motivation, and on socio-cognitive skills such as perspective-taking ability, or on the main principle of mindfulness, such as compassion-based contemplative practices. These trainings may involve adults (parents or teachers) to train or to teach specific strategies to use with children or adolescents (for example, Elias & Clabby, 1992; Šramová, 2004; Valle et al., 2016; Valle et al., 2018) or may be applied directly to children and adolescents. To work directly on the psychological aspects of prosocial behaviour, Heck and colleagues (2018) proposed a training for primary school children focusing on the construct of fairness, demonstrating that training children in perspective-taking influences their decisions in economic games with the researcher involving a voluntary vs. accidental violation of a norm.

In light of these considerations, we aimed to involve primary school children in a conversation-based training for enhancing prosocial behaviour and competencies by developing perspective-taking abilities. This training applies effective teaching methods used by financial education programs, such as group discussion and

guided readings (Amagir et al., 2018), which also involve psychological aspects of prosocial behaviour training such as metacognitive ability to think about self, increased attention towards the affective aspects of decisions, and perspective-taking ability (Böckler et al., 2018). The training used for this study is based on the conversational approach, using conversation as a means of co-constructing knowledge (Siegal, 1999). This type of training guides children to discuss each other's, with the aim of discovering, comparing, and accepting multiple perspectives on the same topic, in order to compare different points of view and promote reflection on experiences (Durlak et al., 2011). In this way, this type of training supports the application of the decision-making process and its components, i.e. altruism, fairness, and intertemporal choice, in children's daily life and in numerous social situations they experience at school.

The aim of the present research is to evaluate the effectiveness of conversational training in promoting fairness sensitivity, altruism, and delay of gratification ability (the basis of the investment propensity) on economic decisions in children from the latter years of primary school (from 8 to 10 years old). The hypothesis is that, involving children, reflections facilitated by a conversational methodology on the issues above-mentioned will lead them to change their behaviours in decision-making from pre- to post-test, compared to children in the control group. We expected that children evaluated at the end of the training would show more inequity aversion in the fairness test and would become more altruistic and better able to wait for a greater good than in the pre-test evaluation with respect to children of the control group.

Methods

Participants

A total of 121 children were initially recruited for this study belonging to six classes (from 3rd to 5th primary school classes) from two schools (Primary

Schools “Marzabotto” and “Ugo Foscolo”) in Northern Italy, near Milan, who took part in this study. Children who did not complete all the measures or children did not speak or understand Italian were removed from the main dataset. Six children assigned to the training group and three children assigned to the control group didn’t complete pre- or post-test sessions and 2 children, assigned to control group, had moved to Italy for no more than 3 months and did not understand or speak Italian. The total of participants considered was 110 (Male= 47) aged between 8 to 10 years (Mean age = 116.51 months, SD = 10.49 months). Two classes for each age range participated in this research project and for every range one class was randomly assigned to the control group (CG, N=55, mean age = 118.15 months, SD = 10.31, male = 26) and one to the training group (TG, N = 55, mean age = 114.91, SD = 9.80, male = 21). The training group participated in the training program described above, while a control group followed only the regular school program of citizenship education. Children was made up of typically developing who were fluent in Italian and, therefore, had not difficulties in taking part (and learn from) the activities of our training program. Parental informed consent was obtained from each participant. The research was conducted according to APA ethical standards and was approved by the local ethics committee.

Procedures

The study was organized into three steps:

Step 1 (Pretest): All children were tested firstly through a collective session and secondly through an individual one. The collective session, lasting about 50 minutes, included a guided-by-the-experimenter protocol to assess socio-economic families’ level, linguistic and mathematical abilities of the children. The tasks were organized into three parts: first and second (socioeconomic level and verbal ability) identical for all three classes and the last one (mathematical ability) suited to the classes to which the children belonged. The individual session tasks

were randomized and evaluate children's inhibitory control, sensibility of fairness, altruism and the delay of gratification. During the two individual sessions, lasting about 25 minutes, children could play with and had the chance to win Calciatori Panini© or Amici Cucciolotti© (football players or puppies) trading cards used as traded goods for the proposed games. Before starting each task, children were asked about their trading cards preferences. Each task was presented randomly.

Step 2 (Training): Only those children in the training group took part in the training sessions, which started one week after the end of the pre-test phase. Children in the control group only attended civics education classes, established in their state curricula.

The focus aspects of the training stories are described below:

- The fairness stories talking about a) the difference between fairness/equity and equality (e.g. Espinoza, 2007) and b) the social norms (Bicchieri & Chavez, 2010);
- The altruism stories elicit a) the prosocial (Larsen et al., 2017) and b) the charity behaviours, considering altruism in terms of personal cost (Eisenberg & Shell, 1986);
- The delay of gratification stories are about the role of prospective thinking enabling the individual to anticipate future outcomes in response to current outcomes (Lombardi, Di Dio, Castelli, Massaro & Marchetti, 2017), as in the case of a) personal reward or b) common social good.

Both training and control group followed the school curriculum based on the Italian National Guidelines for the pre-primary school and the first cycle of school education curriculum (MIUR, 2012). It indicates that the general objective of the educational process in the school system is the achievement of some key competences for lifelong learning recommended by the European Parliament and the Council such as the sense of initiative and entrepreneurship, strictly linked with economic and financial education. Sense of initiative and entrepreneurship

competences refer to an individual’s ability to turn ideas into actions, they include creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve goals. According to these guidelines, every teacher individually and in a personal way shows the principles of the economic and financial education, explaining, for example, the economic trend of industry sector (Ajello & Bombi, 1987; Morselli & Ajello, 2016).

Step 3 (Post-test): all children took part in this session one week after training sessions end. They only attended the individual session in which they were re-tested about fairness, altruism and intertemporal choice tasks, using the delay of gratification paradigm. Tasks were run in random order during one individual session lasting a maximum of 25 minutes. The post-test session ended at the end of the school year, after 4 months from the pre-test session.

Both pre-test and post-test individual sessions were conducted in a quiet room different from children's classes. The training sessions were conducted in the classroom. The three steps of researcher were conducted by independent researchers. Table 1 shows the tasks lists and the pre-test and post-test target dimensions, respectively. We organize the variables in ‘control variables’, potentially confounding variables that are known to be related to fairness, altruism and delay of gratification and ‘decision making variables’, focus of the intervention.

