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Doctoral Thesis

Finding a secure base: Exploring relationships in childcare centre with the "Professional Caregiver Attachment Diary" for both research and practice

PhD Candidate
Alessia Macagno
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Tutor
Prof. Paola F. M. Molina

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INTRODUCTION

Every Ph.D. student at the end of his/her course develops his/her personal idea of what *do research* means. For me, doing research means contributing in any way to scientific development and the progress of society. Few people know that the first ideas on the scientific method and public engagement have very deep roots. More than two thousand years ago, around 400 BC, a Chinese philosopher named Mozi argued that before expressing any statement or publishing any doctrine, some standard of judgment must be established. He said that every theory or argument must pass three tests to be accepted: (1) it should be based on the evidence of past pronouncements of the ancient sage-kings, (2) it must be verified by "the eyes and ears of the common people"; and (3) it has to be applied to society and it must benefit the majority of the population (Mozi, 2011; Stegeman, 2011).

Are these conditions, which are over 2.000 years old, so far from the norms that regulate scientific research today? Now as then, in order to establish the validity of any new hypothesis, researchers have to evaluate its theoretical basis on the available literature, its verifiability by appropriate experiments or studies, and the situations to which it can be applied and useful. And like any other research, obviously also this P.h.D. project followed these conditions and is particularly attached to the latter one: to apply the research to society.

This doctoral project is my master's thesis project continuation. My topic of interest is the attachment relationship in childcare centre, so not between mother-child as one might imagine when talking about "attachment", but on the relationship that is built between the child and the professional caregiver in non-maternal context of care.

Why be interested in this topic? What is the important aspect of this research area? How can better knowledge contribute to social and cultural development and public engagement?

We have to start from the roots, that is, from social changes that continually involve our society. Indeed, the second post-war period leads to substantial economic and social changes in the Western world: industrial development brought on strong demand for female labor, which consequently led to a greater demand for childcare services. If in the past children were raised mainly by non-working mothers, nowadays most women have stable jobs and so that child care is increasingly shared with different types of childcare services. Cultural changes also contributed to changing the role of women: a great demand for women's rights meant that women's work was seen positively and necessary, especially to acquiring personal autonomy in a less and less patriarchal society.

Thereafter, children spend more and more time at childcare services; imagine a common Italian family, in which both parents work full-time, and then the child could spend even 8 hours a day at the childcare centre. At this point, obvious questions arise: is the childcare centre good or bad for children? May it interfere with the establishment of secure mother-child attachment? Nowadays, what is the role of professional caretakers? Therefore, parents, psychologists, pedagogists, and researchers have begun to wonder about the importance of extra-family care and caregivers, such as professional caretakers in childcare centres.

This topic is extremely interesting and important for both research and parents, not only because it is a new issue, but also because it has important implications for child development, for families, and professionals working in childcare services.

All the aspects and queries raised below will be analyzed in the following chapters of the thesis. In the first chapter, Bowlby and Ainsworth's first theorizations about attachment are explored, which focused mainly on how and when the child builds an attachment relationship with the mother. Their studies provided the basis for tools that assess the attachment relationship between child and caregiver, such as the *Strange Situation Procedure* (SSP), the *Attachment Q-Sort* (AQS) and the *Parent Attachment Diary* (PAD).

In the second chapter, the figure and role of the professional caregiver at the childcare centre are widely described and discussed. The questions the Literature tries to answer are: can the professional caregiver be considered an attachment figure for the child? what kind of relationship is built between the child and the caretaker in the childcare centre?

From the third chapter onwards, the research part of my PhD course will be presented. This current doctoral project is part of the growing literature on the relationship between children and professional caregivers and child care practices, aimed to create a method and tool that would fill the gaps in this research and educational fields. The project consisted of several studies in which we adapted and used the new tool *Professional Caregiver Attachment Diary* (PCAD, or in Italian *Diario dell'Attaccamento all'Educatrice/Educatore*) in order to follow the early attachment developments in the new context of care.

This project had two main objectives, one focused on practical and educational aspects, and one more research-oriented. Specifically, they are: (1) to offer to professional caregivers a method and a tool to observe and support the transition to the childcare centre, as in-service training (*practical* purpose); (2) to study the formation of children's

relationships with professional caregivers during the earliest months into the childcare centre, from a process-oriented perspective (*research* purpose).

Therefore, this project aimed to analyze, through a longitudinal study, how the child-caregiver relationship is built and develops over time, for both research and educational purposes. And I want to emphasize this last sentence: *for both research and educational purposes*. Because the PCAD is a tool used to contribute to the literature in this field, but it was designed especially *for* professional caregivers and *together with* professional caregivers.

And so, going back to the beginning, doing research for me (and for my tutor, of course) means also having a public engagement. Research like this doctoral project can bring to relevant interventions for childcare services and activate new educational practices, with the purpose of contributing to scientific development and the progress of society.

SECTION I

Theoretical Background

CHAPTER 1

THE ATTACHMENT THEORY

The importance of the relationship between the child and his/her adult reference figures is currently one of the topics of greatest attention and interest for many disciplines: psychology, pedagogy, medicine, pediatrics and psychiatry are all areas that, some more and some less, refer to the attachment theory to fully understand the health of the person. Already in the 1930s, some studies (mostly independent) began to prove the pathological effects on child development of prolonged institutionalization and frequent changes of the reference figure. With the rise in popularity of attachment theory, much attention has been paid to the effects of parent-child relationship on child development. In recent years, several studies focused on the relationship between attachment and mental health issues such as anxiety (Groh, Roisman, van Ijzendoorn, & Baskermanns-Kranenburg, 2012; Lawrence, Raib, & Klam, 2019), depression (Dagan, Francompé, & Bernard, 2018; Spruit et al., 2019), eating disorder (O'Shaughnessy, & Dallos, 2009) and externalizing behaviors (Fearson, Baskermanns-Kranenburg, van Ijzendoorn, Lapsley, & Roisman, 2010).

In this first chapter, the attachment theory will be widely discussed, from its origins in the context of hospitalization and institutionalization to the tools created to evaluate the relationship that mother and child establish. Bowlby's first theorizations are explored, which highlight the importance of early attachment experiences, focusing mainly on the mother and the important function of attachment. Then, Ainsworth observed that different children responded differently to their mother during stressful situations, so she postulated different behavioral patterns of child attachment: secure,

avoidant and resistant. This categorization of attachment behaviors provides the basis for many tools that assess the attachment relationship between the child and his/her caregivers, such as the *Strange Situation Procedure* (SSP), the *Attachment Q-Sort* (AQS) and the *Parent Attachment Diary* (PAD). These last two are of particular interest to us as they will be included in the research part of this thesis project.

The contents of this chapter give the theoretical basis of attachment on which a growing volume of literature has develop and on which our research project is based.

1.1. The origins of Attachment Theory

1.1.1. John Bowlby: pioneer of attachment theory

Bowlby was a British psychologist and psychoanalyst and was the leading theoretician of attachment theory. After working with James Robertson observing hospitalized and institutionalized children who were separated from their parents, in 1950 he was commissioned by the World Health Organization (WHO) to write a report on the mental health of homeless children in postwar Europe. In this report, he collected the studies that analyzed orphans' needs, which revealed the influence of inadequate maternal care on child personality development. Bowlby's final report was published in 1951 as a monograph entitled "Maternal Care and Maternal Health", which was translated into 14 languages, with sales of 400,000 copies; it had an enormous influence on various disciplines and theoretical constructs (Bowlby, 1989; Bretherton, 1992).

Bowlby's major conclusion was that to grow up mentally healthy "the infant and young child should experience a warm, intimate, and continuous relationship with his mother (or permanent mother substitute) in which both find satisfaction and enjoyment" (Bowlby, 1951, p. 13). With this statement, Bowlby disagreed with the scientific

consensus of his time and his new theory raised a storm at the British Psychoanalytic Society. Bowlby stated that the most important factor in child development was the loss of the specific maternal figure, while the psychoanalytic view at the time affirmed that love for mother derived from sensuous oral gratification, and that the dependency from the mother was based on secondary reinforcement (social learning theory) (Bretherton, 1992). The "secondary drive theory" stated that the "dependence" of a personal relationship, considered a secondary drive, derives from *hunger*, which is a primary drive; according to Freud (1938), love borns from the satisfied need for food. The child's behavioral pattern was limited to mere nutrition, ignoring the need for closeness to the mother as a behavior with its internal motivation and distinct from the need of eating. Bowlby was not satisfied with this psychoanalytic view, that did not match with the experiences he had with children (Bowlby, 1989).

Bowlby emphasized that these psychoanalytic theories derived from an "assumption", which means there were no observations or experiments that could prove it. On the contrary, his research method was ethological, since his theory was based on direct observation of behavior (Bowlby, 1989). Then, Lorenz's and Harlow's studies influenced and get stronger Bowlby's theory that the bond with mother is not simply a consequence of feeding.

Lorenz's observations (1950, reported in Bowlby, 1989) showed that in some species of animals, such as ducks, a strong bond develops towards the reference figure without the baby receiving food or other rewards. These small birds are not fed by their parents, as they feed autonomously by catching insects, but follow them anyway; after the baby birds hatch out of their eggs, they tend to follow any moving object (the parent, or a human being, or a ball) and then they will prefer it to others: this process is known

as *imprinting*. Bowlby wondered if attachment in humans develops similarly, that is, as a consequence of an instinctive behavior (Bowlby, 1969/1999).

Moreover, the study of the ethologist Harry Harlow was also very important, which largely defeated the "secondary drive theory". Due to an epidemic in his laboratory, Harlow had to separate young rhesus monkeys from their mothers; after some time, he noticed the monkeys get obsessed over some objects and protested when someone tried to separate from them. Harlow was very interested in these atypical behaviors and repeated the situation in the experiment that became famous. He separated rhesus monkeys from mothers from birth and then the puppies were put in cages with two "maternal substitutes" which were dummies that imitated monkeys: one dummy was covered with a soft cloth and the other one was just metallic. In half of the cages, a baby bottle with food was placed under the metal dummy, and in the other half, the bottle was placed under the soft dummy. The baby monkeys showed in all experimental conditions a marked preference for the soft dummy, whether they are fed from this, or whether the bottle was on the metal dummy. Therefore, Harlow concluded that the pleasure of contact, and not food, activates attachment behavior; the physical closeness is an innate need of babies, contrary to the idea that the bond would be determined by the reinforcement associated with the satisfaction of need to be nourished (Pierrehumbert, 2009).

With his experience and influenced by the ethological method, Bowlby elaborated the concept of *attachment behavior* as an independent dimension, separated from the dynamics concerning food or sex. In fact, he will never speak about "needs", "impulses" or “drives”, but he will always refer to *behavioral systems*. Bowlby emphasizes for child development the importance of a bond with a specific person that takes care of him. The author describes the attachment behavior as "that form of behavior that arises in a person

who achieves or maintains the closeness to another person, clearly identified, considered able to face the world adequately" (Bowlby, 1989, p. 25).

