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Temporally Extended Self and Social Competences:

concurrent and longitudinal associations in preschool children

Supervisor

Char.mo Prof. Davide Liccione

PhD Student

Francesca Borasio

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ABSTRACT

The present longitudinal study investigated a topic of interest in developmental psychology: the role of social relationships and parental communication in predicting the development of Temporally Extended Self. In order to do so, a sample of 49 3-year-olds (23 girls and 26 boys; Time 1 M_{age}= 41 months, SD = 4.2 months; Time 2 M_{age}= 49 months, SD = 5.9 months) was tested twice at each time point.

As main result we found a significant association between early social competencies and later Temporally Extended Self. These findings are agreed with developing-self theories that emphasize the underlined the importance of socio-affective aspects in the development of the Self.

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INTRODUCTION

In the present paper we examined the relation between two topics of interest in developmental psychology: Temporally Extended Self and early social competences in preschool children.

Between the third and the fourth year of age we assist to a significant developmental phase: children begin to grasp the temporal dimension of the Self (Rochat, 2003), learn to be a good helper (Martin & Olson, 2013) and become sensitive to the theme of their own reputation in relation to others, constantly promoting their social affiliation (Zahavi & Rochat, 2015).

Prosocial behaviours -like *helping*, *sharing* and *comforting*- play an important role in human life, in successful social interactions and peer acceptance (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Martin & Olson, 2015).

Helping behaviours are some of the earliest emerging prosocial behaviours (Warneken & Tomasello, 2006; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992): infants begin life as indiscriminate helpers and then over time learn to appropriately direct aid (e.g., Hay, 2009; Hay, Caplan, Castle, & Stimson, 1991; Hay, Castle, Davies, Demetriou, & Stimson, 1999; Warneken & Tomasello, 2009). Literature shows that already by 3 years of age children are able to discern the way to help. They can not only provide instrumental help in response to an explicit goal (Warneken & Tomasello, 2006, 2007) but also decide how best to help others when the request is incompatible with goal (Martin et al., 2013). In Martin and Olson's study (2013), for instance, children chose to give the experimenter an object not required but considered

better to achieve a goal. This behaviour is call *paternalistic helping*: the person who helps, knows better than the beneficiary the best way to achieve a goal.

To help in an appropriate way, it is necessary to know object affordances, to appreciate that goals differ from means used to reach them, and to recognize that the ultimate goals are more important than the means required to reach them. The contexture of specific references constitutes the background of comprehension that enables us to ascribe meaning to any object (Arciero & Bondolfi, 2009). Literature shows that this competence improves during the fourth year of life (Martin et al., 2013).

Child's prosociality also depends on familiarity with those who need help (Martin et al., 2015). From firsts months, children are in the world in a social way, engaged in a dynamic co-regulation with others, in a constant process of affect and emotion control and adjustment between self and others' experience (Zahavi et al., 2015). Child experiences different kinds of co-engagement that evolve in three levels: *primary*, *secondary* and *tertiary level of intersubjectivity*. Progression of levels leads to an enlargement from Me to We, from individual to group, and follows in parallel the development of *self-consciousness* (Rochat, 2009). Tertiary level of intersubjectivity is a developmental phase defined by the acquisition of co-consciousness and group identification; in-group biases and group conformity develop around 3–4 years of age (Corriveau & Harris, 2010; Haun & Tomasello, 2011; Zahavi, 2018). Entering institutions that extend the family environment to peers lead preschool children to recognize peers as primary social reference group (Haun et al., 2011; Warneken et al., 2009).

Prosocial behaviours toward a group member could be useful for example to affiliate with, to help in return or to provide support later on. Being part of a group means also that others start to evaluate us, leading us to starting to care about our reputation in

relation to others, individuals or groups (Rochat, 2013). From that moment, children become sensitive to approbations of others, constantly engaging and promoting their own social affiliation; they start to have others in mind in the sharing process (Zahavi et al., 2015).

Children possess *self-awareness* long before any awareness of group-membership. The Mirror Self-Recognition task, classically used to evaluated the possession of self-awareness (Amsterdam, 1972; Gallup, 1977), is passed around 18–24 months of age. Another kind of awareness is the *Temporally Extended Self-Awareness*, defined as "the birth of me extending over time". It is from approximatively 3 years that children pass the Me-But-Not-Me dilemma when viewing pre-recorded videos of themselves, while younger children fail and recognize themselves only viewing a live video (Povinelli, 1995, 2001; Rochat, 2003). This acquisition may be related to cognitive changes typically of the preschool age (Povinelli, Landau, & Perilloux, 1996). The Delayed Self-Recognition Paradigm (DSR) of Povinelli & Simon (1998) is classically used to assess the acquisition of the permanence of self. In this task the child and the experimenter are filmed playing a distractor game. During the play phase, the experimenter pats the child's head and, covertly, places a sticker on top. After three minutes of delay, the couple watch the game recorded and the child have to answer to three question: Who is that? What is that? Can you give me the sticker? Child passes the task, and recognizes himself in time, if he reaches up the sticker.

A study of Kristen-Antonow, Sodian, Perst, & Licata (2015) showed a developmental link between early awareness of social world and later self-awareness, which indicates a fairly long-term continuity of self-development. They conducted a research on the relationship between social awareness and the acquisition of Temporally

Extended Self on a sample of preschoolers, longitudinally followed for three years. Responsiveness in social imitation game at a year of life was the strongest predictor of Delayed Self-Recognition at 4 years, while responsiveness toward a social partner in the Still Face task at nine months was the stronger one for the Mirror Self-Recognition at 2 years.

A recent study by Zocchi, Borasio, Rivolta, Rositano, Scotti, & Liccione (2018) indicated that, during the third year of life, there is influence of affective engagement within social interaction on the acquisition of Temporally Extended Self-Recognition. In the research, preschoolers completed the DSR task in two different social contexts, with their mother or with the experimenter. Findings indicated a significant main effect of treatment condition on DSR scores, with children in "mother condition" reporting higher scores than in "experimenter condition".

Influence of the social and familiar context was also illustrated in a study of Rochat, Broesch, & Jayne, (2012). Children completed the Mirror Self Recognition Task (MSR) (Amsterdam, 1972; Gallup, 1970) in two identical conditions except for the presence or absence of a mark placed on the head of experimenter and accompanying parent. Children manifested significantly more hesitation in removing the sticker when they shared the same way of being in the world with other people. Authors concluded that explicit self-awareness, assessed by the mark test, isn't just the product of a solipsistic mental or introspective process but could be socially established (Rochat et al., 2012).

Within this frame of references that underlying the importance of social and affective factors on self-development, we hypothesized that social competences were linked to Temporally Extended Self-Awareness.

In the present work we illustrate the state of the art of theories on developing self and on social competences. Specifically, in Chapter 1 we talk about self-development and differences between mirror self-awareness and self-awareness over time. Chapter 2 is dedicated to the role of the language on the development of self-recognition. Researches on mother conversation style are also presented. Chapter 3 is about the theme of self-with-the-others awareness. Chapter 4 is dedicated to prosocial behaviour and the importance of affiliation to peer group. Chapter 5 illustrates the core of this work, the longitudinal study that aims to investigate the concurrent and longitudinal associations between Temporally Extended Self and some socio-affective aspects, like prosocial behaviour and mother talk style. In Chapter 6, the last one, we present the obtained results, limits and future directions of the research.

CHAPTER 1

SELF-AWARENESS

Theory on self-development

Self-awareness is an important topic of study in many different contexts, for empirical and theoretical disciplines such as psychology, neuroscience, psychiatry, and philosophy. It is a complex multifaceted phenomenon, and the theoretical confusion has led to the development of competing, conflicting, and complementary definitions of the same. All disciplines capture different aspects of self-consciousness, but each of them claims that self-consciousness is primarily to be understood as an explicit way of relating to oneself, by way of concepts, symbols, images, or theories.

In philosophy, self-awareness is linked to the statement "I-thoughts". Baker (2000), for instance, argued that there are two phenomena, a *weak first-person phenomenon* and a *strong first-person phenomenon*. In the first case, all person are subjects of experience and they experienced the world from their own egocentric perspectives; self-consciousness, however, has not only a subjective point of view. In the second case, one must be able to think of oneself as oneself: self-consciousness occurs when one can conceive of oneself as oneself, and has the linguistic ability to use the first-person pronoun to refer to oneself. According to this model, self-consciousness depends on language acquisition and emerges during the developmental process.

Another philosophical move has argued that self-consciousness requires the consciousness of a Self. To be self-conscious requires the ability to think of self-attributed experiences as belonging to the same self. Thus, authentic self-awareness in based on the awareness of one's identity as a subject, bearer or owner of different experiences (Cassam, 1997).

Besides philosophical theories, research has indicated different psychological approaches to self-awareness. In social psychology, for example, Mead (1962) stated that self-consciousness is constituted by adopting the perspective of the other towards oneself; it is itself a social phenomenon and not something you can acquire on your own. The Self is *co-constructed* in interaction with others.

Other theorizations derive from the developmental psychology: in that case, self-consciousness is present only by the moment the child is able of recognizing his mirror-image. The so-called Mirror-Recognition task is the fundamental test used to assess this ability. It is from around eighteen months of age that children recognize the rouge mark in their face because of a match between the image in the mirror and their expected image of themselves (Amsterdam, 1972; Gallup, 1970; Lewis, 2003; Moore, 2007).

In psychology, moreover, some theorists argue that self-consciousness presupposes a Theory of Mind (Leslie, 1987; Perner, 1991): children would gain this capability around the age of four, when they pass the classical theory of mind tasks, such as the false-belief task.

Finally, another psychological theory, a phenomenological one, argued that exists a minimal and implicit form of self-consciousness. It is a pre-reflective, embodied form of self-familiarity (Zahavi, Grünbaum & Parnas, 2004). Prior to an explicit form of self-awareness, manifests through the mirror recognition, infants express an implicit sense of themselves. From few weeks of life, they experienced their own body as an entity differentiated, situated, and agent; objects and people are, instead, non-self-entities in the environment (Rochat, 2003, 2004).

Keeping in mind the previous differentiation between implicit and explicit sense of Self, James (1890) theorized two different form of self-awareness: an implicit level

and an explicit level. The first is the ‘‘I”, the implicit level, at which the self is merely a subject of experience. “Me” is the second and explicit level, at which the self becomes the subject of one’s own attention. Self-awareness begins long time before the onset of self-recognition and it is later included in the ‘‘I”, the implicit self-level

.

Five levels of self-development

Rochat (2003), according to empirical evidences from developmental psychology studies, defended the idea that self-awareness is not a singular phenomenon. He proposed five level of self-awareness, summarized in Table 1.

Table 1

Five levels of self-awareness (Rochat, 2003).

	Age	**Process**	**Behavioural Expression**
Step 1	-	Confusion	Self-world fusion
Step 2	Birth	Differentiation	Self-world discrimination
Step 3	2-7 months	Causation	Self-exploration
Step 4	18 months	Recognition	Self-objectification
Step 5	24 months	Extension	Permanence
Step 6	36 months	Evaluation	Co-awareness

Step 1: Confusion

This is the degree zero of self-awareness. Individual perceives the mirror specular image as undifferentiated from other entities perceived in the environment; it is a mere extension of the world, not a reflection of it. Animals, like birds for example, would express such level when they accidentally crash against mirror (Zazzo, 1981).

Step 2: Differentiation

This is the first level of self-world differentiation. The mirror is seen as an object among others in the environment, and its reflection is different from what is perceived in the surrounding environment. Individuals perceive their own image understanding that there is something unique about the experience of seen and felt movements.

Empirical research showed, opposite to some classic development theories, that infants are not born in a state, as James (1890) said, of ‘‘blooming, buzzing, confusion’’; from early infancy, perceiving movements or objects correspond to the acquisition of pre-linguistic, non-conceptual information about oneself (Bermudez, 2000). For example, Rochat and Hespos (1997) noticed that, already from birth, infants are able to differentiate between stimulation originating from the own body or from an external source, between self- vs. non-self-touch. In addition, children are able to direct their heads towards tactile stimulations while someone touches their cheek (Amiel-Tison & Grenier, 1980).