Table 1 Target dimensions and tasks for the pre-test and post-test administrations

	<i>Dimension</i>	<i>Task</i>	<i>Pre-test</i>	<i>Post-test</i>
<i>Control variables</i>				
	Socio-economic background	<i>Family Affluence Scale (FAS)</i>	X	
	Verbal ability	<i>Primary Mental Ability (PMA)</i>	X	

Decision Making variables	Mathematical Ability	<i>AC-MT 6-11</i>	X	
	Inhibitory Control	<i>Fruit Stroop Task</i>	X	
	Fairness	<i>Ultimatum Game (UG)</i>	X	X
	Altruism	<i>Dictator Game (DG)</i>	X	X
		<i>Donation Task (DT)</i>	X	X
	Delay of Gratification	<i>Intertemporal Choice Task</i>	X	X
		<i>Investment Task</i>	X	X

Tasks

Control variables

Socio-economic background (pre-test). We used the Family Affluence Scale (FAS, Currie et al., 2008) in order to evaluate the socio-economic background: this brief questionnaire explores family expenditure and consumption. This task has four questions that refer to the number of means of transport owned by the family (range = 0–2), to the fact that the respondent had his own not-shared bedroom (range = 0–1), to the number of times the family went on vacation in the last solar year (range = 0–3), and the total number of family’s electronic devices (range = 0–3). Responses to the items were summed into an overall index of family socio-economic background (range = 0–9).

Verbal Ability (pre-test). We tested the verbal ability through the vocabulary subtest of the Primary Mental Ability (PMA, Thurstone, & Thurstone, 1982; Rubini & Rossi, 1982) In this test children had to choose the correct synonym, identifying from among the four target-image proposed. There were 30 items in total, each counting as one point for a correct answer; the total score is the number of the correct answers (range = 0–30).

Mathematical Ability (pre-test). A selection of the Test for the evaluation of Calculation Ability - AC-MT 6-11 (Cornoldi et al., 2012) was used to evaluate mathematical ability. For this study, three exercises and two mathematical problems were chosen. The first exercise was the “judgment of numerosness” subscale: in this task every child had to hoop, for every couple of numbers presented, the highest one. Then they had to complete the “arrangement of series” subscale in which children had to rearrange two series of numbers, the first from the highest to the lowest and the second from the lowest to the highest. The score was attributed by calculating the number of correct answers (range = 0-6) for the “judgment of numerosness”, the number of the right completed series for “arrangement of series subscale” (range = 0-12) and the sum of the correct problems (range = 0-2).

Inhibitory Control (pre-test). We tested the inhibitory control with the Fruit Stroop task (Archibald & Kerns, 1999). This task has four pages of stimuli that present three fruits and one vegetable in rows made up of 5 items arranged pseudo-randomly. After three pages of familiarization phase, the researcher presented to the child a stimuli-page with fruit and vegetables displayed in incongruent colours (e.g. red salad) and child was asked to name the original colours of the fruit and vegetables (e.g. green for salad). Children were instructed to name the colours as quickly as possible. Scoring is based on the number of items completed within a 45 second time limit. The score was assigned by calculating the number of correct answers for every condition.

Tasks: decision-making variables

Fairness

A modified version of the Ultimatum Game – UG (Güth, Schmittberger & Schwarze, 1982) was used to assess fairness (Lombardi et al., 2017). Children

played a game in which they could be shared with another child represented by a drawing image up to 10 trading cards, chosen between two different typologies (i.e. the football players or puppies characters). Playing the role of Receiver, the child could decide whether to accept or refuse the proposed division. In case of acceptance, both children received the respective proposed amounts; in case of refusal, neither child gained anything. The UG was played for real, and children actually won the final amount of trading cards. The children played three rounds as Receiver. The offers were categorized as follows: *unfair* (8-2: eight trading cards for the Proposer and two trading cards for the Receiver); *hyperfair* (2-8: two trading cards for the Proposer and eight trading cards for the Receiver); and *fair* (5-5: equal division of trading cards). All rounds were presented randomly. The children scored 1 when the offer was accepted and 0 when refused. A total of 3 independent scores were hence obtained, one for each type of offer.

Altruism

Dictator Game

A standard version of the Dictator Game (DG, Kahneman, Knetsch, & Thaler, 1986), was used to assess altruism. In this game, the child (playing as Proposer/Dictator) decided how to distribute 10 trading cards, between him and a passive player, that did not have the option to decline the offer. Also, in this case, the other child (the Receiver) was presented as a drawing image (Castelli et al., 2010) and the Dictator has chosen between two different typologies of trading cards (i.e. the players or puppies characters). The DG was played for real, giving a final amount of trading cards. The children played only one round, in which the offered amount was scored.

Donation Task

Based on the donation experiment run by Angerer and colleagues (2015), we used the Donation Task (DT), i.e. a dictator game-like experiment on donations to a

charity. The experimenter first asked the child if he/she could see a box placed on the other side of the room. Once the child replied “Yes”, the experimenter began to explain to him/her that the box contained all the trading cards donated by the children participating in the project to some children whose families didn’t have money to buy them. Then the experimenter told the child he/she would have had 10 trading cards and he/she could decide how many of them donate to the poor children and how many of them taking home. The child was informed that he/she could donate from 0 to 10 trading cards, inserting the donated cards in the box. Cards he/she would take home had to be put in a white envelope. In that way he/she would have taken his/her decision without being observed by anyone. After a couple of control questions on the understanding of the right donated and taken-home trading cards’ allocation, the experimenter accompanied the child in front of the box and gave him/her all the time he/she needed to take his/her decision waiting for him/her in another part of the room. Scores could vary from 0 to 10, depending on the number of trading cards donated.

Delay of gratification

Intertemporal Choice Task

The Intertemporal Choice Task (version of Marchetti et al., 2014), was used to assess the delay of gratification (Mischel et al., 1972), asking children to decide whether to delay gratification in hopes of gaining larger future reward. Children were first told the following sentence: “You know, sometimes you can choose between receiving a small gift right away or a bigger one later” and then they had to answer the following question: “Do you prefer having a pack of trading cards now or wait four weeks, the day XX (showing the right day on a calendar) to have two trading cars’ packs?”. In case the child chose to take one pack of trading cards immediately, he was asked how long he would be willing to wait to get two packs. Every child could gain 10 trading cards (one pack) choosing the first proposal or 20 (two packs) choosing the second one. The experimenter took to school in the

right day after four weeks trading cars children won. The child scored 0 if could not wait four weeks and 1 if waited for the reward.