1.1.2. Definitions

In the first volume of the trilogy *Attachment and loss* (1969), Bowlby defined the concepts of his theory, distinguishing between *attachment behavior*, *attachment behavioral system,* and *attachment bond/relationship*.

Attachment behavior, as explained above, is defined as any form of behavior that aims to achieve and maintain proximity to a differentiated and preferred figure. Attachment behavior is organized in a cybernetic sense, i.e. it is activated in certain circumstances and deactivated in others. It is especially evident in infancy, and especially in episodes of distress, e.g. when the child is scared, tired, or sick; on the other hand, it is reduced when the child receives comfort and care. Child attachment behavior is mainly represented by signals such as crying, calling, smiling, babbling, grasping, suctioning and - when the motor system is more developed - the active approach to the preferred figure. Already at an early stage of development, these activities have the purpose to reach the proximity to the reference figure (Bowlby, 1999). Data support the innate component of such behaviors: blind and deaf children show typical signaling behaviors such as crying, laughing and babbling, showing their innate and non-learned nature (Simonelli & Calvo, 2002).

On the other hand, the *attachment behavioral system* is described by Bowlby as one of the systems that regulate child behavior: it is the result of the interaction with the environment, and especially the interaction with the caregiver. The child, through the self-representation and the representation that he has about his attachment figure,

maintains a certain type of relationship with the caregiver (Bowlby, 1989). So the child, through his experience, behaves according to the internal objective searching for security, and the external objective of exploration (Simonelli & Calvo, 2002).

Lastly, Bowlby (1989) underlines that, for the theories of his time, the concept of "attachment" was wrongly linked to that of "dependency". The role that parents have to provide a secure base for the child was inadequately conceptualized. The term "dependency" had a negative meaning, which was associated with early babyhood; therefore, attachment behaviors shown in later years were demonized as "regressive", giving it a negative connotation. Actually, Bowlby (1969/1999) clearly distinguished *attachment* and *dependent* behaviors. He observes that during the first months of life the child is strongly dependent on the mother, but he/she is not yet attached to her, what happens during the following months. Therefore, while the *dependency* is very intense at birth and decreases over time, vice versa the *attachment* is structured and is evident only after six months of age. Moreover, Bowlby (*ibidem*) emphasizes another important reason to specify the difference between these two concepts: although both behaviors tend to maintain the proximity with another person, *dependency* has a derogatory meaning in terms of relationship, whereas *attachment* is considered a positive and safe condition; when family members are attached to each other, it is positive, whereas a detached person in his personal relationships is a negative condition.

1.1.3. The function of attachment behavior

Bowlby attributes to attachment behavior a biological function of protection: the child “attaches” to the available adult figure that can take care of and protect him/her (Bowlby, 1969/1999).

From an evolutionary perspective, the biological function of a particular behavior is the consequence of certain advantages in the course of evolution: in the case of attachment behavior, the most probable hypothesis is that its adaptive is *protection* from predators. In favor of this hypothesis, Bowlby explains that in many species the chances of survival increase when the animal stays aggregated to other members of the group, whereas it is more probable to be attacked if alone; moreover, attachment behavior arises with maximum intensity in emergency situations (Bowlby, 1999).

Therefore, the attachment behavior has the function of guaranteeing the well-being of the child, his protection from dangers and internal tensions. The evolutionary advantage of child closeness to the mother could be the greater probability of survival. Meanwhile, within this protective relationship, the child has the opportunity to explore and learn the skills necessary for his/her protection, becoming more and more independent from parents (Bowlby, 1999). The essence of attachment-care interactions between the child and his/her caregiver is to compensate and integrate the insufficient child's motor, communicative and social skills, capacities that will be learned as long as he is protected (Ainsworth, 1967).

The first theorizing on attachment focused on the mother-child relationship. Bowlby proposed the term "monotropy", which means the tendency for infants to establish a strong bond to a principal attachment figure, and it was interpreted as the ability of the child to establish a *single* bond, basically with the mother. In fact, monotropy has evolutionary advantages and is a tendency of human infants. First of all, monotropy would lead to establishing a special bond with a specific person who becomes the figure responsible for child care; in this way, the child would have less chance of being neglected and more chance of survival. Furthermore, evolutionary biologists suggest that parents' investment in offspring influences monotropy since they invest in

gene transmission. In general, the biological mother is the one who invests more in the child and so tends to establish a stronger bond with him (Marvin & Britner, 1999).

Referring to a competent adult, the child can trust on a series of resources and protection; for this reason, Bowlby also underlines the importance of the *quality* of maternal care, which is the basis of security and trust to caregiver's availability (Simonelli & Calvo, 2002). The organization of child attachment behavior is brought on *how* parental figures take care of him/her, especially during infancy (Bowlby, 1989).

1.1.4. Balance between Attachment and Exploration

As explained above, the attachment behavioral system groups together child signaling and approach behaviors, which have the objective of maintaining contact with the caregiver. However, Bowlby distinguishes another behavior: the *exploration*. Parallel to the attachment behavior, we find an antagonistic behavioral system, the explorative one (Bowlby, 1999).

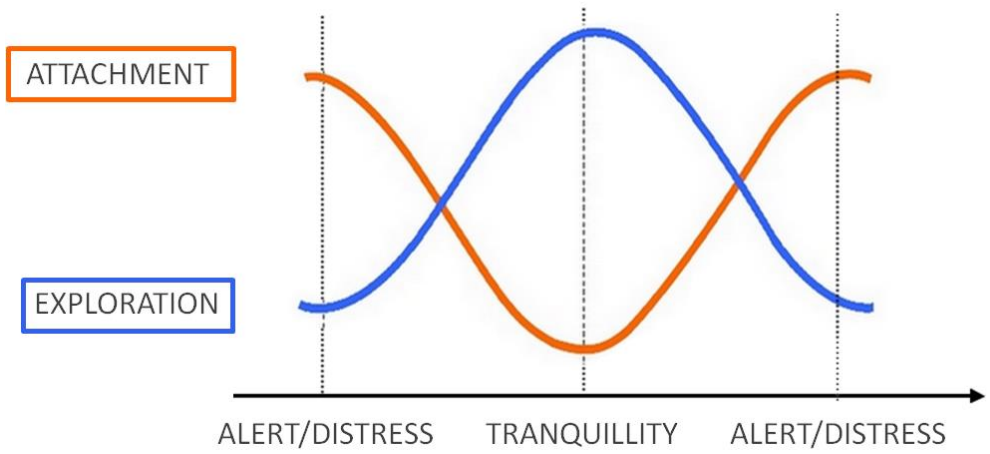
Ainsworth (1967) observed that once developed the main motor skills that get the child able to move more autonomously, he tends to move away from the reference figure, exploring new objects and people. The child often looks at the caregiver, sometimes he comes back to her, as if he needs to make sure she is still there. But the exploration behavior can be stopped if, for example, the child gets scared, gets hurt, if the caregiver goes away or goes out of the child's sight, or in any other distressed situations. In these cases, the exploratory behavior is inhibited, and the attachment behavior is reactivated: in other words, the child comes back to the caregiver or starts crying.

It is evident that there is a dynamic balance between the attachment system and the exploratory one: when the child feels secure, the attachment behavior is deactivated

(but not completely) and the exploratory one is activated, which allows the child to open his eyes to the surrounding spaces. These two systems are activated and deactivated in a specular way (Pierrehumbert, 2009) (see *Figure 1.1*).

This alternation between attachment and exploration is closely linked to the "secure base" concept: when the child feels protected and his/her proximity needs are satisfied, he/she can deactivate the attachment system to activate others, equally important for his development (in this case, the exploratory one). In other words, when the child feels safe and protected by the reference adult, he/she can spend his/her energy to explore (Simonelli & Calvo, 2002).

Figure 1.1. Balance between Attachment and Exploration. Image source: Pierrehumbert, 2012



Therefore, Bowlby (1989) and Ainsworth (1978) emphasize especially the parent's main role: providing a *secure base* for the child. The authors stress the importance of caregivers' *sensitivity* embracing child needs and responding adequately. It is precisely this sensitivity, together with the quality of maternal care, that promotes a secure base from which the child can feel protected and would leave to explore. About that, Bowlby wrote: "In childhood and adolescence, we see them [the children], gradually

growing, to venture further and further away from the base and for longer periods of time. The more they trust their base is secure and ready to respond if invoked, the more they take it for granted." (1989, p. 11).

1.2. Ontogenesis of attachment in infancy and early childhood

Bowlby's attachment theory was born from "protest", "despair" and "detachment" reactions, and from negative behaviors due to the absence or loss of the specific maternal figure. However, science demonstrates the importance of studying the normal functioning and condition as a reference, to better understand its atypical functioning. For that reason, Bowlby and his colleagues needed to study the early development of attachment bonds in children with normal development in their families. Studying the normative functioning of the attachment bond in the course of development, one can be able to understand the origin, nature and consequences of this bond (Marvin & Britner, 2008).

The simplest behavior is the *reflex*, a stereotyped behavior activated by a specific stimulus, which often uses environmental feedback during its execution (Bowlby, 1969/1999). Then, Ainsworth (1967) identifies some more complex behaviors ("fixed action patterns") such as *pressure*, *crying* and *smiling*, which, even if seem simple and primitive, take on complexity and sense in basic attachment behavior: these behaviors aim the closeness to the attachment figure, who will respond in order to satisfy child's needs; e.g. the crying of a hungry newborn can activate caregiver's response to bring him closer to the breast.

A more complex pattern of behavior that Bowlby (1969/1999) describes is the "goal-corrected basis" scheme, that is when the subject is able to choose from a range of behaviors the most appropriate to reach a predetermined goal. A scheme based on goal-

corrected behaviors is more complex, since the subject must have a dynamic representation of himself and the environment, and in particular of the object or person towards which his behavior is directed. To describe this type of representation, Bowlby uses the term "Internal Working Models" (IWMs), that are flexible schemes the person uses to understand and predict relations with the context, to constitute complex behavioral sequences to reach the goal; e.g. if the child wants physical contact with the caregiver, he/she will activate a behavioral sequence and select alternative behaviors that can reach the specific result, as crying or babbling, based on the feedback received.

1.2.1. The ontogeny and development of attachment

About the attachment ontogenesis, Bowlby (1969/1999) and Ainsworth et al. (1978) proposed four phases in the development of the attachment behavioral system.