Right now, infants are prone to imitate facial expressions, sequential finger movements (Meltzoff & Moore, 1977, 1983), or basic emotions such as joy or sadness (Field, Woodson, & Greenberg, 1982). As Gallagher and Meltzoff (1996) said, infants are already equipped with a minimal Self that is embodied, enactive and ecologically tuned.

Step 3: Situation

At this level, there is not confusion and individuals are aware of what is seen on the mirror. They perceive the specular image as differentiated from other entities, but also as index of invariant contingent relations between self-produced and seen movements. Individuals explore how the experience of their own body is related to the specular image.

This level is reached by the end of the second month, when infants show clear signs that have a sense of their own body in relation to other entities in the environment. After the second month infants demonstrate a novel sense of how they relate to the person they imitate, and begin to engage in the so-called protoconversations and mutual monitoring. Another study on imitation of Meltzoff and Moore (1992), showed that 6-week-olds infants are more competent in imitation; they are able, for example, to copy the tongue protrusion's orientation of an adult. They map their own bodily space, not only to differentiate themselves from another person.

In this period of life, the Self is also situated in relation to the partner infants share experience with (Rochat, 2001b; Stern, 1985; Trevarthen, 1979). Indeed, it is from 6 weeks that, as Rochat suggested (2009), co-awareness starts to be evident. Infants, right now, show first signs of shared experience in face-to-face interactions in response to a social situation. In this period of life, relations are not only with others but also with the environment. After the fourth months, when normally infants express systematic eye-hand coordination, they become sensitive to the situation of their own body in relation to the object they see and reach, calibrating their decision to reach it in relation to their postural degrees of freedom, without losing balance and falling onto the ground.

Step 4: Identification

Individual start to manifest explicit recognition, an understanding that what is reflected in the mirror is ‘‘Me’’ and not another person. This fourth level appears during the second year, when also linguistic and symbolic competencies start to play a major role in the psychic life of children. This level is reached when children refer explicitly to the Self while exploring their own mirror image.

In developmental psychology the Mirror Self-Recognition paradigm is used to assess this competence. During the procedure, a rouge mark is surreptitiously placed on the child’s forehead prior to mirror exposure; if the child discovers the rouge mark in the mirror and reaches for it, for touch or removal, he recognized himself as a differentiated entity in the world (Bertenthal & Fisher, 1978; Gallup, 1982; Lewis & Brooks-Gunn, 1979; Povinelli, 1993; Rochat, 1995). It is only by 18 months that infants start to reach for the rouge mark. This behaviour is considered as the litmus test of self-awareness and it is often viewed as the evidence of a conceptual or represented sense of Self. Moreover, the expression of embarrassment in front of mirrors, peculiar of this age, can be interpreted as the first signs of children awareness of how others perceive them.

Step 5: Permanence

At this level the permanent Self is expressed: the perceived image of the body is identified as a permanent entity beyond the “here and now” of mirror experience. Research of Povinelli and colleagues demonstrated that children slowly pass the Me-But-Not-Me dilemma when viewing live or pre-recorded videos of themselves.

The Delayed Self-Recognition paradigm of Povinelli and Simon (1998) is classically used to assess this capability. Children younger than 3-years-old tend to reach

for a large sticker they see on top of their head while viewing a live video of themselves, but not when viewing the replay of the same video taken few minutes prior. Only from 3 years children could recognizes themselves in images taken in the past, as in a photograph or in a pre-recorded video (Lewis & Brooks-Gunn, 1979; Zazzo, 1981; Povinelli, 2001).

Another change that occurs in the same period and concerns the language ability is that the majority of children become to say ‘‘Me’’ rather than their proper name while viewing themselves in a video, suggesting a first-person stance rather than a third one (Povinelli, 1995, 2001).

Step 6: Self-consciousness

In the last step, the Self is recognized not only from a first-person perspective, but also from a third person. By 4-5 years of age, children recognize themselves as enduring entity and begin to show major advances in their understanding of others.

Children pass the Theory of Mind tasks: they are able to hold multiple representations and perspectives on objects and people. Children develop the ability to attribute false beliefs to others (Olson & Cambell, 1993; Perner, 1991), understand that another person holds a false belief and they themselves hold the right belief.

Proving the object permanence, they prove their own permanence in relation to objects or others (Rochat, 2001). The Self is now a public Self, and individuals are in the mind of others and could be evaluated by others; for that reason, emotions linked to other’s possible judgement, like pride or shame, appear.

CHAPTER 2

THE IMPORTANCE OF LANGUAGE ON THE DEVELOPMENT OF SELF

The shared meaning

Learning the use of words leads the toddler into a social world and enables the child to join the communities of other minds. The construction of the child's lexicon typically begins in collaboration with a caregiver or other family member which shares with him habits or routines relevant to the way that language is used.

Language occurs in shared activities and both speaker and listener may interpret each other's communicative intentions. This theory is defined the "social pragmatic theory" (Tomasello, 2003) or "the acquisition of shared meaning" (Nelson, 1985). The *shared meaning* of Nelson indicates that each speaker/listener expects the other to interpret the words in the way intended, and in doing so they use the community consensus. Words learning, moreover, seems a collaborative process involving negotiations between parent and child (Hamson, 1989). In communicating something, in fact, both speaker and listener must use the word in a way that means the same thing to each (Jackendoff, 2002).

The child, situated in a specific social-cultural context, becomes aware of word's meanings through various shared experiences with other people. Words learning requires a joint attention with the caregiver that externalizes the intentions of the verbal expression in communicative comprehension.

The joint attention on conversation differs over the years. In infancy, parent speaks to the child to involve him in activities, highlighting the actions and attention of the child. Caregivers usually speak in a particular register called child-directed speech, exaggerating prosody, shortening sentences and using simple and repetitive words.

Children, surrounded by a social-cultural niche that uses language to communicate, learn how to communicates.

The children's use of language follows some steps. Comprehension of words and phrases precedes production, while usually toward the end of the first year and during the second, toddlers start to use words or short phrases for communicating with others. Moreover, they use an average of 10 words by about fifteen months. Many children experience during the second year a "vocabulary spurt", during which new words are quickly learned.

This variability in the content of vocabulary, however, depends on individual predisposition, family, and cultural ways of entering into the speaking world (Bates, Bretherton, & Snyder, 1988; Fenson, Dale, Reznick, Bates, Thal, & Pethick, 1994; Heath, 1983; Nelson, 1973). The amount of parent's conversations, for example, is related to the early growth of children's vocabularies (Hoff & Naigles, 2002; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Tomasello, Mannle, & Kruger, 1986). Mother's communication style may also affect the child in acquiring words (Nelson, 1973). Research showed also specific long-term effects on children's memory those are influenced by social contexts (Fivush, 2010; Nelson & Fivush, 2004; Reese, 2002).

In sharing experiences with the caregiver and talking about them, child starts to create autobiographical memory. This memory is a type of episodic memory refers to "specific events or experiences that are infused with a sense of personal involvement and ownership… memories that make up our life stories and our personal pasts" (Bauer & Fivush, 2010). Autobiographical memory has become an active area of research on memory because for years it was believed that adults could remember few, if any, events from the first 3–4 years of life.

Preschool children have memories for events that are meaningful to them, especially if repeated during daily life. These general events representations are causally and temporally organized. Because young children often experience, and later talk about, moments with their parents, an important contribution of research on autobiographical memory derives from studies on child memory that include the family, society, and culture. This emphasis on the social context of memory fits with Vygotsky's perspective of sociocultural development (Vygotsky, 1978). Research on autobiographical memory often involved the observation of conversations between parents and children as they construct memories together.

Parent reminiscing and talk style

It is possible to notice that parents scaffold their children's attempts to talk about an event by adding information on it, asking clarification questions, or probing further. Children engage in memory activities in the process of developing a relationship with another person, the caregiver in that case, and they do it in an active way, adding their own memories and interpretations.

The role of the discourse partner in the practice of reminiscing is important for the child's developing ability to contribute to the memory recounting, and elaborations on the child's contributions by the adult partner are facilitative of this development over time (Fivush, 2008; Nelson et al., 2004; Reese, Haden, & Fivush, 1993). However, there is no evidence that what is later remembered by the child is the specific contribution from the parent. Even the evidences which indicated that very young children remember best

things that were remarked upon by the parent (Haden, Ornstein, Eckerman, & Didow, 2001; Tessler & Nelson, 1994), didn't show that children are remembering the specifics of what the parent said. Rather, we can interpret these effects in terms of the attention that is placed on something that is mentioned by a parent. The parental contribution may serve to fill in a gap in understanding to an interesting aspect.

Literature has instead found an interesting result on the role of the disclosure partner, and it's concerned the talk style. Different parents talk styles about the past affect children's developing autobiographical memory skills (Bauer, 2007; Fivush, 2008). Specifically, *high-elaborative* parents fully engage their children in an interactive conversation and construct the memory together, asking questions and elaborating on something the child says. *Low-elaborative* parents, instead, tend to ask specific questions about the event and provide few additional information to child's utterances. Mothers' use of an elaborative conversational style is linked causally to children's developing memory skills.

As highlighted by Fivush, Haden and Reese (2006), maternal reminiscing style is only one conceptualization of mother-child talk about the past, and in that case the focus is on the use of a rich elaborative style. Other research focused on different aspects of mother-child talk, like the use of orientations, temporal and causal language, linguistic referential markers, and quoted speech (Fivush, 1991; Haden, Haine, & Fivush, 1997).

Taking into account the influence of mother's reminiscing style on remembering events, Hedrick and colleagues (Hedrick, San Souci, Haden & Ornstein, 2009) found that 3-year-old children's responses to mothers' questions on event predicted children's elaborations in reporting the same event 6 months later. The elaboration on events serves as a potentially critical mechanism for events memory development.

In this view, information in memory is not disinterested or random; rather, memory draws on meanings in encounters with the world in which the child is situated (Nelson, 2007).

Autobiographical memory and the self-development

Recently, research has linked the development of autobiographical memory to the development of the Self, including one's identity, theory of mind, social relationships, well-being, concepts of time, and emotional development. Autobiographical memory, indeed, seems important for preserving one's past and for understanding the meaning of events for the Self. By the age of two, children interpret and evaluate events in order to construct enduring stories about the self, others, relationships and culture (Wang, 2001). This self-history is private but it is also linked to social experiences and cultural context (Fivush & Nelson, 2004).

Katherine Nelson and Robyn Fivush (2004) formulated a model of the development of autobiographical memory. Authors suggested that multiple cognitive and socio-emotional factors contribute to autobiographical memory; these factors, in turn, are influenced by children's abilities to remember personal events. Nelson and Fivush's model has incorporated the influence of potential moderators of autobiographical memory: individual differences in cognitive and social skills, and indicators of divergent socialization at the level of the microsystem (e.g., gender) and macrosystem (e.g., culture).

Autobiographical memory is about the Self in sociocultural space and time. The timeline of past events and future expectations is not given by nature, it needs to be

constructed (Friedman, 2004; Nelson, 1996). Narration of shared events with someone contributes to such a construction. During mother-child conversation, the language is full of time markers: clock time, days of the week, months of the year, seasons, years, and epochs. Children learn how to use temporal sequences and markers and the meaning of them even in relation to the passing of time. These emerging concepts enable a continue sense of Self and the construction of an ongoing past and future (Nelson, 2007).

Zocchi et al. (2018), in order to analyse the ability to integrate a past event into a sense of personal continuity, adopted the DSR paradigm, as said before, in two conditions characterized by a different level of affective engagement. Authors supposed that, as previously said also in other studies (e.g. Rochat, 2003), the Temporally Extended Self-Recognition emerges in relation to social interaction. To analyse the ability to integrate past event, Zocchi et al. (2018) considered the impact of maternal reminiscing style on the development of autobiographical narrative skills and self-awareness (Fivush et al., 2006; Hudson, 1990; Reese, 2002; Welch-Ross, 1997). The question was whether the integration of a past event, which has just taken place into a sense of personal continuity, might or might not be influenced by the development of autobiographical memories developed by the child through joint verbal remembering.

Previously, indeed, Welch-Ross (2001) described the link between the acquisition of a Temporally Extended Self, the autobiographical memory and a *highly elaborative reminiscing style* of the mothers on the emotional and evaluative aspects of past events in daily conversations with their children (Fivush, 2007). It turned out that the Temporally Extended Self, defined as a continuous "Me" that extends from birth to death, the Self with a history (Nelson, 2009), was associated to the beginning of autobiographical memory.