Investment Task

In addition to the Intertemporal Choice Task, we decided to propose the Investment Task (Angerer et al., 2015), assessing the investment propensity as a part of the delay of gratification paradigm. Compared to the former task, the Investment Task requires to apply a more strategic thinking in the decision to delay an immediate gratification in favour of a greater future reward, because the child has to decide how many trading cards to take home immediately and how many to invest. In this case, the child has to manage the pursuit of two objectives, one immediate and one long-term, assessing whether and how much more important for her/him the immediate reward or the greater future reward is. In fact, in this task children were endowed with 10 trading cards and they were told they had to choose how many trading cards they could take home immediately and how many of them they want to put inside of a box with “four weeks” on its top. Every card inserted in the “four weeks” box would have been doubled if children would have waited for four weeks (children had been shown the exact day on a calendar after four weeks from the day they played this task), while each card they chose to take home immediately would not have been doubled. To understand children's rule comprehension, they were asked to repeat it with some control questions: in case they hadn't understood, the experimenter would have repeated it again. To be surer of their comprehension, the experimenter asked children to complete the example he explained. Once he verified children's real comprehension, he told them to make their choice. At the end, in case of trading cards' division, children were reminded the day they would have received cards they doubled.

The score was the invested trading cards number (range 0-10). The experimenter took to school in the right day after four weeks trading cars children invested.

Training

A new conversational training focused on fairness, altruism, and delay of gratification was created in order to train these skills. The conversational approach (Siegal, 1999) assumes that child is involved in conversational interactions, typical of social life, early in development. The conversational activity, in particular during the school-age period, allows transforming the implicit knowledge into explicit knowledge, discussing them with others.

The training was designed to have three one-hour sessions each, conducted in class by a researcher over a period of about two weeks of school time. For each topic (i.e. fairness sensitivity, altruism, and delay of gratification ability), two stories have been invented or created based on children's (Varela, 2014) or on scientific literature (Larsen, Lee and Ganea, 2017), with the aim of stimulating group reflection and understanding of one's own and other points of view. According to literature about the training programs (Bianco, Lombardi et al., 2019), each story was followed by four multiple-choice questions create with the purpose of verifying child's actual understanding of the content, his/her ability to put themselves in the shoes of the story characters (perspective-taking) and to stimulate the subsequent discussion.

The structure of each training trial followed a sequence, described below.

1. *Initial phase*: at the beginning of every meeting, the experimenter handed over to all children a packet of sheets containing the first story followed by the questions created for each of them (at the end of the first story the researcher withdraws the sheets previously handed over to each child, while second story sheets are handed over);
2. *Story phase*: the researcher read the first story of the session aloud supported by the projection the story text and images in order to facilitate the content understanding;

3. *Multiple choice questions*: after the story reading, children were asked to answer the questions individually in order to stimulate children's reflections on the characters' perspective (Bianco, Lombardi et al., 2019). Each question had three answers: one option was completely correct, one was wrong but challenging because it is close to the correct answer and the third one was completely wrong. Being at school allowed us, using the individual response method, to create a situation similar to the children school habits; in addition, in that way the experimenter was certain that each child focused her or his attention on the highlights of the story.
4. *Feedbacks*: once the questions have been answered, the researcher provided comments, explanations of incorrectness answers and feedbacks on whether the children's choices are correct or not (for the importance of feedbacks during a training see Melot & Angear, 2003): for each question, the conversation started on the basis of the answers content and reflections that have led the children to make a certain choice from the options provided. All children were involved, by rising up their hands to share the given answer.
5. *Discussion*: starting from the stimuli emerged and based on the story's target, the discussion was conducted by the experimenter who welcomed children interventions who voluntarily decided to speak by providing them positive feedback and expanding children's comments referring to the session topic. The researcher ensured to take part in the conversation all the children discussing their point of views on the story and providing corrective feedback when needed. During the discussion, the experimenter had three aims: she guided children to correctly interpret mental states at the basis of the decisions made by the characters, she stimulated children to apply their perspective-taking ability to understand classmates' point of view about the story, and guided participants to reflect on the topic of the meeting (fairness, altruism or delay a gratification). For each training trial,

the class discussion was concluded when all participants showed a good understanding of the story's topic.

6. *Children's examples and final discussion:* at the end of the discussion, after the experimenter summarised contents emerged, children were asked to think or imagine an example about the story's topic, starting from their own personal experience (Durlak et al., 2011), to anchor child experience to the emerged learning in the discussion. All children are invited to participate, but, usually, one child volunteer start and then the researcher encourages others' participation.

The training structure favours the assumption of perspective-taking through stimuli and listening to the answers expressed by the classmates: asking to assume the perspective of the story characters or thinking about similar situations favours their development.

An example for each session is given in the Appendix.

Results

Descriptive statistics for control and training variables in the two groups are shown in Table 2, Table 3, and Table 4. Spearman's correlations between all variables at the pre-test are shown in table 5. Performance on the ICT as well as on the UG was evaluated through non-parametric statistics (binomial analysis and Mann-Whitney U test). We conducted some preliminary analyses to verify the homogeneity of the groups for the considered variables at the pre-test session. We controlled gender differences and no significant results emerged. To assess differences in the pre-test rate of acceptances of hyperfair, fair and unfair proposals and of intertemporal choice task's success the Mann-Whitney U test (Bonferroni corrected for multiple comparisons) by paired-group showed no significant differences between the two groups ($p > .05$). For the other variables, we conduct the t-test for independent samples and it didn't show any statistically significant differences between children assigned to the training group and children assigned to the control t group ($p > .05$), with exception of the verbal abilities ($t_{(108)} = 2,376, p=.019$). For the significant difference between two groups in verbal abilities, in subsequent analyses, we controlled verbal abilities scores.