PHASE I: Pre-attachment, birth - 3 months

Orientation and signals without discrimination of figure

From birth to around 8/12 weeks of life, the child is not able to distinguish people from one another, but he/she reacts intensely to human contact. Despite the relatively scarce discrimination, the newborn already manifests behaviors-signals able to elicit the interest and care of other humans, in order to increase closeness, physical contact, nourishment and human warmth. For example, around four weeks of life, the child is able to respond with a smile to human faces, evoking the smile in other people; then, the more the mother responds with a smile, the more the child will continue to smile (Marazziti et al., 2008).

The newborn is particularly responsive to other humans, but the main caregiver is primarily responsible for maintaining closeness and contact with him/her. If caregiver

behaviors and responses are in synchronicity with infant attachment behavior systems, stable interaction patterns will be established.

PHASE II: "Attachment in making", 3 - 6 months

Orientation and signals directed toward one or more discriminated figures.

The transition from Phase I to Phase II is gradual. In child psychophysical development, behavioral patterns become more and more complex and linked over time. If in Phase I the caregiver is who provides the conditions to stop or elicit a specific behavior in the child, during Phase II is the child who acquires that control. For example, if giving to a 2-month-old baby a bottle or the breast is a stimulus to open the mouth, at 5 months the baby will actively stretch his hands towards the mother's breast to be fed. That because means and goals start to be differentiated, and the baby has a more varied range of behaviors. Having more control over the interaction and more complex behaviors, in this phase the child tries to actively interact, rather than respond passively (Ainsworth, 1967).

Furthermore, at this stage, the child is increasingly interested in maintaining attachment-care social interactions with the main caregiver and begins to better distinguish him/her from other people. Around the third month, the newborn's differentiation becomes evident, as he/she directs specific attachment behaviors just to familiar caregivers: he/she discriminates more when looking and listening, reacts differently to the caregiver's voice, raises his/her arms to be picked up, cries differently if the caregiver leaves and stops crying when he/she came back, etc. (Marazziti et al., 2008).

PHASE III: “Clear cut” attachment phase, 6/9 months - 2 years of age

Maintenance of proximity to a discriminated figure by locomotion and signals

At this phase, the consolidation of a complete and selective attachment bond begins, the child clearly shows a marked preference for a particular caregiver (Bowlby, 1989).

This phase is characterized by important motor, cognitive and communicative changes, as well as significant changes in behavioral patterns organization.

The most important change is the beginning of locomotion: the child better controls the closeness to the caregiver and can move more freely and explore the surroundings. According to Ainsworth (1967), the child shows new attachment behaviors, such as greeting his mother differently when he sees her, following her differently when she moves away, using her as a secure base for exploration, and coming closer to her in situations of fear or distress.

Another important change that characterizes Phase III is the development of cognitive abilities. According to Bowlby (1969/1999), the child begins to have an internal image of the set goal he/she wants to achieve: he/she is now able to elaborate a plan, select the appropriate behaviors, execute the plan to achieve the goal and possibly change it, depending on feedback received. Organizing behavior on a goal-corrected basis means that the child has an internal image of the attachment figure, that is independent and separate from his/her experience, what is called the "object permanence". However, the child is not yet able to understand that the attachment figure has its own perceptions and objectives (the “Theory of Mind”).

Concurrent with the motor and cognitive changes, we can find also important communication development, both verbal and non-verbal. Communication signals acquired during this phase became more complex ("goal-corrected"), such as requesting

or rejecting objects/actions, attracting or maintaining the attention of others, or attracting join attention to share an experience with others (Marvin & Britner, 2008).

Summing up, locomotion development, object permanence and the ability to organize plans based on goal-corrected behaviors bring the child a greater ability to explore and to interact with the surrounding environment (physical and social) and learn its "rules".

Another change that characterizes Phase III, and that deserves separate attention, is the *wary* behavior system. As mentioned above, the newborn is initially inclined to respond to human stimuli, while between 6 and 25 months old he/she tends to be wary of unfamiliar people (Marvin & Britner, 2008). This diffidence is an evolutionary mechanism involved in the consolidation of child's attachment: in fact, the child tends to get closer to the primary caregiver(s) and to move away from strangers, an adaptive behavior that allows him/her to limit the dangers of exploration, since he/she is not yet able to predict who and what may be dangerous (Bowlby, 1969).

Based on changes observed and described above, Bowlby (1969/1999) and Ainsworth (1967) identified 13 relatively complex patterns of behavior that the child manifests to the attachment figure at the end of Phase III (the first 7 are already developed during Phase II): stop crying when the caregiver tries to comfort the child; crying when the caregiver leaves; smiling at visual stimuli; different vocalizations to the caregiver; selective visual and postural orientation towards the caregiver; climbing on the caregiver with the aim of physical proximity and human warmth; approaching and searching for caregiver proximity; beginning of the exploration; differential approach to the caregiver on reunion or when the child is distressed; different ways of following the caregiver when he leaves the room; use of the caregiver as a secure base for exploration; approaching the caregiver as a safe haven when the child is alarmed; reaction of hiding the face (e.g. in

caregiver's lap); different ways of clinging to the caregiver in case of fear, illness or distress.

Therefore, during Phase III, new infant's developments and their balance completely arise and results in what Ainsworth et al. (1978) defined as the "sign of recognition" of the attachment bond.

PHASE IV: Formation of a goal-corrected partnership, 3-4 years old (and on)

Implications of the partnership for the organization of attachment behavior

During this last phase, the attachment system organization still changes: closeness and physical contact needs decrease, even if this does not mean that the child is less attached to the caregiver. At this age, the child begins to have a representation of the coordination of his plans with those of the caregiver. In the previous phase, the child was able to think separately about his own plans and those of others, but he/she is still unable to operate on them simultaneously; but about 3-4 years of age, the child can reasoning in a non-egocentrically way and so can understand the causal relationship between his own plans/goals and those of the caregiver (Marvin & Britner, 2008). This is a big step for the child.

Marvin (1977) hypothesized that during preschool years the child can "cooperate" with others, i.e. that he/she is able to inhibit attachment behavior and can include the caregiver's plans in his own in order to reach his/her proximity. In this phase, the development of communication skills is fundamental: when linguistic communication is more complex, it is more likely that the child and the mother will change their goals or plans to each other, to integrate their goals or plans with those of the other.

Child's non-egocentric behavioral system, that is now simultaneous on his own perspectives and those of others, has important implications on the attachment formation process; Marvin (*ibid*.) suggested the attachment is formed by the development of five skills: 1. the ability to recognize that the attachment figure has his own thoughts/objectives/plans/feelings; 2. ability to distinguish that the child and the caregiver have different points of view; 3. ability to infer on what and how could affect caregiver's objectives and plans; 4. ability to assess cooperation; 5. ability to influence caregiver's objectives/plans.

Thanks to these skills, at 4 years old the child is more independent on the caregiver's physical contact; that because the child's IWMs (Internal Working Models) allow maintaining cooperation with the attachment figure. That means that child's goal is no more the simple physical proximity, but is *having a shared plan with the caregiver for this proximity*. This does not mean that children, when are 4 years old, do not want physical contact with their attachment figure, but it means that attachment behavior has been organized in a new way; so that the child realizes that the relationship with the caregiver is continuous, regardless of physical proximity, because the most important thing is caregiver's *availability in the case of need*. In fact, at this age, most children are less affected by short separations, especially when they had discussed with the caregiver a "plan" about the separation and the reunion (e.g. "Mom now goes to work, but later I'll come back and pick you up and then we'll go home together") (Marvin, 1977). Obviously, however, the need for physical proximity with the attachment figure increases when the child is distressed, so the attachment behaviors are activated and he/she returns to the safe haven (Marvin & Britner, 2008).

Bowlby (1969/1999) initially suggested that Attachment develops according to these four phases described above, and then should stop at "goal-corrected partnership" (Phase IV). However, the attachment behavior system is maintained throughout life, changing continuously and becoming increasingly sophisticated, abstract, and less dependent on proximity. Anyway, the parent-child relationship always lasts close, despite age and distance, and attachment-care interactions continue to be organized according to cooperation regulated by the most sophisticated objectives. At a later time, even Bowlby stated that attachment develops over time also in adulthood; even for adolescents and adults, the main purpose is the *availability* of the attachment figure, rather than the physical proximity. Such availability means trusting that communication with the caregiver is always open and that the attachment figure can respond in case of need (Marvin & Britner, 1999).

1.3. Mary Ainsworth and the *Strange Situation Procedure*

Mary Dinsmore Salter Ainsworth was, together with Bowlby, one of the main theorists of Attachment; her observations constituted the first empirical study of this topic.

After graduating in psychology in Toronto, Ainsworth followed her husband to England where she worked with Bowlby (from 1950), who at that time was looking for a collaborator to analyze Robertson's data on the consequences of long-term hospitalization on children. Thus, a long collaboration began, which greatly influenced the subsequent developments of attachment theory (Pierrehumbert, 2009).

When she was in Uganda, between 1954 and 1955, influenced by Bowlby's theories and Robertson's studies, Ainsworth observed children in situations of separation

from their caregivers. Based on the ethological method criteria, her observations were done in the natural environment and in everyday situations. By doing so, Ainsworth could observe child attachment signals and subsequent maternal responses, trying to identify and assess the attachment relationship and its characteristics. At the beginning, she distinguished three types of attachment patterns: *securely attached* (infants cry just a little and actively explore the surroundings in the presence of mother); *insecurely attached* (infants cry frequently, even with their mothers, and explored little); and *not-yet attached* (no differential behavior to the mother) (Ainsworth, 1967).

1.3.1. The Strange Situation Procedure

When she came back to the USA, in Baltimore, Ainsworth decided to give more empirical support to what she had been observed in Uganda (Ainsworth et al., 1978). Thus, she started the *Baltimore project*, a longitudinal observational study involving 23 families: at the beginning, the observations took place in the family environment, but when the children were 12 months-old, Ainsworth preferred to observe them in a more controlled context, as a laboratory (Pierrehumbert, 2009).

At this point she proposed a new experimental situation and procedure to observe and assess the mother-child attachment relationship: the *Strange Situation Procedure* (SSP), an observational method in which parent-child relationship is observed in a laboratory, that is an unfamiliar and more controlled context. The laboratory facilitates the observation of certain attachment behaviors that would otherwise be less visible in the natural environment (Ainsworth et al., 1978).

The Strange Situation is a 20-minute miniature drama, divided into 8 episodes of about 3 minutes each. The procedure consists of gradually cause to the child slight stress,

that can elicit attachment behaviors. At the beginning, mother and infant are introduced to a laboratory playroom, and the initial observational focus is on how the child explores the surroundings and his/her interactions with the mother. Later, they are joined by an unfamiliar person: while the stranger plays with the baby, the mother leaves briefly the playroom and then returns. In this case, the focus is on how the child interacts with the stranger and his/her reaction to the mother's separation and return. A second separation ensues during which the baby is completely alone, in which his/her exploratory/playing behavior in an unfamiliar place is observed. Finally, the stranger and then the mother come back, and the focus is on the child's reaction to the reunions (if he/she gets calm, interacts with them, accepts physical contact, etc.) (Ainsworth et al., 1978; Bretherton, 1992).