In contrast with the results of the study just mentioned, Zocchi and colleagues (2018) did not find any significant effect of mother elaborative style during conversations on past events which could predict successful performance to the development of the Temporally Extended Self.

Given that last conflicting result, further study should investigate the contribution of socio-linguistic features of mother-child interaction during daily conversation on the emergence of a Temporally Extended Self.

CHAPTER 3

THE SELF WITH THE OTHERS

The Self as a dialogic entity

The Self is a dialogic entity, existing only in relation and knowable only as a relation, which consider other-consciousness as inseparable from self-consciousness (Reddy, 2008). As proposed by Mead (1934), meanings in general, including meanings of the self, are in essence triadic.

The importance of longitudinal data

Developmental research showed the impact of reciprocal social interaction during the first and second years of life on the emergence of self-awareness (Damon & Hart, 1982; Meltzoff, 1990; Rochat, 2003).

An important longitudinal study of Kristen-Antonow and colleagues (2015) defined predictors of the development of self-consciousness. In particular, they found that the responsiveness of children in an imitation social game at 12 months was the predictor of children's Delayed Self Recognition at 4 years, while the children's responsiveness toward a social partner in the Still Face task at 9 months was the predictor of their Mirror Self Recognition at 24 months. These findings gave an important contribution to research, suggesting a long-term continuity of self-development based on the existent link between children's awareness of the social world and their later self-awareness.

Another study who considered the paradigm of the Mirror Self Recognition was that of Rochat, Broesch, and Jayne (2012). Even in that case, the social context influenced the test performance. Authors analysed the differences in passing the MSR task in two social contexts: in the Classic Condition only the child was marked prior to mirror

exposure, while in the Social Norm Condition both the child and experimenter, and accompanying parent, were marked prior to the exposure. In the Social Norm Condition, when the child shares with another person the experimental condition of having a mark in the face, he hesitates more while removing the rouge mark.

Pass the mark test seems to take place in a social way, confirming that self-awareness is not the product of a solipsistic mental or introspective process (Rochat et al., 2012).

A recent empirical study of Zocchi et al. (2018) explored the role of affective engagement within social interaction on the acquisition of temporally extended self-awareness. In this case it was compared the performance during the Delayed Self Recognition task in two different experimental contexts. In a case, children completed the procedure with their mother, in another case they shared the procedure with an experimenter. Authors found a positive effect of Mother Condition on DSR scores: 44.8% of children passed the DSR task when they were with their mother, while 27.6% of children did it in the Experimenter Condition. This easiness in removing the sticker in presence of an affective person could correspond to a familiar mode of self-perception as well as to a peculiar affective consciousness of self. The presence of the mother seems also to facilitate an immediate, pre-reflective, Self-with-the-other awareness (Trevarthen, 1999; Trevarthen & Aitken, 2001; Zocchi et al., 2018). The self and the other are co-perceived in engagement (Neisser, 1994).

Others in mind

Forty years ago, introducing mirrors, video cameras and photographs, the anthropologist Carpenter (1975) recorded the expression of fear and anxiety of adult Biami, an isolated tribe of Papua New Guinea, when confronted for the first time with a clear view of themselves. They came to grip the profound discrepancy between what they felt and perceived about their own body, and what others perceived of them, a gap between private and public self. This response signals, in the context of the gap between first- and third-person perspectives, the tendency of self-idealization from the first-person perspective (Rochat, 2009). In development, as previously said, this discrepancy emerges by the end of the second year, when children manifest embarrassment in front of mirror whilst they recognize their own reflected image (Amsterdam 1972; Lewis & Brooks-Gunn 1979; Povinelli 2001).

Rochat (2009) proposed a theory that considers the human tendency of having *others in mind*, in the continuous attempt to reconcile first- and third-person perspectives on the self. The development of self-awareness lead to the development of self-presentation based on how others perceive and evaluate us. This process contributes to the development of a sense of moral conduct and of a sense of affiliation. Also, based on this process, children learn to collaborate with others and are able to engage in a didactic relationship all of which is resting on *co-awareness*.

Co-awareness can be defined as the awareness that our presence in the world is simultaneously shared with the presence of others (Rochat, 2009). We are always in a social context, in a world with other people (the Heidegger's *Mitsein*). From the phenomenological approach, this interest has moved from individual intentionality and

dyadic interpersonal relationships to an interest in larger social units. Many phenomenological authors, like Husserl, Scheler, Stein, Walther and Schutz were agreed that a proper account of communal being-together and shared intentionality requires an exploration of how individuals are experientially interrelated (Zahavi, 2019). Conversely, Heidegger denied that dyadic relationship is fundamental to a proper understanding of community; he argued that group affiliation, rather than being founded upon another-experience, preceded any such experience. We are constantly with others, and, for Heidegger, a basic constituent of *Dasein's being-in-the-world* is its *being-with*:

"Dasein is essentially being-with others as being-among intraworldly beings. As being-in-the-world it is never first merely being among things extant within the world, then subsequently to uncover other human beings as also being among them. Instead, as being in-the-world, it is being with others, apart from whether and how others are factically there with it themselves. On the other hand, however, the Dasein is also not first merely being-with others, only then later to run up against intraworldly things in its being with- others; instead, being-with-others means being with other being-in-the-world—being-with-in-the-world….Put otherwise, being-in-the-world is with equal originality both being-with and being-among (Heidegger 1982: 278, in Zahavi, 2019)".

Developmental psychology literature, according the phenomenological idea that we are always with other people, showed the existence of a life period in which children become interested to others. In particular, children around 3-4 years of age become interested on group affiliation and group conformity (Corriveau at al., 2010; Haun et al., 2011). Such findings are indicators of sensitivity to group, but children display individual self-consciousness earlier than 3 years old, when they pass the mirror self-recognition task (Gallup, 1977, Rochat & Zahavi, 2011). Moreover, infants have a sense of

themselves as differentiated, situated, and agentive entities from nearly after birth (Neisser, 1993; Stern, 1985; Rochat, 2001). So, if a form of self-consciousness is present already from the early stage of development, as said also in a previous chapter, maybe also a self-with-the-others awareness happens first.

The intersubjectivity

Few years ago, Zahavi and Rochat (2015), described three levels emerging between birth and 5 years whom determine a primary sort of social togetherness or experience of *we-ness*.

Primary intersubjectivity: Affective sharing

By approximately 6 weeks post-partum, as said before, infants engage in eye-to-eye interaction and show the first socially elicited smiling. This active sharing in proto-conversation defines to the so-called *primary intersubjectivity* (Trevarthen, 1980). First eye-to-eye contacts with other, in fact, are signs of early intersubjective exchanges. An intersubjective, shared experience is a new kind of experience in which the other's presence and reciprocation are fundamentals. Such first exchanges, indeed, are primarily scaffold and exaggerated by the caregiver, who produces inflections of voice and amplified facial mimic (*motherese*), capturing attention and perceptive preferences of the child (Rochat, 1999, 2001; Stern, Hofer, Haft & Dore, 1985).

By the second month, the adult's scaffolding and amplification, combined with the attentional capacities of the child, makes proto-conversation a moment in which for the first time self and other are engaged together in an open-ended, emotional process.

This process conducts the child toward symbolic functioning, explicit self-consciousness, linguistic competence, and the development of an ethical stance (Robbins & Rochat, 2011). Moreover, play and share give children first access to their own limits and possibilities as agents in the world (Zahavi et al., 2015).

Secondary intersubjectivity: Referential sharing

By 7-9 months infants become to engage in sharing with others about objects or events in the world outside of the dyad. This behaviour could be defined *secondary intersubjectivity* (Trevarthen, 1980).

The social referencing and triadic joint attention emerge between child and others in reference to things in the context (Striano & Rochat, 2000; Tomasello, 1995). This sharing includes not only cases where the infant attends to another person, but also cases where he actively invites the caregiver to share the focus of attention. The joint attention gives children a new measure of togetherness and social affiliation and become a form of communicative interaction in the shared affect expressed, for instance, through smiles.

In joint attention, child stars to bring other people's attention onto an object in the context, opening the possibility of claiming ownership of both the initiation of a conversation about something and the thing itself. Pointing, offering, or presenting objects are new social gestures (Zahavi et al., 2015).

From 12 months, infants begin to identify with other and to show rudiments of perspective taking. The process of *identifying-with* plays an important role in affective

sharing by structuring ‘‘social experience with polarities of self-other differentiation as well as connectedness’’ (Hobson, 2008, in Zahavi et al., 2015).

Finally, from 14 months, infants able to discriminate objects experienced by *we* rather than *I* alone (Moll, Richter, Carpenter, & Tomasello, 2008; Tomasello, Carpenter, Call, Behne, & Moll, 2005).

Tertiary intersubjectivity: Co-consciousness and group identification

By approximatively 21 months, children begin to explicitly affirm the ownership of an object; it is the period of “Mine!” and of talk about possession (Bates, 1990; Tomasello, 1998). Developmental research showed that, around 18-27 months, child begins also to refer to the self with linguistic terms, like “I, Me”, or his own name. This linguistic aspect emerges in parallel to the explicit self-recognition in the mirror (Rochat et al., 2011) and to the consequent expressions of self-conscious emotions like shame or pride.

The “Me” exists and develops within the relation to other people. It exists as a relational entity in the perception of the other’s psychological gaze. As the infant perception of other’s psychological existence becomes more complex, also the consciousness of the self’s visibility to others become more complex (Reddy, 2008).

Around 2 years of age, children become aware of the possibility of being evaluated by others and start to care about their own reputation in relation to others (Rochat, 2013). Children start to have *others in mind* in the sharing process without confounding their own perspective with that of others. The transition toward *tertiary intersubjectivity* occurs when there is the development of an ethical stance toward others and the parallel emergence of a sensitivity to group affiliation (Zahavi et al., 2015). It is just around the

age of three and five, when children enter in kindergarten, an institution that extend the family context to peers and teachers, that children become sensitive to group affiliation (Corriveau et al., 2010, 2013; Haun et al., 2011).

CHAPTER 4

PROSOCIAL BEHAVIOUR

The development of prosocial behaviour

Between the third and the fourth year of age children become sensitive to the theme of their own reputation in relation to others (Rochat, 2013). In promoting their social affiliation, they learn how to maintain their social popularity and, consequently, to be a good helper (Martin et al., 2013). If self-consciousness is, from the beginning, a self-with-other awareness (Trevarthen, 1999; Trevarthen et al., 2001), prosocial behaviour could be useful to preserve social relationships with others.

Studies shown that prosocial competences constitute a heterogeneous category (Paulus, 2018): a possible explanation consider that different tasks require different cognitive skills to be successfully completed. Instrumental helping, for instance, need the ability to recognize goal-directed request, sharing is based on the understanding of how to spread the resources, comforting requires the ability to understand others' emotional states (Warneken & Tomasello, 2006). Prosocial behaviour, so, involves different ways to perform benefit to another person (Eisenberg, 2003).

Developmental research has long been interested in understanding the development of prosocial behaviour in children. First it was thought that prosocial behaviours appear later in life, subsequently to social learning or explicit instruction (Bandura & Walters, 1977; Bar-Tal & Raviv, 1982; Cialdini, Kenrick, & Baumann, 1982; Rushton, 1980). Later, observational studies showed that even toddlers exhibit prosocial behaviours (Buckley, Siegel, & Ness, 1979; Dunfield & Kuhlmeier, 2010; Hay, 1979; Radke-Yarrow et al., 1976; Warneken et al., 2006). These evidences have been used to argue that children have a basic impulse to be prosocial (Hay, 1994).

Some researchers found a form of sociality also in the intrauterine period (Arabin, Bos, Rijlaarsdam, Mohnhaupt, & van Eyck, 1996; Hata, Aoki, Miyazaki, Iwanari, Sawada, & Tagashira, 1998; Piontelli, Bocconi, Kustermann, Tassis, Zoppini, & Nicolini, 1997; Sasaki, Yanagihara, Naitoh, & Hata, 2010). Castiello et al. (2010), for example, performing a kinematic analysis of the movement through the ultrasound technique on twins between the fourteenth and the eighteenth gestation week. They found that movements of the fetus directed towards the brother were slower and prolonged compared to those towards the own body or the uterine. There was a particular attention to the other twin, in demonstration of a first form of prosociality.