Table 2 Descriptive Statistics on all continuous measures

	Mean	Standard Deviation
	Training group (N=55)	Control group (N=55)
Pre-test age in months	119.11 (10.59)	113.91 (9.8)
Socio-economic background (0-9)	6.29 (1.99)	6.33 (1.67)
Verbal ability (0-30)	25.14 (4.87)	26.98 (3.01)
Problems solving (0-2)	.49 (.66)	.71 (.79)
Judgment of numerosness (0-6)	5.89 (.31)	5.80 (.49)
Arrangement of series (0-12)	8.38 (1.86)	8.82 (1.32)
Inhibition	34.67 (7.81)	35.55 (7.74)

Pre-test DG	4.58 (1.19)	4.78(1.55)
Post-test DG	4.40 (1.48)	5.25 (1.57)
Pre-test DT	4.53 (2.20)	4.47 (2.35)
Post-test DT	4.35 (2.64)	4.93 (2.74)
Pre-test Investment task	4.93 (1.98)	4.95 (2.05)
Post-test Investment task	6.29 (2.3)	5.29 (2.22)

Table 3 Binomial analysis of children's responses to the Ultimatum Game (UG) by type of proposal (hyperfair, fair, unfair) and group (control and trainings groups) at the pre-test and post-test

		<i>UG pre-test</i>					
<i>Group</i>	<i>Response type</i>	Unfair		Fair		Hyperfair	
		N	%	N	%	N	%
<i>Control group</i>	Accept	31	56	50	91	36	66
	Refuse	24	44	5	9	19	34
	Total	55	100	55	100	55	100
<i>Training group</i>	Accept	25	46	50	91	45	81
	Refuse	30	54	5	9	10	19
	Total	55	100	55	100	55	100

		<i>UG post-test</i>					
<i>Group</i>	<i>Response type</i>	Unfair		Fair		Hyperfair	
		N	%	N	%	N	%
<i>Control group</i>	Accept	30	55	52	95	39	71
	Refuse	25	46	3	5	16	29
	Total	55	100	55	100	55	100
<i>Training group</i>	Accept	32	58	48	87	42	77
	Refuse	23	42	7	13	13	23
	Total	55	100	55	100	55	100

Table 4 Binomial analysis of children who passed the Intertemporal Choice Task (ICT) at the pre-test and post-test

		<i>Intertemporal Choice Task</i>			
		Pre-test		Post-test	
<i>Group</i>		N	%	N	%
<i>Control group</i>	Waiting for 4 weeks	26	47	40	73
	No waiting for 4 weeks	29	53	15	27
	Total	55	100	55	100
<i>Training group</i>	Waiting for 4 weeks	34	62	48	87
	No waiting for 4 weeks	21	38	7	13
	Total	55	100	55	100

Table 5 Correlations between variables at pre-test

	<i>SES</i>	<i>VA</i>	<i>PS</i>	<i>JN</i>	<i>AS</i>	<i>SH</i>	<i>DG</i>	<i>DT</i>	<i>ICT</i>	<i>IT</i>	<i>UGf</i>	<i>UGu</i>
<i>SES</i>	-											
<i>VA</i>	.288**	-										
<i>PS</i>	.150	.416**	-									
<i>JN</i>	-.057	.269**	.197*	-								
<i>AS</i>	.135	.144	.272*	.106	-							
<i>SH</i>	.096	.361***	.091	.116	-.087	-						
<i>DG</i>	-.080	.242*	.169	.117	.008	.123	-					
<i>DT</i>	.017	.192*	-.024	.088	-.155	.229	.322***	-				
<i>ICT</i>	.117	.175	.002	.067	-.095	.181	.043	.392***	-			
<i>IT</i>	.034	.210*	.117	.055	-.185	.192*	.155	.182	.143	-		
<i>UGf</i>	-.057	.067	.041	-.035	.193*	-.129	-.053	-.165	.042	-.098	-	
<i>UGu</i>	.055	-.170	.026	-.080	-.086	-.110	-.100	.120	-.146	.007	-.151	-
<i>UGh</i>	-.038	-.179	-.058	-.179	.049	-.176	-.190*	-.266	-.206*	-.049	.098	-.264

Note. SES, Socio-Economic Status; VA, Verbal Ability; PS, Problem Solving; JN, Judgment of Numerousness; AS, Arrangement of Series; SH, Shifting; DG, Dictator Game; DT, Donation Task; ICT, Intertemporal Choice Task; IT, Investment Task, UGf, Ultimatum Game fair proposal; UGu, Ultimatum Game unfair proposal; Ugh, Ultimatum Game hyperfair proposal. * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Subsequently, in order to analyse the effect of training, we performed a GLM for repeated measures for each decision-making continuous variable explored, i.e. Dictator Game, Donation Task, Investment Task with time (pre-test and post-test) as the within-subjects factor and groups (training and control) as the between-subjects factor, and verbal ability as the covariate. Pairwise comparisons revealed that, as shown in figure 1, for the Dictator Game, children in the Training group showed significantly higher post-test offers compared to the post-test offers of children in the control group ($F_{(1,108)} = 5.431, p = .022, \eta^2 = .071, \theta = .700$). Furthermore, for the Investment Task children in the Training group showed a significantly higher post-test investment compared children in the control group ($F_{(1,108)} = 4.270, p = .041, \eta^2 = .038, \theta = .535$), showing the efficacy of the training program (see figure 2). However, for the Donation Task, GLM for repeated measures does not show significant effect of training ($F_{(1,108)} = 0.143, p = .706, \eta^2 = .006, \theta = .130$). In order to evaluate the effect of training for the dichotomous variables, i.e. the Ultimatum Game – fair, unfair and hyperfair proposals - and Intertemporal Choice Task we used the McNemar’s statistic in the two groups. This test was significant for both control group and training group for the Intertemporal Choice Task (McNemar’s binomial training group, $N = 55, \chi^2 = 10.9, p < .001$; control group, $N = 55, \chi^2 = 10.9, p < .001$), showing an effect of the time and it was no significant in the two groups for UG fair proposal (McNemar’s binomial training group, $N = 55, \chi^2 = .40, p = .527$; control group, $N = 55, \chi^2 = .50, p = .480$), UG unfair proposal (McNemar’s binomial training group, $N = 55, \chi^2 = .258, p = .108$; control group, $N = 55, \chi^2 = .07, p = .796$) and UG hyperfair proposal (McNemar’s binomial training group, $N = 55, \chi^2 = 1.0, p = .317$; control group, $N = 55, \chi^2 = .82, p = .366$). These results show that the training had no efficacy in the performance of these tasks.