Baltimore study's observations showed many different reactions to separations: some children were surprisingly angry when the mother came back to the playroom, they cried and wanted contact but also kicked or swiped the mother; another group of children seemed to avoid the mother when reuniting, even if they had searched for her while she was gone; others (most of them) were simply seeking proximity, interaction, or contact with the mother.

Comparing this laboratory data with those collected at home revealed that infants who had been ambivalent or avoidant toward the mother in the SSP had a less positive relationship with her at home (Ainsworth et al., 1978).

Ainsworth's observations in Uganda and Baltimore showed and defined new concepts about the mother-child relationship, attachment behavior and the importance of maternal care, becoming an integral part of Bowlby's theory. In particular, the latest observations provided decisive support in showing attachment as the basis of the

relationship. This would probably not have been possible without the *Strange Situation Procedure*, a structured, quantifiable and reproducible evaluation.

1.3.2. Attachment Patterns

Based on the Baltimore study, Ainsworth was able to refine the three types of attachment behavior previously detected during the project in Uganda, defining three main patterns of attachment:

- **Anxious-Avoidant Insecure** attachment (type A): the child does not seem to be distressed by parent separation. It seems he/she does not need to be soothed in situations that theoretically should elicit stress, ignoring or avoiding the parent when comes back, and giving the impression of being independent. The child explores the surroundings not using the parent as a "safe haven", seems to be indifferent to his/her presence, and shows an easy approach to the stranger (Pierrehumbert, 2009).

  Ainsworth describes these children as “discouraged” that parents could respond appropriately to their needs. On the contrary, the child expects to be rejected, which is why he/she tries to become emotionally self-sufficient (Bowlby, 1989).

  For this reason, the avoidant child tends to inhibit attachment behavior, thereby further activating the exploration system (Marvin & Britner, 2008). However, even if the child does not seek proximity to the caregiver, at the same time he/she does not stay too far (compared to the child with secure attachment). Moreover, even though he/she often interacts with the stranger, seems still

socially inhibited; he/she maintains distance both from his mother and the stranger (Pierrehumbert, 2009).

This behavioral pattern could be the result of parents' *rejecting attitude* in response to the child's needs; the child bases his/her negative expectations on repeated rejections (both physical and emotional) to his/her requests for comfort (Ainsworth et al., 1978; Bowlby, 1989). By doing so, the parent neutralizes the child's requests, preventing the child from seeking tenderness and attention, which will not be considered. Consequently, the child avoids expressing his/her emotions and tries to control them, trying to show independence from the caregiver (Pierrehumbert, 2009).

- **Secure** attachment (type B): the child is distressed by parent separation, but welcomes with open arms when he/she comes back. During the reunion, the child greets him/her or, if particularly stressed, searches for proximity and is easy to soothe. Afterward, he/she continues to explore the surroundings. This is exactly what Bowlby means as a "secure base" (Ainsworth et al., 1978, Pierrehumbert, 2009).

  The child trusts that the caregiver is available, expecting an adequate response from him/her in case of need. Then, the child has a positive expectation, being sure that he/she will get a loving response from the reference figure (Bowlby, 1989).

  In this type of attachment pattern, the child's strategy is a dynamic balance between attachment and exploration behavior, using the attachment figure as a secure base (Marvin & Britner, 2008). The child with secure attachment searches for proximity and contact with parents more intensely than others, which reflects the tendency to use the caregiver as a source of comfort. Despite the search for

closeness, however, the secure child is also who explore more and is more sociable with the stranger during the SSP (Pierrehumbert, 2009).

This behavioral scheme is the result of parent availability, especially during the child's first years of life. The parent is available (both physically and emotionally) and ready to respond adequately to the needs of the child, being sensitive to signals when he/she seeks protection and comfort (Ainsworth et al., 1978, Bowlby, 1989).

- **Anxious-ambivalent** or **resistant** attachment (type C): this type of child is very upset by parent separation, showing anxiety and distress. During the SSP, when the caregiver comes back, the child seeks comfort, but is ambivalent: he/she wants to be picked up or seeks parent proximity, but then immediately want to go away, showing also anger or aggressive behaviors. The child seems inconsolable and very dependent (Ainsworth et al., 1978, Pierrehumbert, 2009).

  Ainsworth describes this type of child as insecure about parent response: he is not sure that the parent will be always available, actually predicting a hostile response. Uncertainty leads the child to be anxious in critical situations, requiring an intense closeness to the attachment figure and limiting his exploratory behaviors (Bowlby, 1989). Therefore, resistant children amplify both attachment and diffidence behaviors (Marvin & Britner, 2008).

  This scheme may be caused by an uncertain and unpredictable parent availability. The caregiver is sometimes available and sometimes not, sometimes is emotionally indifferent and sometimes is excessively involved, and could also use threats of abandonment or separation as means of control (Ainsworth et al., 1978, Bowlby, 1989). Then, the child learns to exaggerate his reactions, in order to attract and maintain caregiver attention. This type of attachment behavioral

system lasts strongly activated, mixing anxiety, sadness and hostility: in fact, the child shows strong requests, but at the same time does not let easily be picked up by the caregiver, because he/she does not receive really comfort from him/her (Pierrehumbert, 2009).

1.3.3. Mary Main and the "Disorganized" attachment

In Ainsworth's attachment classification system (1978) there were two types of insecure attachment patterns: the avoidant and the ambivalent/resistant one. However, following this classification, many authors found that a certain number of children observed with the SSP were not possible to classify as A, B, or C categories. Often, these children were necessarily coded to one of the existing classifications or were just "unclassified". Then, Mary Main and colleagues (Main, Kaplan & Cassidy, 1985) wondered if these children had common characteristics; actually, these children showed a particular attitude when parents came back during the SSP: they seemed confused, disoriented; freeze up as they were worried and dazed; in some cases, behaviors' temporal sequence was disorganized, e.g. a strong avoiding attitude was followed by a strong search for proximity; approach movements may be incomplete.

Then, Main and Solomon (1986, cited in Main et al., 1985) proposed a fourth category: the *disorganized* (or *disoriented*) attachment (Group D), which results in a third insecure attachment pattern.

In a child with a disorganized attachment, a collapse of behavioral strategies occurs, since the behavior is not coherent but contradictory; in fact, he/she would like to approach the parent, but at the same time moves away from him/her. An important aspect

is that such behaviors occur only when the attachment figure is present, and especially when the child most needed him/her.

This type of behavior is often associated with abuse, maltreatment or negligence. In these cases, the reference figure is the one who should take care of the child, but at the same time is also responsible for the maltreatments; thus, the child has an important internal conflict with respect to the attachment figure (Pierrehumbert, 2009).

However, in disorganized children, maltreatment or neglect is not necessarily present, but it has been seen that many of their parents have suffered a particularly traumatic situation, often concerning their own attachment history, which has not elaborated. The hypothesis is: if the mother has suffered a trauma related to her attachment figure, she can behave a disturbing attitude in interactions with her child (Main, Kaplan, Cassidy, 1985).

Some authors (Lyons-Ruth, 1996, Grossmann, 1998, van Ijzendoorn, 1996, cited in Pierrehumbert, 2009) have shown how the presence of unresolved trauma or abuse suffered by the mother would be the cause of disorganization in the SSP: when the child activates attachment behaviors, perceives signs of insecurity by the parent, as fear or signs of threat. If the caregiver is at the same time a source of comfort as well as a source of alarm, the child will not be able to use the attachment figure as a secure base, so his/her strategies are bound to fail.

1.3.4. Predictors of attachment styles

Observing more and more mother-child interactions, Ainsworth reflected on the importance of the *quality of maternal care*; as mentioned above, also for Bowlby parenting skills and maternal sensitivity would be essential in building a secure bond.

With "sensitivity" Ainsworth means the ability of the mother (or the attachment figure) to perceive and interpret appropriately child's signals and requests and to respond appropriately (Ainsworth et al. 1978).

Parents of children with an insecure attachment show difficulties in responding adequately to the child, even ignoring or rejecting their requests. Parents are not readily available and not very present, both physically and emotionally, showing little sensitivity, or even indifference. It is further noted the aversion to physical contact, the lack of expression of emotions, and inadequate responses not synchronized with child's activities (e.g. interference in child's play, interests or emotional state). In fact, as a consequence, these children are upset both when held or put down, as if they were not comfortable neither close nor far from the attachment figure (Pierrehumbert, 2009).

Several studies show that the attachment pattern, once developed, tends to remain stable over time; Waters (1978, cited in Pierrehumbert, 2009) finds that the attachment pattern assessed at 12 months tends to remain the same even in the second year of life: he observed 50 children when they were 12 months, and replicating the SSP at 18 months, he found a coefficient of stability of 96%. Further studies also show that the attachment pattern assessed at the end of the first year of life predicts child behaviors at nursery and even over the next five years (Bowlby, 1989).

The tendency of the attachment style to persist is because, generally, the external conditions do not change, i.e. parents' behaviors remain the same over time. This creates a "vicious circle" whereby, for example, the anxious-ambivalent child will be more whining and difficult than a secure child, which instead will elicit more appropriate responses. Also, it has been noted that children whose mothers were more likely to respond to their cries during the first year are those who would less cry later (*ibid*.).

In summary, it can be said that during the *Strange Situation Procedure* the child reflects the quality of the interactions with the attachment figure during the first year of life, and that the quality of care seems to "predict" the quality of attachment. This justifies the hypothesis that there is a "sensitive period" during the child's first year of life, whereby if the child receives sensitive maternal care he/she will probably develop a secure attachment (Bowlby, 1999). With a secure attachment, the child has a schema about the other as responsive and caring, and consequently a positive self-image. Therefore, these schema let the child maintain activated a minimum level of attachment behavior, to be able to serenely explore the physical and social world around him/her (Pierrehumbert, 2009).

1.4. The Measurement of Attachment Security

This section describes the main tools to assess attachment in infancy. The main tools used to assess attachment behavior are the *Strange Situation Procedure* (Ainsworth et al., 1978) and the *Attachment Q-sort* (AQS; Waters & Deane,1985). In general, in infancy (from birth to 2 years old) the procedures assess situations of separation and reunion with the attachment figure (primarily the SSP), and these have been adapted by different researchers depending on the age and context in which they are used. Other tools, such as the AQS and the *Parent Attachment Diary* (PAD; Stovall & Dozier, 2000), emphasize naturalistic observation in the ecological context.