Apart from this research on prenatal period, first signs of prosociality emerge after children's first birthdays, when toddlers begin to help others in simple goal directed actions (Warneken et al., 2006, 2007). After that period, children gradually expand and increase prosocial behaviour: they start to share object, to comfort another distress person and to cooperate in order to reach a goal (Dunfield & Kuhlmeier, 2013; Eisenberg & Fabes, 1998; Paal & Bereczkei, 2007).

Even if prosocial behaviours are basic and innate, there has been debate about the reasons underlying them. Some authors proposed that children's prosocial behaviours are initially indiscriminate and derived by an intrinsic desire to see others helped (Hepach, Vaish, & Tomasello, 2012; Warneken et al., 2009). Then, during preschool years, these prosociality become selective, and seems to be influenced by different things, like features of the recipient, the context, and the actor's mindset. (Hay, 1994; Hay, et al., 1991; Sebastián-Enesco, Hernández-Lloreda, & Colmenares, 2013; Warneken, 2013; Warneken et al., 2009, 2009b, 2013).

Some research claimed that it is important to separate prosocial behaviour from merely social behaviour in early childhood, because in some cases children might engage in behaviour that has the effect of being prosocial but that is motivated primarily by the simple desire to engage socially with someone. For instance, children might offer somethings to others in order joint attention, (Hay, 1994; Paulus & Moore, 2012), or they might help even in some cases whether help is not needed.

Instead, referring specifically to prosocial behaviour, research indicated different variables that could influence prosociality. For example, children prefer helping others who have previously helped them or have demonstrated an intention to do that (Dunfield et al., 2010; Dunfield, Kuhlmeier, & Murphy, 2013).

By the age of 3 or 4, children share less over time if their partner never reciprocates (Warneken et al., 2013). Younger children, moreover, prefer to reward a person who helped over another one (Dahl, Schuck, & Campos, 2013; Hamlin, Wynn, Bloom, & Mahajan, 2011).

Other factors those seem to influence prosociality are familiarity and similarity: those we are familiar with, like group members, are probably those who like us and will reciprocate our help in the future (Martin et al., 2015). Making social goals salient, also, increase helping in young children (Over & Carpenter, 2009).

Children's abilities in areas different from prosociality, like perspective taking (Theory of Minds, ToM), emotion understanding, or sensitivity to fairness, have also been found to be associated with their prosocial behaviours (Brownell, Iesue, Nichols, & Svetlova 2013; Sommerville, Schmidt, Yun, & Burns, 2013). Empathy, and understanding of emotions, could be fundamental to children's prosocial behaviour (Eisenberg, Fabes, & Spinrad, 2006).

Language competence, also, might makes easier children's engagement in social interactions. This social experience could then facilitate both children theory of mind and the understanding of when is appropriate to help other people (Imuta, Henry, Slaughter, Selcuk, Ruffman, 2016).

Being able to take care of another person who needs help could be linked to the ability to behave prosocially. This capability requires that the child differentiates himself from another, to know how discriminate between the own emotions and those of others (Hoffman, 1975). There are studies that shown a relationship between the acquisition of self-awareness, empathy and prosocial behaviour. In particular, associations regarded prosocial behaviours and mirror self-recognition around 18 to 24 months (Bischof-Köhler, 1989, 1994; Johnson, 1982; Zahn-Waxler et al., 1992).

Reputation in the eyes of others appears to be another important motivator of prosociality (Latane & Darley, 1970; Leary & Kowalski, 1990). As said in the chapter on self with the other, people can shape their self-image by behaving in ways that reflect the kind of person they want to be and they want the other to see. Previous studies suggested that, by preschool age, children have a sense of self and can evaluate their "goodness" and "badness" (Burhans & Dweck, 1995; Eder & Mangelsdorf, 1997; Harter & Pike, 1984; Marsh, Ellis, & Craven, 2002; Stipek, Gralinski, & Kopp, 1990). An interesting research of Bryan, Master and Walton (2014), for example, found that referring to helping with a noun ("helper") rather than a verb ("helping") significantly increased the times children helped. Children were sensitive to subtle linguistic cues and choose to help in order to obtain the Self-identity like a helper.

Models of social interaction assumed that early prosocial behaviours are drive by the desire of social relations. From that point of view, prosociality is not altruistic and

lead by the desire to help another; it is rather a way to have social exchanges (Paulus et al., 2012). Prosocial behaviours allow children to claim a positive identity useful to maintain these social relations.

Prosocial behaviour and affiliation to peer group

From the age of three, children extend their social relations beyond the boundaries of the family. The kindergarten leads the child to be part of a new context characterized by the presence of teachers and peers.

Theoretical work from developmental psychology proposed an association between prosociality and group membership and that these emerged sequentially in human evolution (Tomasello et al., 2012). Research has shown that, by 14 months of age, children begin to engage in collaborative activities with adults and, later, with peers, and this collaboration improves around the age of two (Brownell & Carriger, 1990; Brownell, Ramani, & Zerwas, 2006; Warneken, Chen, & Tomasello, 2006; Warneken et al. 2007).

As suggested by different studies, peer relationships become important for child's social, emotional and cognitive development (Dunsmore, Noguchi, Garner, Casey, & Bhullar, 2008; Howes, 1988; Ladd & Price, 1987). Children become interesting in social affiliation and aware of the possibility of being evaluated by others (Rochat, 2013).

Between 3 and 5 years, children start to act toward others, according to ethical principles they internalize. The moral and ethical dimension of sharing become important in try to reach right decisions in order to maintain a social affiliation (Zahavi et al., 2015).

Sharing is the primary context in which children establish their own moral identity in the evaluative eyes of others. The co-conscious sharing occurring in this period, at the tertiary level of intersubjectivity, regards group-based we-experience in the context of larger scale collaboration, like the one that happens in kindergarten. This corresponds to the transition between two forms of shared intentionality, from the joint intentionality to the collective intentionality (Tomasello, 2014).

Preschoolers support their partners by helping and waiting for them and by sharing equitably the effort of collaborative activity (Gräfenhain, Carpenter, & Tomasello, 2013; Hamann, Warneken, Greenberg, & Tomasello, 2011). It is also important, for children, that their partner obtains a reward even if they themselves have already gotten theirs (Hamann, Warneken, & Tomasello, 2012). The study of Ploetner, Over, Carpenter and Tomasello (2015) showed that effects of a brief collaboration concerns the partner's support and other aspects of the relationship, such as trust, liking, and affiliation. This finding supports the idea that collaborative partners are important not only at the moment of the collaborative interaction but also generally, even in the future (Tomasello et al., 2012).

Theory of mind and prosocial behaviour

Empirical research has argued that children who possess an advanced theory of mind (ToM) are more likely to act prosocial behaviours. An interesting meta-analytic integration of all prior literature on the present topic was conducted few years ago by Imuta, Henry, Slaughter, Selcuk, Ruffman (2016).

The construct of theory of mind, according to the Piagetian notion of perspective taking, is the ability to take another person's point of view. Specifically, this implies identifying what others see (Salatas & Flavell, 1976), think (Ruby & Decety, 2003), and feel (Lamm, Bateson, & Decety, 2007). Recently, ToM has been differently defined as involving general social insights without a commitment as to whether the tasks used to measure ToM consider mental state understanding (e.g., Perner, 2010; Ruffman, 2014). The meta-analytic study of Imuta et al. (2016) showed that recognition of others' needs or intentions should facilitate children's engagement in prosocial behaviours (Dunfield, 2014; Hay & Cook, 2007; Hoffman, 2000); engaging in prosocial behaviours may, in turn, lead to the development of a Theory of Mind (Astington, 2003; Eisenberg et al., 1998). This positive association seems significant in preschool children (Imuta et al., 2016).

Meta-analysis' authors expected that associations may be stronger in the younger children because there is substantial development in ToM during the preschool years (Wellman, Cross, & Watson, 2001). If ToM allows prosociality, then one might expect an increase in the association as children become more ToM expert. In contrast to this prediction, analysis of indicated that the connection between ToM and prosocial behaviour was stronger for 6- to 12-year-old children than for preschoolers. This result

may be understand considering the less important role of ToM in younger children's prosociality because early prosocial acts may be motivated by normative ideas of how one should responds when other people require help (Paulus, 2014), or through the desire to have a social interaction with another person (Paulus et al., 2012). Increasing with age, children consider the perspective of the others and weighing it against that of their own, becoming more selective in helping people (Hay et al., 2007; Sierksma, Thijs, Verkuyten, & Komter, 2014).

As said above, motivation must play a substantial role in engage in prosocial behaviour (Carlo, Knight, Eisenberg, & Rotenberg, 1991). Different variables could affect motivation, like parenting behaviour, sibling influences (Bryant & Crockenberg, 1980), social exclusion (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007), religiosity (Shariff & Norenzayan, 2007), empathy (Eisenberg & Miller, 1987), positive mood (George, 1991), social conventions and reciprocity. Such findings suggest two possible outcome conclusions: ToM allows but does not necessitate prosocial behaviour, and ToM is one contributor to prosocial behaviour but not the most important one.

Further research could be useful to separately assesses ToM and motivations to prosociality and to empirically test these two conclusions.

Regard the two distinct aspects of ToM, namely affective perspective-taking (APT) and cognitive perspective-taking (CPT), studies showed different relations to prosocial behaviour, with the affective theory of mind stronger correlate to them. This finding could be explain considering that APT and CPT are, respectively referred to an "hot" ToM and a "cold" ToM, and these two components could be depending on different motivation (Carlo, Knight, McGinley, Goodvin, & Roesch, 2010; Davis & Stone, 2003).

Literature indicated different kind of prosocial behaviour related to ToM, like helping, comforting, and cooperating. Moreover, it seems that that spontaneous but not compliant helping is related to ToM.

Finally, longitudinal studies have examined relations between early ToM and later prosocial behaviour, however the bidirectional relations are still not clear (Broeren, Muris, Diamantopoulou, & Baker, 2013; Caputi, Lecce, Pagnin, & Banerjee, 2012; Eggum et al., 2011; Ruffman, Slade, Devitt, & Crowe, 2006).

CHAPTER 5

THE STUDY

Introduction

Self-development and early social skills are two topics of interest for developmental psychology. In particular, literature showed that significant changes occur in these two domains in preschool age.

Our research intends to analyse the relationships existing between the acquisition of the permanence of the Self, prosocial behaviour, and social affiliation within the peer group in preschool children.

According to literature (Rochat & Passos-Ferreira, 2008; Zahavi et al., 2015), children between 3 and 5 years become sensitive to the theme of their own reputation (Rochat, 2013) and worry about others' approval, engaging in prosocial behavior and promoting social affiliation. These concerns would appear in parallel with another important acquisition: the development of temporal extended self-awareness (Damon et al., 1982; Povinelli, 2001; Rochat, 2003; Zocchi et al., 2018).

Based on the gaps identified in the literature of studies on both the acquisition of a permanence Self and social competence, the present study was created with the specific intent of deepen the knowledge regarding possible connection between them. Since these skills develops in this age range, the longitudinal study allowed us to explore directionality of links of development of Temporal Self-Awareness and social competences among peers, parents and adults.

We explored in two distinct moments ten months from each other, all the interest variables. The temperament questionnaire was the only test used merely at Time 1. The possibility of have two times test lead us the opportunity to create a model useful to study the predictability of prosocial behaviours on the development of TES.

Aim of the study

Literature shows inter-individual differences in the develop of sense of a permanent self, and some studies attributable that variance to social aspects. In particular, the development of Temporally Extended Self, at 3-years-old, seems to differ in presence of a stranger experimenter or of own mother. The affective engagement leads to recognize me more at the DSR paradigm (Zocchi et al., 2018). Temporal Self-Awareness is, thus, a process characterized in a social and emotional sense (Reddy, 2008). Furthermore, conversation on past events with the own mother is linked to the development of a sense of self-over-time (Welch-Ross, 2001).

According to literature that highlights the importance of social interactions in the Self-development (Kristen-Antonow et al., 2015; Moore, 2007; Rochat, 2009; Rochat et al., 2012; Zocchi et al.), in the present longitudinal study we investigated the association between self-awareness and early social skills in preschool age. We hypothesized that children's prosociality would be positively related to the acquisition of a Temporally Extended Self, both concurrently and longitudinally. In addition, we hypothesized that children who are competent on autobiographic narrative would be relatively more competent on prosocial ability within peer group.