Figure 1 Dictator Game proposals for Training group and Control group at pre-test and post-test

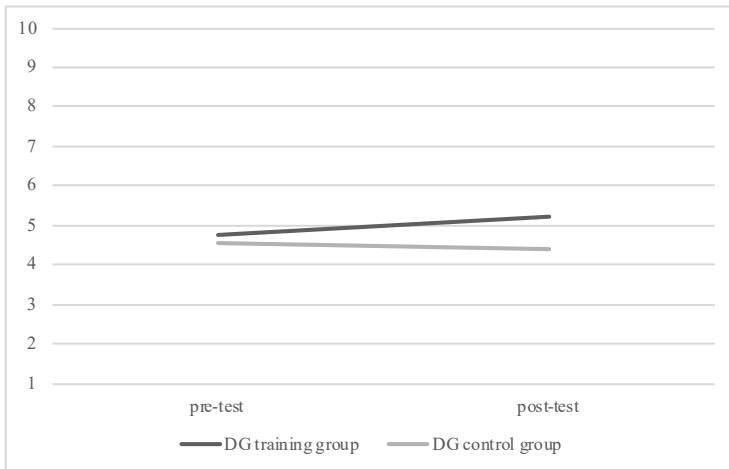
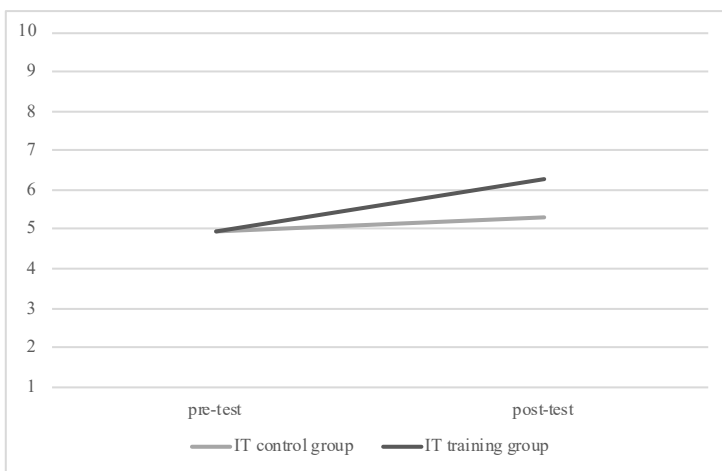


Figure 2 Investment Task performance for Training group and Control group at pre-test and post-test



Discussion

In this research, we tested the efficacy of a conversational training about fairness, altruism and the ability to delay gratification in children aged from 8 to 10 years. Results evidence that the training increases altruistic behaviour and the ability to delay gratification, whereas does not impact the fairness behaviour.

Regarding the altruism increase, the literature suggests that the propensity for altruism is already seen in early childhood (Warneken & Tomasello, 2006) and stabilizes in early school-age (Benenson et al., 2007). Nonetheless we find that training in the perspective-taking ability modify altruistic behaviour in the late school-age: children who participated in the conversational training increase the number of the trading cards shared in the Dictator Game, but they didn't increase the number of the trading cards donated in the Donation Task. The latter explicitly evokes the construct of charity (a concept similar to that of a donation considered here) that consists of an allocation of resources to a recipient identified by need, not by personal characteristics (Niemi & Young, 2017). This makes the Donation task quite different from the Dictator Game; in fact, the Dictator Game requires children to play with another hypothetical - but well defined - child, because of a schoolmate depicted in a drawing, whereas the Donation Task asks to share some trading cards with an unfamiliar child. It is possible that children trained in the perspective-taking with their classmates become more able to assume the perspective of a specific child similar to them, to whom they can attribute the same characteristics as their classmates, then they may have based the choice of the number of trading cards to share on the assumption of a hypothetical relationship with her/him. In the case of the Donation Task, training in the perspective-taking may not have had the same result because charitable behaviour is based on the identification of a need, without implying or hypothesizing a direct relationship with the other; consequently, in this case the ability to take on the point of view of others may be less involved.

Regarding the impact of the training in economic behaviours related to the ability to delay gratification, children of the training group increase the number of trading cards invested in the Investment Task, compared to the control group, but we do not find differences in the Intertemporal Choice Task. In the ability to delay a gratification, many competencies are involved, including self-control (Kidd et al., 2013), used to inhibit the desire to obtain the gain immediately, anticipation, the capacity to anticipate the hedonic consequences related to the good that will be obtained in the future, and representation, the tendency to evoke specific interpretative frames about the salience of the delayed reward (Berns et al., 2007). We assumed that the application of these capacities during the training helped children to become more strategic in an investment task, a complex situation that involves the ability to anticipate and represents both the immediate and the future gain and that requires to find an equilibrium between them (both ensured, the decision is about the amount of the rewards). Conversely, the intertemporal choice situation is less complex and less strategic because imply an “all or nothing” decision (a reward immediately or a reward in the future), then it is possible that children continue to apply their usual behaviour without benefiting from more complex reasoning.

Regarding results about fairness, we had assumed that after participating in a training focused on the fairness norm, children showed more inequity aversion that in the pre-test phase, by the increase of the rejections of unfair (in the case of disadvantageous) and hyperfair (in the case of advantageous) offers. Instead, results suggest that a conversational training eliciting children’s reasoning about this social norm did not have an effect on the inequity aversion, in both directions. To understand this result it is useful refer to the theme of the overlapping of fairness and inequity aversion: indeed, the fact that to train fairness does not impact on inequity related behaviour may mean that, at least, in the age groups considered, social norm of fairness is something different from its behavioural

operationalization in inequity aversion. Recently, Engelmann and Tomasello (2019) proposed a new interpretation of fairness behaviour in line with this idea. Authors affirm that children decide about the resources' allocation on the basis of the social meaning attributed to this distribution and specifically on the basis of the desire that people involved are equally respected. In this theoretical frame, children' decisions are not moved by an abstract norm of fairness (object of the present training), rather by the application of this norm involving an interpersonally based reasoning on the mutual respect, the merit (in the case of collaboration) and the resource's need. In the light of this perspective, we can assume that to obtain a change in economic behaviour it might be useful to work on these social aspects, rather than on the norm itself, as proposed during the training.