As gradually the child grows up, representations of relationships with others become more complex, therefore the tools evaluate not just the external behaviors but especially the *representations* the child has of his/her attachment figures, e.g. using pictures, story completion tasks, drawing and doll play (Molina & Casonato, 2013).

1.4.1. Limitations of the Strange Situation Procedure

The SSP, described in the previous paragraph (*1.3.1*), is the main assessment tool used in infancy due to its reliability, stability and predictive validity. Its most significant contribution has been to identify different types of attachment patterns, which has allowed to effectively describe individual differences in the early years of life.

However, the SSP has some limitations. First, test-retest stability is low in short-term re-administration, probably due to the child's sensitization to the procedure (Solomon & George, 2008). Also, the administration is quite expensive, due to the specific and appropriate setting and instrumentation, and a long-lasting examiner training. Furthermore, the SSP is only applicable during the second year of life, a very limited age range in attachment research (Molina & Casonato, 2013). Further limitations will be described in *Chapter 3*, referring to its applicability in the context of childcare centres.

Some researchers have introduced few changes to the traditional procedure to adapt it to children over 18 months of age, creating new assessment tools: these are the *Cassidy-Marvin Preschool Attachment Classification System* (Cassidy & Marvin, 1992) and the *Main-Cassidy Attachment Classification for Kindergarten-Age Children* (Main & Cassidy, 1988).

1.4.2. The Attachment Q-Sort

The *Attachment Q-Sort* (AQS) by Waters and Deane (1985) is a less "intrusive" system than those described above, and assess children between 1 and 5 years old in the home context. The child is observed in a quiet and familiar situation, in which “secure-base behaviors” are evaluated, instead of attachment behaviors in "emergency" situations,

so like in the SSP. In other words, the focus of assessment is the organization and balance between child proximity seeking and the desire to explore that the child manifests when he/she is in his/her daily home context (Solomon & George, 2008).

The tool, in a Q-set format, consists of 90 items (cards) that describe a wide range of behaviors that reflect the "secure base" phenomenon. After 3-6 hours of observing the child, cards are divided into 9 groups (10 items each), arranged according to how closely the card describes the behaviors observed on the child (Cassibba & D'Odorico, 2000). The AQS scores range from -1.0 to +1.0, where higher scores indicate more similarity to the ideal-type security sort, thus a more secure attachment relationship. With this method, the AQS score is continuous and without categories, so it does not differentiate between avoidant and resistant classification (van Ijzendoorn et al., 2004).

At least 2-3 home visits are required, for a total of 3-6 hours of observation. The assessment can be carried out by trained observers or by parents (Cassibba & D'Odorico, 2000). However, it was found that assessment is more reliable if done by an external observer, rather than by the caregiver (van Ijzendoorn et al., 2004); Cassidy and Kobak (1988, reported in Solomon, George, 2008) hypothesize that parental bias could influence caregivers when dividing the cards. In their meta-analysis, van Ijzendoorn and colleagues (2004) explored 139 studies that used AQS with 13,835 children (aged between 12 and 70 months old) to evaluate its validity in assessing secure attachment relationship with parents or another caregiver: it results that the AQS secure scores obtained by external observers correlate with those of the SSP ($r = .42$), and so the AQS when applied by external observers, and not by the caregivers, can be considered an appropriate tool for attachment assessment.

The correlation between AQS and SSP, even if is considered sufficient, shows some differences: this because these two measurements assess different dimensions of

the same construct. The focus of the SSP is on attachment behavior activation in stressful situations, while the AQS focuses on the balance between attachment behaviors and exploration behaviors in the natural setting (Solomon & George, 2008; van Ijzendoorn et al., 2004).

Finally, the AQS compared to the SSP has some advantages: it can be used also with children from 12 to 48 months old; is more flexible, since observations can be done in the child's home and a daily context; it does not need long-lasting and expensive training; it can be used in different cultures and contexts, even where the separation between child and the caregiver is a common daily situation; it can be used several times in repeated measures observing the same child, without affecting the scores (a thing that happens with the SSP) (van IJzendoorn et al., 2004).

1.4.3. The Parent Attachment Diary (PAD)

The PAD by Stovall and Dozier (2000, translated into Italian by Molina and Casonato, 2009) is a tool specifically designed to assess the construction of attachment in the U.S. context of foster care, that is, between the child and a *new* caregiver.

The PAD is a structured diary, filled daily by foster parents for 2-3 months from the arrival of the child in the foster family. The diary is structured to record daily the behaviors the child shows in specific stressful situations that supposedly would elicit attachment behaviors, in order to follow the early attachment developments in the new context of care (Molina & Casonato, 2013). Foster parents are asked to record 3 episodes that should activate child attachment behavior, specifically when: 1) the child got physically hurt; 2) the child was frightened or afraid of something; 3) the child and the caregiver were separated. For each of these situations, parents should briefly describe the

episode, then they should choose from a checklist child's behavioral sequence (Stovall & Dozier, 2000).

PAD coding is based on Ainsworth's SSP behaviors (1978): behaviors coded as *Proximity Seeking/Contact Maintenance* include looking at and moving closer to the parent, calling him, signaling to be held; behaviors coded as *Ability to be Calmed* include child's facility to be soothed by the parent, without showing anger or resistant behavior; behaviors coded as *Avoidance* include ignoring the caregivers or turn away as if nothing was wrong; behaviors considered as *Resistance* include reactions of anger or frustration, such as kicking, hitting, biting, as well as the difficulty to be soothed (Stovall & Dozier, 2000).

Compared to the SSP, the PAD shows good concordance, scores correlate especially with *proximity seeking* and *avoidance* categories (Molina & Casonato, 2013). Children classified as *secure* in the SSP get lower *avoidance* scores and higher *secure* scores with the PAD, and vice versa, children classified as *avoidant* in the SSP get higher *avoidance* scores with the PAD (Stovall-McClough & Dozier, 2004).

Studies on foster families using the PAD (Fisher & Kim, 2007; Stovall & Dozier, 2000; Stovall-McClough & Dozier, 2004; Pugliese et al., 2010) show significant changes in child's attachment behaviors after two months in the new family: secure behaviors increase over time and decrease avoidant and resistant ones.

1.5. Conclusions

The attachment theory is, to date, the main theoretical foundation about the conceptualization of adult-child relationship, thanks to the first considerations and investigations by John Bowlby (Pierrehumbert, 2009). Bowlby's attachment theory

unveil the mechanisms the mother-child relationship forms and develops over time. He demonstrated that the quality of care and the ability to respond to child needs are fundamental in building the attachment bond, and consequently in creating favorable conditions for child development.

Mary Ainsworth then integrated the theory with her observations, in which she examined children's individual differences in relation to different *patterns* of attachment. Child experience with his/her attachment figures creates a specific relational history, making each bond unique. Thus, Ainsworth's studies and the application of SSP introduced the concepts of *secure*, *avoidant* and *resistant* attachment, which well illustrate children's behavioral systems towards attachment figure(s). In most cases, the child is securely attached to the mother, seeking her proximity, using her as a source of comfort and as a secure base for exploration. On the other hand, some children ignore their mothers even when they are distressed (avoidance) and some others show ambivalent behaviors, such as the desire to seek comfort from the mother but followed by the difficulty to be soothed by her, including reactions of anger (resistance). Hence, the current research project also adopts this classification, adapting it to other caregivers other than the mother.

Indeed, as described below, it became increasingly clear that infants form more than one attachment bond, this means fathers, siblings, grandparents and childcare providers meet during the early years of life. This latter in particular is the subject of study of the current research thesis, therefore, the next theoretical chapter focuses on "multiple attachments", and especially on the professional caregiver as attachment figure at the childcare centre.

Finally, in the research part, the PAD and the AQS presented above will be used as tools to observe the child-professional caregiver relationship. Both use Ainsworth and

colleagues' (1978) attachment classification system and include the concept of balance between attachment and exploratory behaviors.

CHAPTER 2

ATTACHMENT IN CHILDCARE SERVICES IN EARLY-CHILDHOOD

Attachment theory has greatly influenced child care policies in different contexts such as institutions, hospitals and childcare services as childcare centres. This is because Bowlby, in his first observations for the WHO, focused on the importance of negative and damaging effects of maternal deprivation.

Over time, the awareness that infants could attach to more people closely involved in child care increased and this led to a radical change in childcare services. When infants grow up, they spend more and more time with people that are not the mother, which gives the opportunity to form new attachments. More space and importance have been given to attachment figures defined as "secondary", such as fathers, grandparents, adoptive parents or professional caretakers in childcare services and kindergartens. This brought further important changes, both in theory and in child care policies practice.

Given that multiple attachments exist and are important for child development, what is their role across the lifespan? In the following chapter, the focus will be on child attachment relationships to non-maternal caregivers, approaching it from a historical perspective, with particular reference to some important contemporary childcare services such as childcare centres.

2.1. Theoretical and practical implications of Attachment Theory for child care policies

As mentioned in the first chapter, the attachment theory originates from observing and evaluating the conditions of "maternal deprivation" in institutionalized children. During the early 1950s, in fact, Bowlby and Robertson investigated the responses and consequent effects of mother's absence in institutionalized and hospitalized children, with the aim of improving childcare policies. That is because attachment theory emphasizes the importance of continuity and *sensitivity* in caregiving relationships.

2.1.1. Hospital and institutional context

The first impact of attachment theories in childcare policies refers to the strong considerations that Bowlby described in 1951 in WHO's report ("Maternal care and mental health"). Following Bowlby's observations on institutionalized children, findings demonstrate the damage that the lack of attachment bonds and personalized care may cause.

Robertson (1973) also denounced the condition of maternal deprivation in very young children hospitalized. He described that in hospitals neither time nor space were given for mother-child dyad, and that visits were restricted as considered "disturbing" for children: it was generally believed that once adapted to the hospital context, parental visits made the children "unhappy" as they cried more.

Robertson's (ibid.) observations during the "adaptation" of hospitalized children suggested the division into three phases of this process, which are compared by the author and by Bowlby (1989) to the phases of adult grief. The three phases consist of:

1. *Protest*: during the first few days, the child is confused by the new situation and distressed for the mother's absence. The child seeks and calls her hoping that she will respond to his crying.

2. *Despair*: the child, who still needs the mother, gradually loses the trust of her response. He becomes detached, apathetic, melancholic, having any demands or expectations from the context. At this point, the child is mistakenly defined as "adapted". During the brief reunions with the mother, the child frees his frustration and cries desperately, episodes that lead to the belief that the visits are disturbing because the child "was quiet before the parents arrived". This type of affirmation is crucial since it was mainly for this reason that parent's visits were seen as an extremely turbaning event for the child. Consequently, parents' visits were strongly discouraged, risking damaging the mother-child relationship.