Methods

Research design

The study is of a longitudinal type. Data were collected in two phases, ten months from each other (Time 1 and Time 2). We chose 10-month gap because previous research showed that children of 3 and of 4 years of age differ in prosocial competences, in passing the DSR task and in mental state knowledge. We were therefore interested in developmental trajectory in order to determine if social skills were predictors of Temporally Extended Self-awareness.

Participants

Overall, a number of one hundred twenty-three preschoolers (53 girls, 70 boys) took part at this longitudinal study. Some of the children did not complete all tasks, and only who participated to both Time 1 and Time 2, doing all the tests, were included in longitudinal analysis.

Given the high mortality of participants, possibly due to preschool age, parental involvement or number of tasks, our final sample was of forty-nine preschoolers (23 girls and 26 boys). Children's mean age was 41 months (SD = 4.2, range =34-50 months) at Time 1 and 49 months (SD = 5.9 range = 41-63 months) at Time 2.

Participants were all Caucasian and Italian speaking and they were recruited from three kindergartens with socially mixed catchment areas in the North of Italy. All children had written parental consent. Criteria for inclusion were Italian as native language and no developmental or linguistic delay.

Procedure

Participants were part of a longitudinal study, where Time and Time 2 took part after about ten months. The ethical committee of the Lombard School of Psychotherapy approved the procedure of this study.

At each time point, children participated in two individual testing sessions of approximately 30 minutes each. The time interval between sessions was about two weeks, and the order of the sessions was counterbalanced.

In addition, each child participated with a parent to ten minutes of conversation (both Time 1 and Time 2). Solely at T1 parents and teachers completed a self-report questionnaire about child's temperament but, due to the poor compliance of parents or teachers, QUIT results were not included in the analyses.

Observational measures and tests were divided between the two sessions test. During one session, a test for receptive vocabulary (Peabody Picture Vocabulary Test-Revised PPVT-R, Dunn & Dunn, 1981), Spontaneous Helping task (Bryan et al., 2014), and Delayed Self Recognition task (DSR, Povinelli & Simon, 1998) were administered. During the other session, we administered Raven's Colored Progressive Matrices (Raven, Raven, & Court, 1998), Paternalistic Helping task (inspired to Martin et al., 2013), and two sociometric status measures: Peer rating scale (Asher, Singleton, Tinsley, & Hymel, 1979) and Nominations of liked and disliked classmates (McCandless & Marshall, 1957).

Measures

Verbal intelligence

Peabody Picture Vocabulary Test

The Peabody Picture Vocabulary Test – Revised (PPVT-R; Dunn et al., 1981) is a test of receptive vocabulary and is intended to provide an index of child's linguistic maturity. In the current study it was administered the Italian Version of the PPVT-R (Stella, Pizzoli, & Tressoldi, 2000) as inclusion measure to assess children's receptive language.

The PPVT-R is adopted to assess the receptive vocabulary between the age of 3,9 and the age of 11,6.

The test consists of 175 black and white illustrated tables, content four pictures to a page. Items are order by difficulty. The PPVT-R allows to identify also a critical range within which to perform the administration, useful to guarantee the validity of the results (it is relevant to use items that are neither too simple nor excessively complex). The two extremes of this interval are the basal and the ceiling. The basal is the lower limit and is represented by the first item from which the child was able to provide eight correct consecutive answers, while the ceiling is the last item given after six wrong answers on eight subsequent items.

Administration procedure

The test is given verbally and takes from twenty to thirty minutes to complete. No reading is required by the individual. The examiner presents a series of pictures, four pictures to a page, speaks a word describing one of the pictures and asks the individual to point to the picture that the word describes. Before the administration procedure, the

examiner calculates the chronological age, obtained by the differences between date test and date of child's birth, in order to find the table from which to start. Items, in fact, are sorted by increasing difficulties and each chronological age has a specific starting item. After that, the test starts with a familiarize phase constitutes by three test tables; the familiarize phase end when the subject answers three times correctly.

Scoring

According to PPVT-R Manual, first of all, basal and ceiling levels were defined. After that, raw score was calculated and converted to an IQ score based on chronological age. Children who achieved a score lower than two standard deviations from mean score were excluded from the analysis.

Non-verbal intelligence

Raven's Colored Progressive Matrices

Raven's Progressive Matrices is a non-verbal group test typically used to assess non-verbal intelligence (Raven et al., 1998). In the present study were used the Italian standardization (Belacchi, Scalisi, Cannoni, & Cornoldi, 2008) of Raven's Colored Progressive Matrices (CPM) as inclusion measure.

The coloured version of Raven's Progressive Matrices is the most suitable for preschooler children, indeed there can be used to assess non-verbal abilities in children between 3 to 11 years. Raven's CPM consists of three sets (A, Ab, B) of 12 items. All of the table on the consist of visual geometric imagine with a missing piece.

Administration procedure

A target visual matrix with one missing part was presented in each item. Children were asked to select, from six choices, the piece that best fit the matrix. Test is concluded when children complete all 36 items.

Scoring

Score is obtained adding the numbers of correct responses on the three series of matrices (A, B, and Ab). The raw score is then converted to a percentile based on normative data. IQ score, based on chronological age, corresponds to the non– verbal intelligence level. As for verbal ability, we excluded children who scored lower than two standard deviations.

Cognitive theory of mind

Theory of Mind Test

The Theory of Mind Test (TMT; Pons & Harris, 2002) examines the ten components of cognitive understanding (Flavell, 2004):

(a) perspective taking - level 1,

(b) perspective taking – level 2,

(c) comprehension of intentionality,

(d) comprehension of ignorance,

(e) comprehension of false belief,

(f) comprehension of the distinction between appearance and reality,

(g) comprehension of lies,

(h) comprehension of jokes,

(i) comprehension of second-order false belief,

(j) comprehension of double bluff.

Whereas children in our research are about three to four years, we decided to evaluate solely the first five components of cognitive understanding.

Administration procedure

TMT consists of a book presenting series of cartoon scenarios on each page. While showing a cartoon scenario, the experimenter read a story regarding the depicted character(s) or the content of the imagine. After hearing each story, children were asked to attribute a cognition to the main character by pointing to one of two alternative outcomes depicted below the scenario.

Scoring

Each component was evaluated via two items, and children were given one point for each category in which they passed both items

Emotion comprehension

Test of Emotion Comprehension

The Test of Emotion Comprehension (TEC; Albanese & Molina, 2008; Pons & Harris, 2000) gives an overall score of affective theory of mind. TEC is used to evaluate the understanding of emotions in children aged three to eleven through nine components concerning the nature of emotions, the causes of emotions, and the possibility to control the expression of emotions.

Specifically, nine components are:

(a) emotion understanding based on facial expression

(b) understanding of external causes of emotion

(c) emotion understanding based on desires

(d) emotion understanding based on beliefs

(e) understanding of the influence of a reminder on the current emotional state

(f) understanding of the capacity to control a felt emotion

(g) understanding of the capacity to hide an emotion

(h) understanding of mixed emotions

(i) understanding of moral emotions.

Administration procedure

TEC consists of an A4 book (male and female versions) presenting series of cartoon scenarios placed on the top of each page. In the bottom part of the same page there are four possible emotional outcomes depicted by facial expressions. While showing each scenario, the experimenter read a story regarding it with a neutral tone of voice. After hearing each story, children were asked to point to one emotional outcome depicted below the scenario to attribute an emotion to the main character (whose face was blank).

Scoring

Two items per component were administered, and children were given one point for each category in which they passed both items.

Temperament

Italian Questionnaire of Temperament (QUIT)

The Italian Questionnaire of Temperament (QUIT, Axia, 2002) is a self-report interview useful to collect observations about children temperament and character with parents and teachers as observers. The questionnaire explores various temperamental dimensions: social orientation, inhibition of novelty, motor activity, positive and negative emotionality, attention.

Administration procedure

Parents enrolled in the study and teachers completed, one each, a QUIT about the child. It has been used the questionnaire version appropriate for children from 3 to 6 years. It contains sixty Likert scale (from 1= almost never, 6= almost always) items which have to be answered by indicated the frequencies, in the last week, of different child behaviours. Questionnaire were collected only in T1 but, due to the low compliance of parents or teachers, QUIT results were not included in the analyses.

Scoring

Scores of every temperamental dimension (social orientation, inhibition of novelty, motor activity, positive and negative emotionality, attention) were calculated and compared to the average scores obtained by an Italian population of preschoolers.

Narrative competence

Mother's reminiscing style and child's autobiographical recall

Following Welch-Ross (1997) procedure, mother was asked to hold a ten minutes conversation with the child. The indications were to talk about two past non-routine life events that had been shared together.

Administration procedure

Each dyad participated to the conversation in a quite kindergarten room. Conversations were audio recorded.

Scoring

All the conversations were audiotaped, transcribed and subsequently codified by two independent examiners. Coding was based on the classification reported in previous study (Welch-Ross, 1997; Zocchi et al., 2018). The duration of the conversation was coded as the number of words, while other indexes are presented in the following table (Table 2).

Table 2

Mother - child coding indexes.

Index	Description
Mother elaborative questions	Questions that provide new information or focus on a new aspect of the event, e.g. *wh*-questions
Mother elaborative statements	Sentences that provide new information
Mother repetitions	Intervention which provided no new information. Exact repetition of a previous statements or question
Mother repetition child words	Repetition of the same child words
Mother temporal statements	Use of temporal label, e.g. today, last week, tomorrow
Mother temporal sequences	Use of words referring to sequences of actions, e.g. before, later, then
Mother positive feedback	Positive feedback on child, e.g. very good, good boy, well done
Mother negative feedback	Negative feedback on child, e.g. stop that
Child elaborative answers	Child provides new information about the past event or requests novel information about the event

Index	Description
Child evaluations	Utterances that confirmed or negated a mother's previous utterance, throughout a verbal or non-verbal "yes"/ "no"
Child temporal statements	Use of temporal label, e.g. today, last week, tomorrow
Child temporal sequences	Use of words referring to sequences of actions, e.g. before, later, then

Temporally Extended Self

Delayed Self-Recognition Paradigm

The Delayed Self-Recognition Paradigm of Povinelli & Simon (1998) is classically used to assess the acquisition of Temporally Extended Self (TES). In this task, the experimenter and the child are filmed playing a distractor game. While the experimenter caresses the child on his head, covertly places a large sticker on top. After few minutes, the experimenter and the child watch the video of the distractor game, including the sticker placement. The task is successfully passed if child reaches up the sticker.

Administration procedure

Children were seated at a table with the experimenter set next to him and told that a board game was going to be played. A small digital video camera, activated by a second

experimenter, was placed in front of the children. During the first two minutes of taping, the experimenter patted the child on the head in the context of praising how well he or she was doing. These served to habituate the child having the experimenter touch his or her head. During the third minute, the experimenter, surreptitiously placed on the child's forehead a yellow sticker. The post-it sticker measured 4.5×3.5 cm. After three minutes play, the child was told "we are now going to watch on the video what we just did", while the second video camera (that recorder the child viewing the video) was activated.

At the end of the play phase, the tape was paused with the sticker clearly visible. The main experimenter asked to the child "Who is that?", pointed to the child's video image, "What's that?", pointing to the sticker on the monitor, and "Can you give me the sticker?". Children received three different scores: Self Recognition, Sticker Identification and Delayed Self Recognition.

Scoring

We scored the Self Recognition answers as follow: "0" if children didn't recognize themselves, "1" if they used their proper name, and "2" if they used pronoun "me". This criterion was based on developmental research data: Povinelli & Simon (1998) found age-related trends, with younger children tending to use first-person pronoun and their proper name indiscriminately, whereas older children almost exclusively used the personal pronoun.

Sticker Identification had two cases: "0" if they did not name it, "1" if they did.

In Delayed Self Recognition, children received scores in on a four-point scale: "0" if child did not realize he had a sticker on his head, "1" if the child shown some awkwardness about the sticker on his head, but couldn't remove it, "2" if child took off

the sticker after the question, “3” if child took off the sticker prior the question. We considered such distinction between two or three points only from a theoretical point of view.