Starting from these results, we showed that using guided conversations as procedural tools and training children to focus themselves on the reflective thinking about norms, values and possible different perspectives about economic topics, altruism and investment decision-making behaviour in school-aged children are modified. Reflective thinking can help to monitor and display the solution/decision process, through the problems solving with logical reasoning, in order to analyze and think about the options, choosing the most useful alternative. Decision making requires to reflect knowingly on their own mental structures and procedures, emerging as a solution to interpret, delay and understand the issues of thinking in prediction and decision making for the future (Rasyid, Budiarto & Lukito, 2018). We think that reflective thinking supports reflections and discussions with others and helps children to develop higher-order cognitive skills, for example, through the link of the new knowledge to their previous understanding, the implementation of specific strategies for new tasks and the aware understanding of their own thinking processes and decision strategies. Many studies, mainly based on socio-cultural approach, showed how learning occurs through social and communicative processes, as forms of "dialogic" interaction, such as classroom discourse (Mercer &

Littleton, 2007; Molinari, Mameli & Gnisci, 2013; Resnick, Asterhan & Clarke, 2015). In the case of the training, each child discussing with other participants recognizes the diversity of voices, values, beliefs and perspectives and the meaning emerges from the tension between the perspectives in that "dialogic space" which develops through the social construction of meaning (Perret-Clermont, Perret, & Bell, 1991; Lombardi, Greco et al., 2018). In this way training helps children to reflect on their own thoughts and decision-making process. Reply to open questions, participating in shared reasoning and thoughts, and critically considering other points of view were useful for our children to learn and generalize new forms of thinking, that take into account different points of view. At the end of this type of training, new knowledge in children derived not only from materials prepared by the researcher, used just as a stimulus to start the discussion, but also from listening to mutual comparison, in a more active and interesting way. Furthermore, children learn something about the topic and something about aspects of this topic related to their social world, putting themselves in the story protagonists' shoes and these mental simulation leads them to considering changing their decisions. The children's reactions to the stories at the post-test session well demonstrate how new insights and understandings are actively and dynamically constructed. Children rely on previous knowledge and work to actively welcome new information to make sense of the situation presented in the story. In this way, they move from considering the concrete, action-oriented, context-specific details of the stories - knowing what happened and why- to building an understanding of the wider and longer-term emotional implications for their own situation (Immordino-Yang, 2015). The training may also have stimulated cognitive processes underlying thoughts and behaviours regulation in children, concerning higher-order cognitive skills. In particular, the conversational training may stimulate the cognitive flexibility, refers to our ability to switch between different mental sets, tasks, or strategies (Diamond, 2013). The training group children refocus attention to relevant theme of the

training session and also simultaneously consider conflicting representations of information in order to modify one's thinking in response to changes in their own internal or external environment and in relation to their decisional process.

Limits, strenghts and conclusions

About the limits of this study, we think that in the future it will be important to let children play as proponents of the Ultimatum Game: in fact, literature evidences that school-age children evaluate differently the fairness of the offers when they play in the Proposer or in the Receiver role (Castelli et al., 2014). It might be interesting to check whether playing as a Receiver can bring changes that are not appreciable when the children play as Proponents. Moreover, in this training we did not evaluate the trust in the experimenter role. In this study, an experimenter tested all children in a pre-test phase, and she came back to deliver the gained trading cards during the games: the same happened in the post-test phase. It is possible that to verify the experimenter's reliability in the first phase has led the children to trust that person even in the second phase, influencing in some way economic decisions in the post-test (about the importance of the reliability of the experimenter see Kidd et al., 2013). From the methodological point of view, another limit of this study concerns the difficulty of discriminating the effect of learning in the post-test session, although the training group is significantly improved in the proposed tasks compared to the control group. In future studies, will be useful consider the transfer effect of our training in order to test the efficacy of the training in producing improvements on practiced but also on transfer tasks, in attempting to better show the achievement of the generalization in untrained tasks. In addition, the two groups followed normal school programs, future research should use a control training with the same structure as the experimental one, but with neutral contents.

A strength of the training program concerns the applicability in the educational context in order to improve both specific and broad psychological dimensions. In fact, results showed that a training applying school methods, familiar for teachers and pupils, have an impact on very specific dimensions such altruism and delay of gratification, which are interrelated (Lombardi et al., 2017), but also may promote more general psychological abilities, for example reflective thinking as discussed above.

In light of our results, we think that the application of this conversational training at school might be useful for teachers and children. The training's structure, based on narratives' stimuli and guided discussion, is near to the teaching methods usually used at school, they might be easily accepted and applied in a classroom. Moreover, this training does not directly refer to the subject of economics, which is generally not included in primary school curricula, but its application provides foundational learning relative to work economic topics for this age group.

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Competing Interests

The authors have declared that no competing interests exist.

Appendix: Examples of training trials

Story	Type of story	Questions	Category of Answers
<p><i>The line at the amusement park</i></p> <p>Every year, at the end of the school year, Federico, Davide, Giada and Sara's class organizes a school trip to an amusement park. Children are very close friends and spend a lot of time together at school and in their spare time. During the school trip, the amusement park is very crowded and the queues to get on each attraction are very long. The children are in line with many other people to get on the Panoramic wheel and spend the waiting time looking at the park map and chatting. Federico and Giada are looking for Sara and Davide among the many people who have left. "Where am I?" They ask. "Here they are. I knew it!", says Giada a little angry," Davide and Sara are trying to skip the line! ". "They never liked to wait!" Says</p>	Fairness	Is the amusement a crowded place?	<p><i>Correct</i></p> <p>Yes, in all the attractions there is a queue.</p> <p><i>Wrongs</i></p> <ul style="list-style-type: none"> - No, there are few people. - Yes, there is a queue in all the attractions except for the Panoramic Wheel. <p><i>Feedback:</i></p> <p>Right! All the attractions are quite crowded.</p>
		What do Federico and Giada think about Sara and Davide behavior?	<p><i>Correct</i></p> <p>Federico and Giada think that Sara and Davide didn't behave in the right way.</p> <p><i>Wrongs</i></p> <ul style="list-style-type: none"> - Federico and Giada think that Sara and Davide are clever compared to them. - Federico and Giada think that Sara and Davide are nice. <p><i>Feedback:</i></p> <p>That's right! Federico and Giada think that Sara and Davide's behavior was not correct because they skipped the line while the others wait their turn in line.</p>