3. Children who stay at the hospital for short periods usually experience only the first two phases, whereas those who stay for long periods may enter the *Detachment* phase: the child gradually becomes interested in the environment, smiles more and cries less during parents' visits, and seems indifferent. This could mean that the child is well adapted to the hospital context and is calm. Actually, his behavior reflects the intolerable discomfort he feels, that induces him to deny his need to love and be loved by his mother. The very young child does not understand the causes of his experience, but only feels discomfort and anger that he will use to accuse those he loved and trusted of abandoning him.

Spitz (1945, cited in Dozier & Rutter, 2008) describes similarly the orphanages in the United States: trying to reduce infections, the institutional environment was aseptic, the staff touched the children as little as possible, and meals and nappy change were

mechanical and hasty. In some orphanages in Romania and Russia, bottles were even suspended over the cradles, so infants did not need to be held and could stay in the cradles for long periods, without interacting with anyone. In doing so, the child lacks the opportunity to develop meaningful relationships with those who care for him/her, and these treatments discourage caregivers from engaging emotionally with children (Dozier & Rutter, 2008).

These deprivation conditions described above are not only a "maternal deprivation", but can even be defined as "affective deprivation", which can easily be associated with the most pervasive negative effects on child development: these children had a higher-than-average mortality rate; they often had growth delay and motor development delay; they could suffer cognitive and language disorders; they often had atypical behavior, altered social behavior and depressive disorders (ibid.).

Therefore, Bowlby and Robertson engaged in an information campaign denouncing the devastating effects that children could suffer because of their condition of deprivation experienced in the hospital and institutional contexts. Their work and the spread of attachment theory helped to get attention on the risks associated with a total separation between mother and child, helping to improve institutional and hospital conditions (Pierrehumbert, 2009). Then, medical and hospital care policies radically changed: more open and flexible visits were promoted, inviting parents also to stay overnight with their children, and a greater emotional closeness of caregivers (such as nurses) was promoted during mother's absence (Robertson, 1973).

Then, the attachment theory led to a further revolution, which concerned the reduction of institutionalization (such as residential nurseries and orphanages) as the first-choice solution for infants whom parents could not take care of, in favor of *foster care*. The aim of this change was to provide the child with more personalized and continuous

care over time, in contrast to what happens in residential institutions, where staff was emotionally detached (Rutter, 2008).

2.1.2. The settling-in phase at childcare centre

Economic and cultural changes that occurred over the last century have led to major changes in social life organization, particularly with regard to the role of women in working life. Greater participation of women in professional careers has consequently limited the availability of the mother figure for their children, bringing a strong demand for child care services such as childcare centres and kindergarten.

At the beginning, childcare centres reported a critical situation: the *settling-in phase*. Professional caretakers described the experience of childcare settling-in as delicate and difficult to deal with. Methods commonly adopted consisted of groups of children without the possibility that parents could stay with them, and so, denying the possibility of supporting and mediating the parent-child separation. These practices generally generated anxiety and distress, not only in children, but also in parents and caregivers. In general, the common problems were: the brusque transition of children from family into the childcare service; the total absence of parents supporting the transition; the caregiver responsibility for "the classroom" and not for "the children", and so the caregiver could not follow children's growth process during their first years at the childcare centre (Mantovani, Saitta, and Bove 2003).

Influenced by Bowlby's theories, the general concern was about mother-child separation in childcare services: worries about children's separation anxiety led to significant changes in child care strategies. The settling-in phase became a *gradual* transition, giving importance to the mother even in her absence, and *including parents* during the transition period, so that the child could experience a less traumatic separation.

Therefore, significant changes in the settling-in practice led to major participation of parents during the transition, so that they could share this delicate experience with their child. This graduate approach also gave the possibility for professional caregivers to better manage the relationship with both the child and parents, to make the context more familiar, and reduce the distress of this delicate experience (ibid.).

Over time, more and more attention has been paid to the settling-in phase, with the aim of transforming this experience from a traumatic separation to a situation of sharing the care of the child and supporting parents. From their origins in 1971[1], Italian early childhood services paid attention to the transition from family to childcare centre (in italian *inserimento*), explicitly referring to attachment theory (Mantovani 1987, 2001; Mantovani, Saitta, and Bove 2003). Nowadays, the *inserimento* generally lasts for two weeks and a familiar person (the mother or others main caretakers, such as fathers or grandparents) stays at the childcare centre to support the child building new relationships, to gradually manage the separation, offering him/her the possibility to experience separation and reunion. Therefore, the aims of the settling-in phase are:

- mutual knowledge between childcare centre and family, in order to share the care of the child based on a trustful relationship;
- a gradual introduction of the child into the new context of care, avoiding a traumatic experience of separation;
- continuity of care between family and childcare centre;
- presence of a reference figure (professional caregiver) with whom the child form a bond: on the basis of this trustful relationship, the professional caregiver will become the "secure base" in childcare centre, a safe haven from which the child

[1] The 1944 Law (*Piano Quinquennale per l'istituzione di asili-nido comunali con il concorso dello stato*) established in Italy public nurseries for the first time, managed by the municipalities with the contribution of the State.

will be able to leave to explore and form new relationships with other caregivers and children (Molina, 1994).

So essentially, attachment theory has also positively influenced childcare services practices, and nowadays the settling-in phase has become a process thought to promote the formation of new bonds and the elaboration of separation.

2.1.3. Has the concept of 'maternal deprivation' been misunderstood?

The attachment theory, in its first formulation, focused essentially on the mother-child relationship and mainly on "maternal deprivation" effects in case of separation. Bowlby emphasizes the importance of *continuity* in the caregiving relationship (Bowlby, 1973).

However, this concept has often been misunderstood, labeling as "maternal deprivation" any type of separation between mother and child: this meant that any sharing of maternal care among various figures was negative for the child (Ainsworth, 1973). As a result, diffidence on childcare centres arose: could this type of child-mother separation be negative on child development?

Several studies wondered whether repeated separations and time spent at childcare centre could have negative consequences on mother-child attachment, considering that these separations happen when attachment bond is in formation. After several studies with any reliable results, in the early ‘90s the NIH (National Institute of Health of the United States) financed a study that became famous for involving more than a thousand families, the *NICHD Study of Early Child Care and Youth Development* (NICHD SEECCYD): the aim of this study was to verify the effects of the child care services on mother-child attachment relationship (Howes & Spieker, 2008). The study

concluded that there would be no negative effects in non-parental care on mother-child relationship (detailed conclusions are reported below).

Therefore, it was the inappropriate generalization of Bowlby's results on institutionalized children that led to misinterpret possible negative consequences for child development of *all* types of extra-family care. Bowlby defined as "maternal deprivation" that particular situation in which the mother-child relationship was *insufficient*, and described the "discontinuity" of a relationship as the *inability* to communicate between caregiver and child, that are not childcare centres' characteristics per se (Bowlby, 1973).

In this regard, Ainsworth (1973) definitively clarifies the misunderstanding:

> It seems that some disagreements can be attributed to misunderstandings, excessive simplifications or distorted results on first investigations. [...] Thus, useless disputes arise because of the lack of clarity in recognizing that "maternal deprivation" and "mother-child separation" include several types of experiences with different variations in severity, and that the consequences of such experiences depend on many variables (*ibid*., p. 216).
>
> Perhaps because most research on maternal deprivation effects were carried out in childcare services where each child is cared for by many people, it became normal to attribute to Bowlby [...] the hypothesis that any deviation from a direct and *exclusive* mother-child relationship means deprivation (*ibid*., p. 223).
>
> No one denies the importance of continuity in any kind of maternal care. When it is said that continuity is needed, however, does not mean that it is essential or

> even recommendable to have an exclusive mother-child relationship. Bowlby, in fact, argued that maternal care must be integrated with those given by other figures [...] (ibid., p. 211).

2.2. Multiple attachments

As described above, the notion of *monotropy* was strongly criticized: even if the attachment theory is inspired by Lorenz's studies and the concept of *imprinting*, of course, that could not be used as a model and be generalized to all species and in all facets. Western social changes and the revolution of men and women's role in family life led to a greater demand for extra-family care, foster care and adoption, situations that have raised new questions and re-think differently the attachment theory (Howes & Spieker, 2008).

Sarah Hrdy (2005, in Pierrehumbert, 2012) used for the first time the term *alloparenting* to define any type of parental care that is provided by figures other than biological parents. Not all species are monotropic, but in the human being, whose children become autonomous in rather long times, alloparenting would guarantee child survival in the absence of parents. This has evolutionary roots. The transition from quadrupedal to bipedal walking led to relevant skeletal alterations in the human body. The erect posture required a narrowing pelvis and vaginal canal: as consequence, for females death in childbirth became more and more frequent and giving birth became a serious danger. However, women who gave birth earlier, when the baby's skull was still smaller and softer, had more chances of survival and chance of having offspring. Consequently, natural selection favored premature birth (9 months was considered *premature* for those times, but nowadays it is the norm), even if the newborn was not fully developed. And

so, as the foal walks a few hours after birth and the cat looks for food independently after a few weeks of life, the human being is dependent on adults' care for many years. Even for our ancestors, being a single mother was difficult to provide enough food for herself and the offspring, so raising a child required the help of the tribe (Harari, 2011).

Moreover, it is also important to highlight that monotropy is a Western concept, linked to Western family image: it must be taken into account that outside the Western world the family often responds differently to child care needs. For example, in some regions of Africa, Oceania and among the Eskimos, children often are not raised by their parents: many children are raised by other family members, but in any case not cutting ties with parents. Hence, Western culture would not be "the norm" (Pierrehumbert, 2009).

Therefore, the concept of *attachment* has extended and does not concern only mother-child relationship anymore, but considers other figures who take care of child well-being and who are significant to him/her. In the course of his life, the child engages with many available figures who can be considered alternative attachment figures other than the mother. In general, Literature refers to fathers, grandparents, caretakers, teachers and, for most complicated situations, adoptive and foster parents. In this chapter, the focus is on the *professional caregiver* in the childcare centre, that is the research topic of this thesis.

2.2.1. Relationships at day-care: the NICHD study

Normally, the child meets many figures that take care of him/her during childhood. Contrary to what happens with the mother, whose bond is built from birth, the attachment relationship with alternative figures forms later. The relationship would begin when the child's attachment building process is still in formation (6-8 months) or is

already formed (two years) and the child has already begun to develop IWMs (Internal Working Models) (Howes & Spieker, 2008). So, how do children and parents experience extra-family care?

During the last decades, as mentioned above, families have been concerned about any negative consequences that children could suffer in situations of non-parental care, such as attending a childcare centre.