Prosocial Behaviour

Spontaneous Helping

In our study, according to the Spontaneous Helping procedure of Bryan et al. (2014), child was shown two attractive toys, and, once he was engaged in playing, the experimenter provided four opportunities to help. In the first three cases, children had to stop playing to help, in the final case, they had to stop drawing to help. We can talk about spontaneous help because, in each of the four opportunities, the prompts made the child understand that his help was welcome but not mandatory.

Administration procedure

Child, participated individually in a kindergarten room with minimal distraction, was shown two attractive toys and invited to play with them. Once child was engaged in playing with the toys, the experimenter provided four opportunities to help. First, the experimenter pretended to notice that she had forgotten to pick up a pile of blocks on the floor; she then proceeded to put them in a container, providing verbal prompts (e.g., “This is hard to do by myself”) if children did not help spontaneously. Second, she went to put blocks into a bin and pretended to have difficulty opening the lid because her full hands. Third, as child moved from playing with the toys to drawing, he has the possibility to help put away toys. At the and, as child was drawing, the experimenter “accidentally” knocked over the cup of crayons and said “Better pick those up”.

Scoring

The dependent variable was the number of tasks child helped with (possible range: 0–4). Child was coded as having helped if he (a) picked up at least one block and put it in the bin, (b) lifted the lid of the bin, (c) put at least one toy in the storage box, and (d) picked up at least one crayon and put it back in the cup.

Prosocial Behaviour

Paternalistic Helping

The help, besides being spontaneous, can also be explicitly requested. In the case of this specific task, our question of interest was whether, when the experimenter requested a dysfunctional object (no suitable to complete a task), children would help by giving her what she asked for, or by giving her what she needed to achieve her goal. A modified version of Martin and Olson' procedure (2013) were used.

Administration procedure

One experimenter familiarized child with pairs of functional and dysfunctional objects, asked the child to name and explore each one (asking questions like "What is it called?"; "What is it for?"), without pointing out dysfunctional properties.

Dysfunctional objects resemble the functional ones but do not have the proper properties to complete a task. For instance, experimenter may ask for a plastic glass to drink some water: in a case the glass is undamaged, in another case, the glass has a hole in the bottom and it is impossible drink with it.

Children then participated in the helping phase of the study, seating on the floor between the two trays, and the second experimenter sat on the chair at the small table. Second

experimenter conducted seven helping trials in which she first stated a goal and then requested a specific object (the object closest to her) to achieve the goal, under the guise of "getting ready." The first trial was always the warm-up trial ("Could you give me those scissors so I can cut the paper?") to familiarize children with the type of request.

Children then received six trials in which experimenter reached for objects on the closer tray to complete certain tasks and pointed at the desired object while verbally requesting it (always saying "that [object]", referring to it specifically). In three cases, the object in the indicated tray was suitable for the task, in the other three cases children have to choose an object from the tray not pointed by experimenter to better reach the goal.

Scoring

For the purposes of this study, the number of tasks in which the children helped paternalistically was considered, choosing the object necessary to achieve the goal rather than the object indicated by the experimenter.

Sociometric status

Nominations of liked and disliked classmates

Nomination of liked and disliked classmates (McCandless et al., 1957) was used to discover the popularity of all children between the classmate group.

Administration procedure

Each child was given a list of the classmates and asked to identify the names of three peers whom he/she most liked to play with, and then three peers whom he/she least liked to play with.

Scoring

It was assigned 1 point every time a child was named by a peer. Dividing by the number of raters in each class, it was obtained an average number of positive nominations and an average number of negative nominations.

Sociometric status

Peer rating scale

The rating-scale sociometric interview derives from the procedures described by Asher et al. (1979). This scale is useful to assigned a positive, neutral, or negative rating to each member of every child's class.

Administration procedure

Each child was presented individually with a list of each of his/her classmates by the experimenter. The child was asked to assign each classmate to one of three picture, which depicted either a happy face ("children you like to play with a lot"), a neutral face ("children you 'kinda' like to play with"), or a sad face ("children you don't like to play with").

Scoring

It was assigned 3 points for positive, 2 for neutral, and 1 for negative face respectively. Scores have been summed and then divided by the number of raters in each class to obtain an average rating.

Statistical analysis

Data were analysed using SPSS software for Windows.

First, we present preliminary analyses concerning descriptives, developmental changes and stability for all variables.

Subsequently, concurrent and longitudinal associations between measures will be presented.

In the main Results section, we address the focal question of this study, that is the relation between temporally extended self (Delayed Self-Recognition task), social competencies and social affiliation presenting analyses concerning associations within time points (first) and between time points (secondly). Pearson's correlations and linear regression analyses will be used.

Results

Data analysis Time 1: descriptive statistic

Table 3 shows the descriptive statistic of measures at Time 1.

Table 3

Descriptive statistic of the interesting measures.

	M (SD)	Range
Age (in months)	40.76 (4.15)	34-50
IQ Peabody	82.86 (8.20)	69-105
IQ Raven	108.57 (10.41)	90-130
TMT	1.98 (1.28)	0-5
TEC	2.98 (1.15)	0-9
Mother elaborative talk	62.18 (22.66)	18-138
Mother temporal talk	9.22 (4.69)	0-25
Child elaborative answers	27.57 (11.90)	3-56
Child temporal talk	1.24 (2.51)	0-15
DSR Self	1.53 (.71)	0-2
DSR Sticker	.63 (.49)	0-1
DSR Self in time (TES)	1.12 (1.17)	0-3

	M (SD)	Range
Paternalistic Helping	.27 (.49)	0-3
Spontaneous Helping	3.16 (1.09)	0-4
Peer rating scale	2.19 (.37)	1-3
Positive nominations	.24 (.22)	0-1
Negative nominations	.10 (.15)	0-1

Data analysis Time 2: descriptive statistic

Table 4 shows the descriptive statistic of variables at Time 2.

Table 4

Descriptive statistic of the interesting measures.

	M (SD)	Range
Age (in months)	48.84 (5.91)	41-63
IQ Peabody	90.80 (12.34)	66-119
IQ Raven	111.84 (12.02)	80-130
TMT	2.51 (1.33)	0-5
TEC	3.33 (1.52)	0-9
Mother elaborative talk	54.59 (20.27)	20-109

	M (SD)	Range
Mother temporal talk	9.12 (4.92)	2-24
Child elaborative answers	31.69 (15.81)	6-65
Child temporal talk	2.06 (2.60)	0-11
DSR Self	1.82 (.44)	0-2
DSR Sticker	.76 (.43)	0-1
DSR Self in time (TES)	1.78 (1.09)	0-3
Paternalistic Helping	.43 (.76)	0-3
Spontaneous Helping	3.63 (.76)	0-4
Peer rating scale	2.09 (.57)	1-3
Positive nominations	.32 (.28)	0-1
Negative nominations	.14 (.19)	0-1

Data longitudinal study: descriptive statistic

Table 5 shows descriptive statistics for all the variables at both time points. A series of paired sample *t-test* were performed in order to examine the existence of significant age-dependent changes between two testing times. Age effect emerges on receptive vocabulary, t (49) = - 4.65, p <.01, Self- Recognition , t (49) = - 2.62, p <.05, Temporally Extended Self, t (49) = - 3.18, p <.01, Spontaneous Helping, t (49) = - 2.48,

p <.05, and Theory of Mind, *t* (49) = - 2.33, p <.05. No time effect was found for non-verbal ability, Paternalistic Helping and Emotion comprehension (TEC).

Table 5

Descriptive statistic of the interesting measures at Time 1 and Time 2.

	M (SD) **Time 1**	***M (SD)*** **Time 2**	***t***
IQ Peabody	82.86 (8.20)	90.80 (12.34)	-4.65**
IQ Raven	108.57 (10.41)	111.84 (12.02)	-1.64
DSR Self	1.53 (.71)	1.82 (.44)	-2.62*
DSR Self in time (TES)	1.12 (1.17)	1.78 (1.09)	-3.18**
Paternalistic Helping	.27 (.49)	.43 (.76)	-1.48
Spontaneous Helping	3.16 (1.09)	3.63 (.76)	-2.48*
TMT	1.98 (1.28)	2.51 (1.33)	-2.33*
TEC	2.98 (1.15)	3.33 (1.52)	-1.44

*$p < .05$; **$p < .01$

Correlations between measures at Time 1

Time 1 Pearson's correlations will be presented below. See Table 6 for associations between variables.

Associations between cognitive measures and other variables

We found two significant associations between cognitive measures and other variables. In particular, verbal abilities are associated with Emotion comprehension (r = .29), while non-verbal abilities are associated with Theory of Mind (r = .31).

Associations between Theory of Mind, Emotion comprehension and other variables

The pattern of correlations indicated that Theory of Mind is associated with non-verbal abilities (r = .31) and with Mother temporal talk (r = .39). Emotion comprehension is associated only with verbal abilities (r = .29).

Associations between mother-child conversations and other variables

It is possible to note some correlations between mother-child conversation indexes. Specifically, we observed:

a) a positive association between Mother elaborative talk and Mother temporal talk (r = .31);
b) a positive association between Mother elaborative talk and Child elaborative talk (r = .69);
c) a positive association between Mother temporal talk and Child elaborative talk (r = .45);

d) a positive association between Mother temporal talk and Child temporal talk (r = .64).

Mother temporal talk is also, as previously said, associated with Theory of Mind (r = .39).

Associations between Temporally Extended Self and other variables

Temporally Extended Self is not associated with other measures of interest.

Associations between Helping behaviours, social affiliation and other variables

As expected, there is a negative association between peer rating scale and negative nominations (r = -.37). No other significant associations appear.

Table 6

Associations between variables at Time 1.

	IQ_P	IQ_R	TES	Patern Help	Spont Help	Posit nom	Negat nom	Rating scale	TMT	TEC	M_ elab	M_ temp	C_ elab	C_ temp
IQ Peabody	1	.23	.07	-.06	.11	-.16	-.01	.05	.25	**.29***	.01	.18	.09	.16
IQ Raven		1	-.09	-.01	.04	-.23	-.08	.03	**.31***	-.11	.22	.13	.06	-.09
TES			1	.23	.02	-.09	.05	-.16	-.09	.11	-.12	-.04	-.11	-.20
Paternalistic Helping				1	.15	.13	-.14	-.25	.24	.12	-.12	-.06	-.03	-.14
Spontaneous Helping					1	.11	.08	-.12	.11	.19	.13	.09	.18	-.18
Positive nominations						1	.07	.08	-.19	-.16	.16	-.17	-.09	-.22
Negative nominations							1	**-.37****	.00	.06	.11	.01	.12	-.02
Peer rating scale								1	.03	.04	.18	-.14	-.06	-.03
TMT									1	.03	.04	**.39****	.13	.28
TEC										1	-.21	-.03	-.24	.02
Mother elaborative talk											1	**.31***	**.69****	-.04
Mother temporal talk												1	**.45****	**.64****
Child elaborative answers													1	.19

* $p < .05$; ** $p < .01$

Correlations between measures at Time 2

Table 7 presents Pearson's correlations regarding data at Time 2. Data will be presented below.

Associations between cognitive measures and other variables

The pattern of correlations indicated one significant association between verbal abilities and Theory of Mind (r=.43).

Associations between Theory of Mind, Emotion comprehension and other variables

We found a positive association between Theory of Mind and verbal abilities (r = .43) and a negative association between Theory of Mind and Paternalistic helping (r = -.37). Emotion comprehension is not associated with the measures of interest.

Associations between mother-child conversations and other variables

We observed different associations between mother-child conversation and other measures. In particular:

e) a positive association between Mother elaborative talk and Mother temporal talk (r = .51);
f) a positive association between Mother elaborative talk and Child elaborative talk (r = .81);
g) a positive association between Mother temporal talk and Child elaborative talk (r= .43);
h) a positive association between Mother temporal talk and Child temporal talk (r= .34);

i) a negative association between Child temporal talk and peer rating scale (r = -.36).

Findings show the interdependence between mother and child conversation style.

Associations between Temporally Extended Self and other variables

At Time 2, Temporally Extended Self is not associated with other measures of interest.

Associations between Helping behaviours, social affiliation and other variables

The pattern of correlations shows only two associations between Helping behaviours, social affiliation and other variables. We found:

a) a negative association between peer rating scale and Child temporal talk (r = -.36);
b) a positive association between Spontaneous helping and positive nomination (r = .29).