Federico. "But I don't like to wait either!" Giada replies. The Panoramic wheel's owner calling for the next ride. Sara and Davide climb on the Panoramic wheel. "Sara and Davide skipped the line. That's not fair! We could have all skipped it!", Federico and Giada reply. In fact, the two children have to wait for the next ride to be able to climb on the Panoramic wheel. Federico and Giada are very sad and angry about the behavior of the two friends and think that what they have done is not fair. So, after the ride on the Panoramic wheel, they go to buy the candy floss. They are in line, but they realize that it's getting late: it's almost time to go home and probably won't have time to take the candy floss. In front of them, in line, they see Sara and Davide calling them. "Come on, guys, get close to us! If you don't, you will have to give up candy floss!". Federico and Giada think about it and finally answer: "No, sorry, it's not fair to skip the line!". Then Davide and Sara reply: "Okay! Then we will join you and go home all together".

Why do Sara and Davide decide not to buy candy floss?

Correct

Because they understood that what they had done before was not fair

Wrongs

- Because they got tired to stay in line.
- Because they thought candy flow wasn't good.

Feedback:

Well done, right! Sara and Davide realized that skipping the line was not a fair behavior, thanks to Federico and Giada that told them.

What do you think the meaning of these phrases in history is? "They never liked to wait!" "But I don't like to wait either!"

Correct

Federico and Giada decided that although nobody likes to stand in line, they wouldn't skip the line because it's not fair

Wrongs

- Federico and Giada knew that Sara and Davide didn't like to wait.
- Even Federico e Giada wanted to skip the line

Feedback:

Right! In fact Federico and Giada think that even though they don't like to stay in line, it's not fair to skip it and so they decided not to buy candyfloss.

Francesco learns how to share

Francesco's favorite word was "Mine!" He liked to keep his things close to him without ever sharing them with others.

Sometimes, Francis wanted to be alone and one day he stayed to listen to his classmates and thought they were having a great time. "Yesterday with my mom, I cooked a lot of cookies. I can't eat all the cookies by myself", Ludovico said to Nicolò. "Why don't we all go back to my home after school time for a snack?", Nicolò replied. "Okay," said Alice, "I'll bring some jam!", "I'll bring some bread for jam!", Silvia said.

Francesco also would to go, but he didn't want to share with their classmates the chocolate that he usually eats for a snack after the school time. His classmates didn't see him and didn't invite him to snack with them after school.

Francesco walked home. He was very happy because as soon as he arrived home he could eat all the chocolate that his mother had bought him. Thinking about what had happened at school, however, he began to feel more sad than happy. Francesco told his mother about the snack at Nicolò's house: "We could bake some muffins with

Altruism

What did Francesco do when he was home with his mother?

Correct

He baked the muffins with some of the chocolate he had

Wrongs

- He baked the muffins with all the chocolate he had
- He did his homework

Feedback:

Right! He saved some chocolate in a bowl and used the rest to bake the muffins.

What was Francesco's worries in front of Nicolò's door?

Correct

Francesco didn't think he'd eat the muffins.

Wrongs

- Francesco didn't think he'd have fun
- Francesco had no worries

Feedback:

That's right! Francesco didn't want to share the muffins because he thought his friends would eat all the muffins and he wouldn't have any. In fact, he was very worried.

How did Francesco feel when he shared muffins with his classmates?

Correct

Francesco felt happy because he hadn't thought about muffins while playing.

Wrongs

- Francesco felt sad because he could not eat all the muffin
- Francesco felt angry because he didn't want to share the muffins

chocolate," suggested his mother. "You could take them to Nicolò's house and share them with your friends: it might be a nice surprise for them!".

Francesco was not so sure he wanted to share his chocolate, but he loved baking sweets with his mother. So, he saved in a bowl some chocolate to eat later and used the rest of chocolate to bake the muffins. Francesco couldn't decide what to do. In the end, he went to Nicolò's house to surprise his classmates. Once he arrived at the front door, Francesco could hear his friends inside, and they were talking. "Surely it will be fun to join them," you know. But then a worrying idea came to his mind: "If everyone eats my muffins," he thought, "there won't be enough left for me!" Soon after, Nicolò opened the door. "Francesco!", he exclaimed, "Come in and join us! How kind of you to have brought the muffins!" he said. Nicolò took the muffins, even though Francesco kept thinking that he would have preferred to eat them all by himself. When the classmates saw him, everyone came to greet him. Very soon Francis started having so much fun that he completely forgot about his muffins. It was a beautiful afternoon.

Feedback:

Well done, right! Francesco felt happy because he had fun with his friends. The next day he decided to share his suitcase with Ludovico.

What do you think the meaning of this sentence: "Francesco borrowed his suitcase with the new ruler and new glue to Ludovico"

Correct

Francesco decided to share his suitcase with Ludovico.

Wrongs

- Francesco wanted to have one of the models that Ludovico was building.
- Francesco thought he was borrowing his suitcase with Ludovico.

Feedback:

Right! Right! Francesco made a decision to share his things with his friend Ludovico.

Once back home, Francesco did nothing but tell his mother how much he was happy with his friends and how good the snacks that the others had brought were. The next day, at school, Francesco borrowed his suitcase with the new ruler and new glue to Ludovico, who was building some models of their favorite cars. When Ludovico comes back the suitcase still in excellent condition and without having ruined anything, he gave Francesco one of the models he had built.

The holiday

It's evening, mom Claudia and daddy Fabio, Marco's parents, are on the couch. They are very tired: "We are working a lot in this period, we need rest!" says mom. "It would be nice to have a holiday for a few days." Daddy answers: "You're right, I'd like it too and I think it is a good idea! But it's the end of October, Marco has to go to school and we have no money for another holiday after the summer's

Delay of
Gratification

What does mom
Claudia say to
daddy Fabio on
the couch?

Correct

It would be nice to take an holiday because we're working a lot and we're tired...

Wrongs

- It would be nice to take a holiday because I saw an offer
- It would be nice to go to the mountains for skiing

Feedback

Right! In fact, mom Claudia tells daddy Fabio that they're really tired and that it would be nice to have holiday to rest.