During the ‘80s, first studies on consequences of attending childcare services concluded that they may interfere with the formation of secure mother-child attachment (Belsky, 1988). Afterward, several studies and reviews reached more reassuring conclusions, denying the theory that there were negative impacts on child development. However, methodological limitations such as sample composition and assessment procedures of many studies did not define definitive conclusions (Pierrehumbert, 2009). But in the early ‘90, the NICHD SECCYD (*NICHD Study of Early Child Care and Youth Development*) began a longitudinal 10-site study with 1,357 families with young children to shed some light on controversies concerning child development at childcare. The results (reported in Howes & Spieker, 2008) are summarised below:

- *"Double risk" model of development*: a large amount of hours spent at child care, the poor quality of the service or the numbers of caretakers do not promote an insecure mother-child attachment relationship in itself, but just in situations in which others risk factors are already present, such as difficult child temperament, being a boy, having a non-sensitive mother or have few psychological skills. In this study, the highest insecurity scores were recorded in the “double risk” conditions. This means, for example, that a child with an unresponsive mother attending a poor quality day-care during many hours is more likely to be insecure.

And anyway, responsive mothering was considered the most important variable that moderates the effects of childcare on attachment relationships.

- *"Compensatory" hypothesis*: when a child's family conditions are critical (presence of risk factors) good-quality child care and/or full-time stable attendance can positively help mother-child relationship. There would be a compensatory function: high quality of child care may moderate the effects of low maternal sensitivity on attachment security.
- *"Main effects" hypothesis*: the hypothesis that childcare characteristics such as structural quality, the quantity of care, age of entry and stability, taken individually, have no main effects on child-mother attachment and could not predict attachment security.

In summary, the NICHD SECCYD study states that parents-child attachment relationship is mainly influenced by family context than by day-care effects. If family relationships are problematic and stressful, some negative childcare effects could increase more children's insecurity. Otherwise, the current study suggests that, in positive family contexts, multiple cares has no negative impact on the mother-child relationship.

Literature, as well as NICHD SECCYD study's results, highlights the importance of *quality*. It is stated that good quality childcare provides adequate cognitive and emotional development for the child, having also preventive effects in disadvantaged family conditions (Molina, 2012). What does it mean, specifically, when we talk about *quality*?

The concept of quality in childcare context involves different characteristics, both structural and functional. For *structural* characteristics is referred to methods and physical qualities that the day-care has and implements, such as the number of children

per section, the ratio of children-caregiver, caretakers' professional training, caregivers' stability and continuity at day-care and the stimuli offered to children. On the other hand, *functional* characteristics refer to the quality of the child-caregiver relationship, and therefore to professional caregivers' motivation to take care of children, which is reflected in sensitivity, support and sign of affection; these behaviors are able to positively stimulate the child's attachment relationship to the new caregiver. Both dimensions, structural and functional, would be connected to each other, so the quality of child-caregiver relationship would depend on the structural characteristics of the environment, which in turn would be influenced by local public authorities' involvement in educational programs (Pierrehumbert, 2009).

About it, a meta-analysis by Ahnert and colleagues (2006) described that child attachment to professional caregiver also depends on the size of the class-group and the child-caregiver ratio; it seems that a large number of children in the same class with few reference figures could limit the formation of a secure attachment with the alternative caregiver, reducing the quality of day-care. Thus, the quality of care seems to significantly influence the attachment relationship, which would be linked with more favorable structural characteristics.

2.2.2. Organizational structure of attachment in multiple-caregiver context

Several studies on attachment at day-care give importance to quality and concluded that non-parental care would not have negative consequences on the child in itself, if care he/she receives is of "good quality". It seems that the quality of day-care can amplify or attenuate the effects of family context and vice versa (Pierrehumbert, 2009). This is the "double risk" hypothesis explained by the NICHD study suggests, that is, the vulnerability of one context could accentuate negative effects on the other context.

Examining child attachment in *multiple caregivers* contexts means taking into consideration his IWMs and the cross-effects between his/her family environment and that of the day-care. Bowlby (1969/1989) proposed that the child form separated IWMs (representations of self, important others and the workings of the world) based on his/her different experiences with different adults: so, it began more complex when the child has different experiences and has to organize all of them.

Three models of attachment organization have been suggested in situations of multiple attachments:

Hierarchical. In the hierarchical organization model by Bretherton (1985, cited in Pierrehumbert, 2009) the mother is (most of the time) the main figure of care and she is the most influential person on child's representations. A secure relationship with the mother would be a model in formation of successive secure relationships with others. According to the hierarchical model, the maternal relationship would be the most predictive one, and attachment relationships with other caregivers will be influenced by that. However, several studies on multiple attachments proved that the attachment bond is *specific* for each relationship, and it is not based exclusively on child inclination or habits (Pierrehumbert, 2012). Even the studies that have compared child relationships with the mother and the father have found a poor correspondence: the relationship that the child builds towards the mother and the father is often different, suggesting specificity in the construction of his/her bonds (Howes & Spieker, 2008). When we talk about multiple attachments, therefore, we cannot refer just to the hierarchical model, because attachment is a characteristic of the specific relationship, and not of the child (Ahnert, et al. 2006; Goosen & van IJzendoorn, 1990; Howes & Hamilton, 1992; Zimmerman & McDonald, 1995)

Integrative. Van IJzendoorn, Sagi and Lambermon (1992) proposed that all different child's attachment relationships are organized and then integrated into a single representation. According to this perspective, there would not be a relationship more salient than the other, but all of them have the same weight. In this case, two secure attachment relationships are more positive for child development than one that is secure and one that is insecure, and this latter configuration would be more positive than two insecure relationships.

The integrative organization model explains how different relationships can compensate each other: it was found that children who had an insecure relationship with their mother had fewer behavioral problems the more they had been cared for by a positive alternative caregiver (Pierrehumbert, 2009). Therefore, it is assumed that a positive relationship with a sensitive caregiver can compensate for the mother's lack of affection.

Independent. According to this model, each representation is independent of others and influences a specific child's developmental domain. That means that different attachment relationships could have selective effects on development; therefore, different relationships are *qualitatively different* and would not be “interchangeable” (Howes, 1999). Pierrehumbert (2009) specifies, for example, that family life characteristics are associated with child development, whereas educational experiences would influence more specifically social behavior and resilience.

In conclusion, each model has some evidence, so maybe the three attachment organization models are not exclusive: this means that a child can organize his

representations giving more importance to a figure rather than to another but, considering certain variables, the hierarchy could benefit the alternative caregiver, rather than the mother. Furthermore, if a family does not offer adequate development conditions, different care provided by an alternative caregiver could compensate it. Moreover, different attachment figures could influence different child developmental domains (Pierrehumbert, 2009). Van Ijzendoorn, Sagi and Lambermon (1992) call it the "multiple caregiver paradox": we have to consider the *extended* attachment network to better predict infant developmental outcomes, rather than only the family attachment network and that of the individual child-parents attachments.

2.3. Attachment and relationships in childcare centres

From an evolutionary perspective, the child would receive different care from multiple contexts and so he/she can form attachment relationships with more caregivers who take care responsively of him/her (Dozier & Rutter, 2008). The child who is exposed to different situations and interacts with different people is most likely to re-elaborate some negative experiences, and even reorganize positively insecure types of attachment.

According to this perspective, the concept of attachment extends to professional caregivers at childcare centres, who nowadays are an increasingly common figure in the growth path of children. Professional caregivers are in fact significant figures both for supporting parents and for the relationship they form with the child, becoming real attachment figures (Mantovani, Restuccia Saitta and Bove, 2008).

Nowadays, it becomes increasingly difficult to imagine a mother who does not work and stays at home to take care of the child until kindergarten attendance or even elementary school, since women increasingly have a working life comparable to that of

men. Grandparent support also can no longer be assumed, since the retirement age has been delayed than it used to be. Therefore, the role of childcare centres becomes increasingly important and an increasingly common educational experience. Consequently, for their role and for the amount of hours the child spent in the childcare centres, professional caregivers are considered a really important figure for child development.

2.3.1. First studies in kibbutzim context

Including multiple caregivers in attachment relationships study added new dimensions and theoretical perspectives to research on this topic. The first studies on attachment relationships in the context of multiple caregivers were conducted by Sagi, van IJzendoorn, Aviezer and colleagues in Israeli *kibbutzim*. The *kibbutz* is an associative form of workers living according to the principles of equality and common property; those who live in the kibbutz work for the community, not receiving money, but living off everyone's work. In this particular context, traditionally children's growth was collective: this means that children, after 6-12 weeks from birth, were entrusted to the care of a particular figure, the *metapelet* (in the plural "metaplot") into the "house of children". During the day, when parents are working, children are brought up by metaplots, each of which takes care of 3-4 children of the same age. Children stay with their parents from 16 to 19, then return to their respective metaplot and they sleep in their "house" (Aviezer, et al., 1994).

First studies by Sagi, Lamb, Lewkowicz and colleagues (1985) on attachment to extra-familiar figures referred to this particular context, assuming that the child can form a relationship of secure attachment with the metapelet that takes care of him. However,

first results reported a higher percentage of insecure attachment styles than expected[2], both to the mother and the metapelet. However, a specific result is interesting: when the same metapelet took care of more children, they tended to develop the same attachment relationship (12 cases out of 16) towards the same caregiver. The authors interpreted these results as indicators that children's attachment style is influenced primarily by the quality of care they receive. It seems that some metaplots have characteristics that can stimulate a more secure attachment, so the building of a secure bond could be particularly influenced by the characteristics of the adult (Sagi et al. 1985).

Ten years later, Aviezer, van IJzendoorn, Sagi and colleagues (1994) found out that the high percentage of insecure attachments in kibbutzim was not due to the kibbutz context in itself, but to parents' absence, or better yet, the absence of a stable reference figure during the night (sleep routine was collective). Therefore, many kibbutzim began to leave children sleeping at home with their parents. Aviezer and colleagues (1994) then compared attachment styles of children in traditional kibbutzim (collective sleeping) with not traditional one (sleeping at home) and results showed that secure relationships were higher in the latter sample, as observed in the common population. Overall results demonstrated that the quality of care is a determining element in the child experience.

In another study, Sagi, van IJzendoorn, Aviezer and colleagues (1995) focused on the *quality of care*, and especially on the congruence of children's attachment style with the same caregiver. As already shown previously (Sagi et al., 1985), the metapelet tends to form similar attachment relationships with different children; this supports not only the theory that some caregivers' characteristics can stimulate a secure attachment, but

[2] Data were compared with the attachment style distribution for mothers reported by Ainsworth and colleagues (1978): Avoidant (A) 21%; Secure (B) 67%; Resistant (C) 12%. Results were compared with those of Ainsworth, since in this research field it was the first and most well-known study on that specific topic.

also that the attachment is not a characteristic of the child, but the importance is the specific adult-child relationship.