Table 7

Associations between variables at Time 2.

	IQ_P	IQ_R	TES	Patern Help	Spont Help	Posit nom	Negat nom	Rating scale	TMT	TEC	M_ elab	M_ temp	C_ elab	C_ temp
IQ Peabody	1	.18	-.01	-.19	-.01	.02	-.03	.28	**.43****	.22	.08	.06	.03	-.19
IQ Raven		1	.05	-.11	.01	-.14	.14	-.22	.01	-.15	.20	.09	.01	-.19
TES			1	-.01	.25	-.11	-.11	-.01	.17	.09	.02	-.17	-.03	-.12
Paternalistic Helping				1	-.01	.11	.22	-.04	**-.37****	-.11	-.02	.01	.01	.05
Spontaneous Helping					1	**.29***	-.16	.27	.21	-.04	-.03	-.03	-.09	-.05
Positive nominations						1	-.06	.17	.17	-.13	-.11	.15	-.22	-.01
Negative nominations							1	-.23	-.25	-.05	-.19	-.10	-.16	-.27
Peer rating scale								1	.08	-.04	-.07	-.16	-.02	**-.36***
TMT									1	.25	.03	-.01	-.04	.05
TEC										1	.00	.00	.02	.21
Mother elaborative talk											1	**.51****	**.81****	.08
Mother temporal talk												1	**.43****	**.34***
Child elaborative answers													1	.15

$^{*}p < .05$; $^{**}p < .01$

Longitudinal correlations between measures

Longitudinal Pearson correlations between data at Time 1 and at Time 2 will be presented below.

The correlations between Time 1 and Time 2 indicate good stability over time for language, Paternalistic Helping and Child temporal talk. See Table 8 for associations between variables.

Associations between cognitive measures and other variables

The pattern of correlations between language and non-verbal abilities indicated that, for most cases, individual differences in language, non-verbal abilities and the other variables of interest were non significantly associated. We found few exceptions:

a) a positive association between Time 1 verbal abilities and Time 2 verbal abilities (r = .38);
b) a positive association between Time 1 verbal abilities and Time 2 Temporally Extended Self (r = .39);
c) a positive association between Time 1 verbal abilities and Time 2 Theory of Mind (r = .44);
d) a positive association between Time 1 verbal abilities and Time 2 Emotion comprehension (r = .39);
e) a negative association between Time 1 non-verbal abilities and Time 2 positive nominations (r = -.29);
f) a negative association between Time 1 Temporally Extended Self and Time 2 non-verbal abilities (r = -.36).

Findings show the significative role of language on cognitive and emotional mental states and on the development of the extended self.

Associations between Theory of Mind, Emotion comprehension and other variables

Table 8 indicated few longitudinal associations between Theory of Mind, Emotion comprehension and other variables. We found:

a) a positive association between Time 1 verbal abilities and Time 2 Theory of Mind (r = .44);
b) a positive association between Time 1 Parent temporal talk and Time 2 Theory of Mind (r = .38);
c) a positive association between Time 1 verbal abilities and Time 2 Emotion comprehension (r = .39);
d) a negative association between Time 1 Parent elaborative talk and Time 2 Emotion comprehension (r = -.29).

Associations between mother-child conversations and other variables

Regarding the mother-child conversation indexes, it is possible to note some correlations between them and other variables. Specifically, we found:

a) a negative association between Time 1 Mother elaborative talk and Time 2 Emotion comprehension (r = -.29);
b) a positive association between Time 1 Parent temporal talk and Time 2 Theory of Mind (r = .38);
c) a negative association between Time 1 Parent temporal talk and Time 2 negative nominations (r = -.32);

d) a positive association between Time 1 Child temporal talk and Time 2 Child temporal talk (r = .32);
e) a negative association between Time 1 Spontaneous Helping and Time 2 Child temporal talk (r = -.31)

Associations between Temporally Extended Self and other variables

Regarding our main interesting measure, it is possible to note some important results. We found:

a) a negative association between Time 1 Temporally Extended Self and Time 2 non-verbal abilities (r = -.36);
b) a negative association between Time 1 Temporally Extended Self and Time 2 negative nominations (r = -.31);
c) a positive association between Time 1 verbal abilities and Time 2 Temporally Extended Self (r = .39);
d) a positive association between Time 1 Paternalistic Helping and Time 2 Temporally Extended Self (r = .39);
e) a positive association between Time 1 Spontaneous Helping and Time 2 Temporally Extended Self (r = .39);
f) a negative association between Time 1 peer rating scale and Time 2 Temporally Extended Self (r = -.37);

Findings show the significative role of Helping behaviours on the development of the self-awareness over time.

Associations between Helping behaviours, social affiliation and other variables

The pattern of correlations indicated several associations between Helping behaviours, social affiliation and other variable of interest. In detail, we found:

a) a positive association between Time 1 Spontaneous Helping and Time 2 peer rating scale (r=.44);
b) a positive association between Time 1 Paternalistic Helping and Time 2 Paternalistic Helping (r = .31);
c) a negative association between Time 1 negative nominations and Time 2 Spontaneous Helping (r=-.41);
d) a negative association between Time 1 negative nominations and Time 2 peer rating scale (r=-.29);
e) a positive association between Time 1 peer rating scale and Time 2 positive nomination (r=.36);
f) a negative association between Time 1 Spontaneous Helping and Time 2 Child temporal talk (r=-.31);
g) a negative association between Time 1 Mother temporal talk and Time 2 negative nomination (r=-.32);
h) a negative association between Time 1 non-verbal abilities and Time 2 positive nominations (r = -.29);

These findings support the view of a interdependence between social affiliation and helping behaviours.

As mentioned before, there are some interesting association between social measures and Temporally Extended Self.

We found:

a) a positive association between Time 1 Paternalistic Helping and Time 2 Temporally Extended Self (r=.39);
b) a positive association between Time 1 Spontaneous Helping and Time 2 Temporally Extended Self (r=.39);
c) a negative association between Time 1 peer rating scale and Time 2 Temporally Extended Self (r = -.37);
d) a negative association between Time 1 Temporally Extended Self and Time 2 negative nominations (r = -.31).

Table 8

Longitudinal associations between variables.

	IQ_P	IQ_R	TES	Patern Help	Spont Help	Posit nom	Negat nom	Rating scale	TMT	TEC	M_ elab	M_ temp	C_ elab	C_ temp
T1 IQ Peabody	**.38****	.01	**.39****	-.08	-.03	.14	-.11	.00	**.44****	**.39****	.17	-.03	.05	-.05
T1 IQ Raven	.21	.24	.03	-.11	-.07	**-.29***	.06	.09	.13	-.02	.00	-.18	-.03	-.23
T1 TES	-.06	**-.36***	.19	-.08	.15	-.01	**-.31***	.07	.09	-.06	.09	-.08	.23	.02
T1 Paternalistic Helping	-.13	.06	**.39****	**.30***	.16	-.26	.01	.03	-.18	-.01	-.15	-.26	-.17	-.19
T1 Spontaneous Helping	.09	-.04	**.39****	.12	.00	-.04	-.13	**.44****	.01	-.07	-.03	-.21	.02	**-.31***
T1 Positive nominations	.08	-.04	-.10	.03	-.06	.20	.21	.19	.02	-.05	-.09	.06	.05	-.09
T1 Negative nominations	-.09	.03	.05	-.11	**-.41****	-.18	.12	**-.29***	.00	.19	-.13	-.22	-.10	.09
T1 Peer rating scale	.10	-.05	**-.37****	.09	.16	**.36***	.00	.21	.08	-.28	.12	.18	.07	-.02
T1 TMT	.19	.14	.25	.03	.12	.16	-.16	.08	.25	-.06	-.06	-.12	-.17	-.19
T1 TEC	.26	-.10	.11	-.04	.02	-.11	-.05	.12	.27	.22	-.21	-.11	-.17	-.13
T1 Mother elaborative talk	.23	.09	.03	.13	.03	.10	-.04	.16	.13	**-.29***	.09	-.04	.05	-.05
T1 Mother temporal talk	.19	.08	.22	-.15	.08	.07	**-.32***	.01	**.38****	-.10	.00	.05	.19	-.19
T1 Child elaborative answers	.14	-.01	.09	.12	-.14	.08	-.14	.00	.20	-.09	.08	.11	.18	.10
T1 Child temporal talk	-.04	.07	.06	.07	.10	.26	-.18	-.19	.21	.09	-.09	.27	-.17	**.32***

$^{*}p < .05$; $^{**}p < .01$

Linear regression model

The main aim of the study was to examine the direction of the association between helping behaviours, social affiliation and Temporally Extended Self.

Longitudinal associations analysis realized through Pearson's correlations allowed us to notice some interesting relationship between measures. Relying on the hypothesis of the study, by which there could be a relationship between self-awareness over time and prosocial behaviours in preschool children, and according to correlations pattern, we computed a regression analysis.

The regression model was created according to the following longitudinal associations: Temporally Extended Self at T2 related to verbal abilities (PPVT-R), Prosocial Helping and Spontaneous Helping at T1. Furthermore, it was added to the model also the Temporal Extended Self at T1 despite there was no significant association with the same measure at T2 (r = .19), in order to control for the same test.

Table 9 shows that Time 1 verbal abilities, Time 1 Paternalistic Helping and Time 1 Spontaneous Helping were all significant predictors of Time 2 Temporally Extended Self, F (4,44) = 7.80, $p < .001$. The predictability of significant measures on TES is pure: language and the two prosocial tasks correlate only with TES and not between them. Therefore, it is not solely the contribution of verbal ability that affects the subsequent TES development but also the prosocial capability.

In sum, the results of the previous analyses provide support for a model in which early helping behaviours predicts later temporally extended self.

Table 9

Linear regression model.

Measures	**A**	**SE A**	**B**
IQ Peabody	.05	.02	.39**
TES	.07	.11	.07
Paternalistic Helping	.79	.27	.35**
Spontaneous Helping	.29	.12	.29*

R^2 = .42 *p < .05; **p < .01

Discussion

The present study intended to verify, in preschool children, the existence of a relationship between Temporally Extended Self, prosocial behaviours and maternal conversation style. It was supposed that children's prosociality would be positively related to the acquisition of a Temporally Extended Self, both concurrently and longitudinally. For that reason, it was implemented a longitudinal study, and data were collected in two phases, ten months from each other (Time 1 and Time 2). The longitudinal study allowed us to explore directionality of links of development of temporal self-awareness and social competences among peers, parents and adults.

Preliminary results on longitudinal study had shown the existence of significant age-dependent changes between two testing times regarding performances on: IQ Peabody, DSR Self in time (TES), Paternalistic Helping, Spontaneous Helping, and TMT. Age did not affect performances on IQ Raven Matrices and TEC.

Examining our main measures, the Temporal Extended Self, significant concurrent Pearson's correlational at Time 1 and Time 2 were not detected, unlike what was hypothesized.

Analysing other measure, conversely, there were found some results worth discussing.

Associations between measures at Time 1

First, some associations with cognitive measures have been found. Non-verbal intelligence correlates with the cognitive component of theory of mind, while verbal ability and the affective theory of mind are associated among them. This result could be understandable because these tests measure the cognitive development. Understand the

missing piece of the presented imagine of Raven's Matrices or the cognition of the main character in TMT require a similar lever of cognitive abilities.

Regarding sociometric status indexes, it has been found a negative correlation between peer rating scale and negative nominations. Children who are less preferred by peer are also those who receive lower scores in the rating scale. Conversely, those who receive fewer negative nominations, receive higher scores at the rating scale. This expected correlation indicates a consistency between the two measures used for testing the social popularity.

At the Time 1 emerged also some correlations between the conversation indexes and between them and other measures. As seen in a previous chapter, the elaborative talk of the parent is associated to parent's temporal talk, and to the child elaborative talk. Parent temporal talk, instead, correlates with both the child indexes: child elaborative talk and child temporal talk.