Cruise". The next morning, during breakfast, mom Claudia and daddy Fabio resume their speech: "I thought, Claudia, that we could organize ourselves to go to the mountains a couple of days next weekend" says daddy. "That would be wonderful...", replied Mom. "...Or we could decide to wait until the Christmas holidays and organize a skiing holiday", daddy continued. Mom looked at him, hesitated a little bit and said: "That would be even more beautiful! Come on, let's wait for Christmas! So, we can enjoy a whole week together with Marco free from all our schedules of school and job. I'll make a reservation!" On December 26th, mom Claudia, daddy Fabio and Marco left for the skiing holiday. "It's really worth waiting all this time!", said Mom Claudia as soon as they arrived at their destination.

Daddy Fabio agrees with mom Claudia to take a holiday?

Correct

Yes, but he reminds her that they don't have enough money and that Marco has to go to school.

Wrongs

- Yes, but he thinks that Claudia's overreacting.
- No, he doesn't agree with her.

Feedback:

Well done! In fact, daddy Fabio agrees with mom Claudia. But he thinks to wait a little bit because now they don't have a lot of money and Marco has to go to school.

Why did mom Claudia hesitate when daddy Fabio proposed the skiing holiday?

Correct

Because she was deciding whether to go to the mountains a couple of days in October or take a skiing holiday at Christmas.

Wrongs

- Because he didn't understand the question.
- Because he thought Daddy Fabio didn't want to make the journey

Feedback:

Exactly! In fact, mom Claudia was deciding to give up the weekend in the mountains the following weekend for a skiing holiday at Christmas.

What do you think the meaning of this sentence: "It's really worth waiting all this time!",

Correct

It was really worth deciding to wait all this time

Wrongs

- It was really worth trying to wait all this time
- It was really worth the thought of waiting all this time

Feedback:

- Right! In fact, mom Claudia decided to wait for a longer and more carefree holiday.

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Chapter 5

General Discussion

The aim of this thesis was to study the ability to understand oneself and “put oneself in the shoes of the other” starting from the adulthood, considered as the age of highest evolution of this a skill. Theoretical framework and research results showed that the understanding of the others mind can be investigated on different levels, focusing from time to time on specific facets of the construct, on the evaluation measures or on its application in daily contexts. In particular, through the first research it has been created the Italian version of the Mentalized Affectivity Scale which, through analysis, has led to a transformation of its structural origin from three to five factors. The thesis continued with the second study that investigated the link among mentalization, teacher-child attachment relationship and emotional regulation in primary school children. Finally, the last study is dedicated to the application of the ability to “put oneself in the shoes of the other” through a perspective-taking training for school-age children aimed to improve decision-making abilities in the economic-financial field. In the case of the Mentalized Affectivity Scale, the validation study helped in identifying cultural differences in the declination of mentalization construct, helping to better define it and understand its structure. The change in the number of factors from three to five, compared to the original version allowed to explore new details and consider new elements of this construct. For example, the identification of the presence of a factor related to people' autobiographical memory, hypothesized in the mentalized affectivity theory, but not included in the original version, opens the way to new studies on the role that past experiences and their reworking can have in the process of understanding others' perspective. In addition in the Italian version it has been found two different

processing factors (Emotional and Control Processing), instead of the single one in the original one: this poses some questions with respect to the possible multiple levels of the emotional information processing when people mentalized their affect.

In the second work of evaluation of the construct of the ability to “put oneself in the other's shoes”, the focus was on school-age children and their relationships with teachers. In mentalization perspective, attachment relationships are at the basis of the development of the ability to understand one's own mind, contributing also to emotions regulation enhancement thank to dyadic interactions (“affective regulation”, Fonagy et al., 2002). Most studies investigate the child with her/his family caregivers, focusing its attention on what happens in the first years of life. Our results support and expand this perspective, because, starting from a multiple attachment bonds point of view, they show that attachment, mentalization and emotion regulation abilities are connected and involved also in extra-familiar relevant relationships, such as those with teachers. These results can be interpreted also in an applicative perspective, because, in line with Pianta (1999) theoretical perspective, teacher-child relationships are a key protective factor to prevent difficulties at school: this could be mediated by the possibility of developing and applying mentalization at school, both in relationships with teachers and peers.

The application of the ability to understand others perspective is analyzed in the third study. The results show how it is possible to improve the perspective-taking ability in school age, through targeted actions and in a relatively short time as those proposed by the training presented. In their

daily work, teachers have the possibility to help children to “put themselves in each other's shoes”, with a relevant impact not only on this social competence, but also in other more specific abilities at the basis of the decision-making process, useful in didactic and non-didactic settings. In fact, perspective-taking had an impact on fairness, altruism and intertemporal choice: being a basic ability, it impacts on other related skills, such as decision-making process, and it can change the decisions of children evaluated in the economic field. Basically, working on perspective-taking means implementing the basic component of social skills, but also achieving positive effects on other children's abilities always linked to the social sphere. Moreover, results suggest that, for teachers, to work at primary school on skills apparently and generally considered “technical” and not social (such as, in this case, the understanding of economic concepts and economic life itself) it is not necessary to be an expert of the topic, but it is important to know the psychological developmental level of children and their social competences. Just being human beings leads us to keep in mind the others' mind in all circumstances, even when we make decisions. In conclusion, to better work in everyday life, including daily decisions, it is important to implement on our basic skills from a social point of view.

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Andiamo!

Curriculum Vitae

Teresa Rinaldi is a member of the Research Unit on Theory of Mind at Catholic University of the Sacred Heart, in Milan, Italy.

In 2014 she graduated with a BSc in Science of Education at Catholic University of the Sacred Heart in Piacenza and in 2017, working as an elementary school teacher and as an educator in a kindergarten, she obtained an MSc in Pedagogy, writing a thesis on "The perception of self-harm in adolescence: a research contribution".

This experience was the beginning of her passion for research thanks to the experience with Prof. Annalisa Valle and evolved into a PhD in the Unit directed by Prof. Antonella Marchetti.

Her research interests focus on financial and economic education and social constructs underlying children-teachers and parents-teachers' educational relationships.

She was a visiting student at the University of Virginia in 2020 supervised by Prof. Robert Pianta.

She is a member of the International Society for the Study of Behavioral Development (ISSBD), the Italian Association of Psychology (AIP) and the Italian Association for Research and Intervention in Psychopathology of Learning (AIRIPA).