The association of elaborative style of parent and child indicates that both the members of the dyad use a rich narrative style, characterized by a greater use of open questions (the so-called *Wh* questions), details and insight of the event. According to literature, children whose mothers use a high elaborative style produce more accurate information on an event than children with low elaborative mothers (Farrant & Reese, 2000; Haden et al., 1997; Hendrick, Haden, & Ornstein, 2009; Leichtman, Pillemer, Wang, Koreishi, & Han, 2000; Reese & Newcombe, 2007). Moreover, parents with a high elaborative style are more interested in conversation with their sons (Reese et al., 1993) and, conversely, children with an high elaborative talk style are more interested in this activity.

The narration of past events represents an important opportunity to create and maintain emotional relationships (Fivush, 2011; Reese, 2002). Conversation is a parents' opportunity of sharing with the child, and an activity emotionally engaging. For instances, parents who enrich the narration through a focus on the emotional meaning of the event (Fivush, 2007) have children who recall episodes of the personal past in more detail way, using the same parental mode (Fivush & Fromhoff, 1988; Fivush, Haden, & Reese, 1996; Fivush & Vasudeva, 2002; Flannagan, Baker-Ward, & Graham, 1995; Hudson, 1990; Wang, 2001).

The caregiver, as theorized by the socio-cultural approach of autobiographical memory development (Nelson et al., 2004), provides a model of memory encoding of past events which is learned and applied by the child as a way of telling stories (Reese, 2002). The parent's scaffolding favourites the child's learning of a specific mode of recalling events.

From a phenomenological perspective, besides, shared experiences are experiences whose subjective aspect is not singular, "for me", but plural, "for us" (Schmid 2014).

Finally, mother temporal talk is associated with TMT measure. Children with a better cognitive Theory of Mind are those whose parents use a greater number of temporal references and time sequences. According to literature, mother talk style, in preschool children, seems critical in developing an understanding of other mind that includes belief, cognitive processes and emotions, but the specific role of reminiscing has not been fully investigated (Fivush et al., 2006; Wellman, 2002).

Literature also show that use of temporal references in conversations allows us to grasp the dimensions of time and progression of events (Hudson, 2001). This ability could

also be useful for understanding the temporal sequences of a story (such as those of TMT) and for correctly deducing what happened to a person before, or in the past, with respect to a present situation. A study of Lewis & Osborne (1990), for instance, indicates that performance in the Theory of Mind tasks improves when time markers are used, maybe because them would children to understand the temporal sequence of the events. However, there is no agreement on the role of temporal linguistic cues in such tests (Wellman et al., 2001). Future studies are needed to explore the influence of the mother's temporal references use on the understanding of other situations or mental states.

Associations between measures at Time 2

First of all, there was found a positive correlation between linguistic abilities, tested through PPVT-R, and cognitive Theory of Mind (TMT). This data is in line with literature. A study of Nelson and colleagues (Nelson, Skwerer, Goldman, Henseler, Presler, & Walkenfeld 2003), for example, found a correlation between Theory of Mind and PPVT score in preschool children, and other research have highlighted the role of language in the development of the theory of mind (Astington & Jenkins, 1999; Cutting & Dunn, 1999; Rosnay & Harris, 2002). Language, in fact, represents the main tool to enter in the world (Nelson et al., 2003) and to understand the perspective of others. Therefore, further studies should be useful to clarify this association.

At Time 2 another correlation of TMT appears, in this case with the measure of Paternalistic Helping. The association, however, is negative. This result could be understand taking into consideration the fact that they are two tasks that generate a different cognitive commitment. Paternalistic helping task, in fact, requires the ability to understand the other person's goal is and the way to help in order to achieve it. The best

way to help, in that task, is to provide the object that fit better with the request, not necessarily the object that is verbally request by the experimenter. For example, if the experimenter asks for the plastic glass, with a hole in the bottom, to drink, the child could help paternalistically disregarding the verbal request and providing the plastic glass unbroken. This form of perspective help presupposes that the child knows the intention of the adult. The understanding is not, however, a cognitive understanding but a practice pre-comprehension of the object and of their use in the world. It is a phenomenological comprehension of the world. The intentions of others are meanings that the children know thanks to the fact that they both share the same consistent world (Zahavi, 2019). These intentions not necessarily involved a cognitive ability, such as theory of mind tests required. The negative association between TMT and paternalistic helping task seems due precisely to this different way to understand other and experiences, a cognitive or a phenomenological one. Consequently, this could explain the different performances of children in the present study.

At Time 2 emerged a positive association between the two prosocial indexes: Spontaneous helping and the number of positive peer nominations. This result appears to be in line with the literature: there is a relationship between the child's popularity among peers and his prosocial behaviour within the group (Denham & McKinley, 1993; Denham, McKinley, Couchoud, & Holt 1990; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006). In the present research, however, we didn’t consider a measure of prosocial behaviour towards peer group; research is necessary to better understand this topic.

Finally, also in Time 2 there have been found correlations regarding conversation indexes. As in Time 1, the elaborative talk of the parent is associated to parent's temporal talk, and to the child elaborative talk. Moreover, parent temporal talk correlates with both the child indexes. Child temporal talk, however, correlates negatively with the peer rating scale score; this result should be investigated in further research. Maybe it depends on the fact that these measures have involved different person: the conversation measure has involved the mother, while the rating scale is an affiliation index given by a classmate.

Longitudinal associations

As said before, at Time 1 and Time 2 there were not detected associations between the main interesting measures: Temporally Extended Self and prosocial behaviours. However, these correlations appear longitudinally, taking into account measures at both times of tests administration.

The Temporally Extended Self variable at T2 is associated with a cognitive measure and three social indexes at T1. It is associated with: verbal intelligence measure, Paternalistic Helping and Spontaneous Helping, besides association with peer rating scale. According to these important associations, a linear regression model was created to evaluate the predictability of language, temporally extended self, paternalistic helping and spontaneous helping at Time 1 on TES at Time 2. The linear regression model result show that the explanatory variables of the development of a temporally extended self are: verbal intelligence, paternalistic helping and spontaneous helping. Language and prosocial skills, at preschool age, predict the emerge of a sense of self over time.

This main result is in line with the developmental research that show the impact of social context and social interaction on the emergence of a self-awareness (Damon et

al., 1982; Kristen-Antonow et al., 2015; Meltzoff, 1990; Rochat, 2003, 2012; Trevarthen, 1999; Trevarthen et al., 2001; Zocchi et al., 2018). The other-consciousness is inseparable from self-consciousness (Reddy, 2008). Also, the other-consciousness is understood, in this case, as the awareness of other's needs. This finding is also in line with previous research in which preschool children recognize others and, engaging in social interaction find an opportunity for self-recognition (Brownell, Svetlova, & Nichols, 2009; Dahl et al., 2013; Dunfield et al., 2013; Kenward & Dahl, 2011; Meltzoff, 1990; Rochat, 2009; Warneken & Tomasello, 2007). However, further studies should better understand these results.

Longitudinal analyses on measures shown also others interesting results. Indexes of social affiliation are associated between Time 1 and Time 2. For example, receiving less negative nomination at T1 is linked to a higher score at peer rating scale at T2, or T1 higher score at peer rating scale are associated with more positive nominations at T2. Social affiliation between peer's group seems to remain stable over time.

Social affiliation is also associated to prosocial behaviours. Indeed, children receiving fewer negative nominations at T1 help spontaneously more at T2, and a better spontaneous helping at T1 is associated with higher score of peer evaluation at T2. Previous studies shown the same results: children who have greater social skills will be evaluated more positively by peers (Gottman, Gonso, & Rasmussen 1975; Greener, 2000; Hartup, Glazer, & Charlesworth 1967).

Mother-child conversation indexes are associated among them and with other measures. The child temporal talk, for example, is associated between time; the mother temporal talk is negatively associated with the negative nominations at T2 and positively with the cognitive theory of mind at T2. Mother elaborative talk is associated negatively

with the affective theory of mind at T2; this negative correlation should be better understood in future research. Preschool children are in a critical developmental phase and the ability to recognize other mental state could not been reached yet; mother's temporal cues might facilitate the acquisition of a theory of mind in subsequent years.

CHAPTER 6

CONCLUSION

The present longitudinal study explored the social origins of the Self. Our hypothesis was that, at this age, children's social competencies would be positively related to the acquisition of a Temporally Extended Self, both concurrently and longitudinally.

Our main aim was to examine the relations between the development of Temporally Extended Self, social competencies and social affiliation, within time points (first) and between time points (secondly). We adopted a longitudinal research to investigate the direction of the association between prosocial behaviours and Temporally Extended Self.

The present research has two strengths: it allowed us to look at the predictive effect of prosocial competence on later Temporally Extended Self and it integrated the analysis of helping behaviours with measures of social status within peer group. We also included in the study two classic measures of mental state knowledge that might have an influence on social competence.

Before presenting the main findings, there are preliminary results that deserve discussion. We observed, at least in part, stability across time regarding children's language, Self-Recognition, Temporally Extended Self, Spontaneous Helping, Paternalistic Helping, and Theory of Mind. These results support those of similar studies that demonstrated stability of individual differences in children's false belief understanding (Hughes & Dunn, 1998) and self-awareness over time (Povinelli, 1995, 2001; Zocchi et al., 2018).

The main aim of the study was to investigate the specific link between Temporally Extended Self and social skills. Findings within time points showed that, except for the

relations between helping behaviours and social status at Time 2, there were no significant correlations of helping behaviours and social affiliation with Temporally Extended Self.

Between time points, however, we found an interesting result: children who passed the DSR task in Time 2 obtained, at Time 1, a higher score on helping behaviours. Let's now consider the direction of the link between Temporally Extended Self and social skills. Our main results indicated that early verbal ability and social competences, assessed via Paternalistic Helping task and Spontaneous Helping task, significantly predicted later Temporally Extended Self-Awareness. These results support the causal relation between language, social competencies and the development of Temporally Extended Self-awareness.

Our findings are agreed with theories of developing self, which show the impact of social interaction on the emergence of self-awareness (Rochat, 2003, 2015; Rochat et al., 2012; Zocchi et al., 2018). Moreover, they are consistent with some evidence on developmental relations between children's early responsiveness toward social world and their later self-awareness (Kristen-Antonow et al., 2015): infants make use of their social world and social ability to form an understanding of who they are (Kristen-Antonow et al., 2015). According to the research aim, correlations support the existence of a relationship between the ability to recognize that "I am the same self that I was yesterday" (James, 1890) and some indicators of social status of the child within the peer group.

The results of the study are consistent with the idea that during the preschool years children would begin to perceive themselves as part of a social world, becoming sensitive to affiliation to the group and to the topic of potential social exclusion (Zahavi et al., 2015). The acquisition of a sense of personal continuity, or permanent self (Kristen-Antonow et al., 2015; Rochat, 2003; Zocchi et al., 2018), indeed, is associated with the

recognition by peer group. Furthermore, the Temporally Extended Self, related to a paternalistic help understood as the ability to predict which is the most functional object for achieving a goal, agrees with Raffoul's phrase "Familiarity with the world is familiarity with oneself" (2004).

The study offers an innovative contribution in highlighting a link between a diachronic sense of self and social competence. However, it is not without limits. Further studies should be including a higher number of participants, and doing so with preschool children could be difficult because of the easy mortality. The mortality of our participants did not allow us to add QUIT to analyses; future studies could include it as a parent/ teacher index of child behaviour. Given the higher mortality of preschool children with respect to school children, future research could consider this kind of participants in studying self-development and prosocial skills.

The present study contains several and different kind of measures, however it should be interesting to add more prosocial tasks, especially to assess prosociality towards peers. The presence of an affective person, like the mother in that case, might be enlarge to other tasks, like prosocial ones or Delayed Self Recognition task (see Zocchi et al., 2018). Future research should also better understand the contribution of mother's reminiscing style on the development of a temporally extended self-awareness and on prosocial behaviour and social affiliation.

To summarize, our results indicate that:

a) there is a link between preschool aged children's prosocial behaviours and Temporally Extended Self;

b) the association between prosocial behaviours and Temporally Extended Self is causal and goes from earlier social skills to later Temporally Extended Self;

c) the association between language and Temporally Extended Self is causal and goes from earlier verbal abilities to later Temporally Extended Self.

These findings are original yet consistent with previous studies. Our study provides an important contribution to the existing literature, since both self-awareness and social competencies are important for children's cognitive and social development. We believe these findings have implications for intervention and could therefore help to promote the importance of social context and social competencies in an educational perspective (Flook et al., 2019).

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