2.3.2. Attachment relationship between child and professional caregiver

When the child enters a new context, such as the childcare centre, he/she needs a *secure base* who can guide him/her in the new environment: so, as with his/her parents, the child when distressed seeks proximity and reassurance from a familiar care provider (Barnas & Cummings, 1994; Howes, 1999). Seeking proximity and reassurance are clearly attachment behaviors that the child addresses to the available adult in this specific context, therefore, many researchers used the *Strange Situation Procedures* (SSP: Ainsworth, Blehar, Waters, & Wall, 1978) and the *Attachment Q-Sort* (AQS: Waters, 1995; Waters & Deane, 1985) to assess children's relationships with professional caregivers. It is clear that children develop close relationships with their professional caregivers (Ahnert et al., 2006) and they are not affected by a few hours of separation from their parents if they have a secure bond with the alternative caregiver (Bowlby, 2007).

In the *Handbook of Attachment*, Howes (1999) and Howes and Spiker (2008) summarize several studies on attachment in day-care context, stating that the formation of professional caregiver-child bond is similar to the formation process of mother-child bond during the first year of life. As well as the child seeks and follows the mother when distressed, at day-care he/she directs the same attachment behaviors towards the caretaker. If the professional caregiver is sensitive and responsive, the attachment relationship is more likely to be secure. Howes (1999) identifies three criteria with which the child selects the professional caregiver as attachment figure: 1. the caregiver takes care of both physical and emotional needs; 2. caregiver's presence has to be constant and

continuous over time; 3. the caregiver has to be emotionally involved in child care, establishing a significant emotional bond.

Nowadays it is clear that children develop significant relationships with their professional caregivers and literature has been growing about the nature of these relationships.

Security of attachment to Professional Caregivers and Parents

First, researchers were interested in comparing the relationship with professional caregivers with that with parents. Some study found that the security of relationships with parents and professional caregivers were often concordant, and that the distribution of secure, avoidant and resistant attachment relationships with alternative caregivers do not differ significantly from those with mother (Booth et al., 2003; Goossens & von IJzendoorn, 1990; Howes & Hamilton, 1992a, Howes & Oldham, 2001), whereas other investigators reported that secure child–care provider attachments were less common than a secure child-parent attachment (Ahnert & Lamb, 2000; Ahnert, Lamb, & Seltenheim, 2000).

In their metanalysis, Ahnert et colleagues (2006) found that 42% of the children were securely attached to their care providers, whereas 60% were securely attached to their mothers and 66% to their fathers. Then, results suggested that secure attachments with professional caregivers were less common when compared with parents. However, secure attachments with care providers were less common when SSP was used, whereas with AQS greater concordance between child–mother and child–professional caregiver relationships were found, and the likelihoods that children would be securely attached to mothers and care providers were equally high. Authors specify that the difference lies in

what is observed: the SSP focuses the security-seeking and proximity-promoting behaviors, conduct that characterizes more children's relationship with parents than those with professional caregivers (Ahnert, Rickert, & Lamb, 2000); on the other hand, the AQS captures many different child behaviors such as security seeking, call for help, support seeking and assistance seeking in a daily context of exploration (Booth, Kelly, Spieker, & Zuckerman, 2003). Therefore, the AQS may reflect better than SSP the relationship that child built with professional caregivers in group settings (Ahnert et al., 2006).

Then researchers questioned whether child attachment relationships were related or not to each other. Goossens and van IJzendoorn (1990) first proposed that child-professional caregivers' attachment relationship would be *independent* of mother-child or father-child relationship, highlighting that a secure bond with the professional caretaker could compensate for the insecure relationship that the child may have with his/her parents. In their metanalysis, Ahnert and colleagues (2006) found that there is a low correlation between child secure attachment with the mother and with the alternative caregiver: they underline that the quality of parents care could influence the attachment formation towards other caregivers, but not completely, supporting an integrative attachment organizational model.

The literature on multiple attachments shows that mother-child relationship is only partially associated with the relationship that the child builds with the alternative caregiver; when the child enters day-care, he/she develops and experiences new situations and new relationships that can modify his/her relational patterns, which offer the opportunity to create new attachment stories (Howes & Oldman, 2001; Sabol & Pianta, 2012). Attachment bond with the professional caregiver would not be influenced only by the maternal relationship, but would develop independently, based on reciprocal

exchanges in the specific relationship (Howes and Hamilton, 1992a; Zimmerman and McDonald, 1995). Aviezer and colleagues (1994) affirmed that children built attachment relationships to their professional caregiver and these bonds reflect the interactive history of the specific child-caregiver dyad; this means that in a context with multiple caregivers the child can form multiple attachment relationships, and each one is independent of every other. Within a matrix of multiple relationships, secure bonds with professional caregivers contribute to the child's well-being, because the child can add more secure relationships to his/her experience and develop his/her socioemotional dimension, without interfering with the parent-child relationship (ibidem).

Child characteristics

The literature on attachment at childcare centres has also examined whether some children's characteristics, such as gender, age at enrollment and time post entry, could influence the security of children's relationships with professional caregivers.

Howes and Smith (1995) found, for example, that girls were more likely to form secure relationships with alternative caregivers than boys. They suggested that most care providers are female, so gender-biased behaviors could lead to more positive interactions with girls, who consequently form secure attachments more readily than boys do. Ahnert and colleagues (2006) in their metanalysis as well found that girls developed secure relationships with their professional caregivers more often than boys did, however, the evidence was based on only five studies and the effect size was very low (r=.24). Furthermore, many studies did not find any differences depending on children's gender (De Schipper et al., 2004; Howes & Hamilton, 1992a; Howes & Oldham, 2001; Raikes, 1993).

Howes and Smith (1995), in the same study cited above, reported that secure relationships with professional caregivers were more common when children were younger: they suggested that the relationship with the care provider became less secure as children grew older, maybe because children interact more with other children and less with adults. However, many studies and Ahnert's metanalysis do not support this conclusion (Ahnert et al., 2006; De Schipper, Van Ijzendoorn & Tavecchio, 2004; Elicker et al., 1999; Howes & Hamilton, 1992a; Raikes, 1993).

Nevertheless, it seems that older children have less secure attachments to their professional caregivers when they had discontinuous histories of child care (Ahnert et al., 2006). This underscores the importance of stable care experiences: children need time to form secure attachments with alternative caregivers, in fact, time post entry is generally positively associated with secure attachment (Barnas & Cummings, 1994; Howes & Hamilton, 1992b; Elicker et al., 1999).

Caregiver and Child Care characteristics

First studies on attachment relationships at childcare reported by Anderson, Nagle, Roberts and colleagues (1981) underscored the importance of *quality of care* for attachment relationship development: high caregiver's involvement is associated with children with high levels of attachment, affiliative and exploratory behavior. Children with high-involved caregiver have behaved most like securely attached because they were able to use their caregiver as a secure base for exploring, conduct not observed in children with a low-involved caregiver. The sensitive and responsive caregiver facilitates the bond formation, therefore Anderson and colleagues (1981) concluded that the *quality* rather

than the quantity of care is most important in building and maintaining a positive child-caregiver relationship.

Later, several studies such as those by Aviezer and Sagi (2008), Goossens and van IJzendoorn (1990), Howes and Hamilton (1992a, 1992b), Howes and Smith (1995), Zimmerman and McDonald (1995), Booth and colleagues (2003), and van IJzendoorn and colleagues (2004) emphasized the importance of caregiver's characteristics for secure attachment relationship: sensitivity, emotional involvement and non-intrusive attitude would be fundamental characteristics as are closely correlated with secure attachment relationships. Above all, more sensitive caregiving by professional caregivers is linked with children's secure relationships with them (Ahnert, Pinquart and Lamb, 2006; Howes & Hamilton, 1992a; Howes & Smith, 1995).

The role of the professional caregiver is to understand the unique emotional needs of each child, and the quality of care consists of responding to child distress with sensitivity and kindness, supporting child's exploration, promoting a feeling of confidence and trust and so establishing a special connection with each child (Booth et al.). Love and colleagues (2003) also identified that the quality of care was the stronger predictor in child attachment behaviors, whereas the quantity of care was not a significant predictor.

But on this issues, De Schipper, Tavecchio and Van IJzendoorn (2004) specify that the mere interaction with a sensitive caregiver may not be sufficient to create a secure bond, since the professional caregiver has to divide her attention among more children; the interaction with the child should be frequent enough to be able to stimulate a safe relationship. So, the *frequency* of positive interactions would be particularly important for the child to trust the caregiver and then to be able to think of her as a safe haven.

In a longitudinal study by Howes and Hamilton (1992b), the stability of child-professional caregiver relationship, from childhood to preschool, was examined. It results that most of the children established a secure bond with their caregivers, and the relationship was more stable and secure when the caregiver did not change over time. When the professional caregiver is sensitive and responsive, and the relationship is stable over time, this figure provides the child an attachment relationship similar to the maternal one (of course similar does not mean equal).

Increasing interest in the comparison between mother-child and professional caregiver-child relationship led Howes and Smith (1995) to study the organization of attachment behaviors in extra-family care contexts. The authors used the AQS to extract "attachment behavior profiles" describing the specific relationships that are built at childcare centre: profiles obtained were "avoidant", “secure” and "difficult", which were conceptually the same as Strange Situation classification (A avoidant, B secure and C resistant). This study also reported that professional caregivers were more sensitive and involved in child care with secure children, than those with a resistant (difficult) or avoidant profile. This led the authors to confirm again that, despite contextual differences, relationship building with the mother and the professional caretaker has the same conceptual basis and develops similarly.

About it, an Italian study by Cassibba, van IJzendoorn and D'Odorico (2000) on child's play activity offers new considerations that do not support the "monotropic" attachment theory model, but it states that the alternative caregiver is an important figure that influences different dimensions of child development. Observing child behaviors during free play, results indicated that the attachment relationship to the professional caregiver is the best predictor of both the activity and inactivity of child play. It results that the child who has a secure attachment to the professional caretaker shows a higher

involvement in play activities, sharing with peers, and more exploratory behavior. These results are compatible with an "independent" attachment organization model.

Zanolli, Saudargas and Twardosz (1990) also focused on caregiver's characteristics that could promote a secure bond, pointing out that especially the *smile* would be the behavior that most arouses children's positive responses. Caregivers who smile more have more positive interactions with children, including facial expressions, physical contact and words. Thus, it seems that smiling is an important element in the construction of the caregiver-child attachment bond, since the child would recognize that he/she is in a positive emotional relationship with the adult.

As explained above, the concept of quality involves different characteristics, both structural and functional, that would be connected to each other. *Functional* characteristics refer to the quality of child-caregiver relationship, whereas *structural* characteristics refer to methods and physical qualities that the day-care has and implements. For example, characteristics of the care settings such as group size and child-adult ratio seem to affect the association between the caregiver's behavior and the secure relationship the child forms with her (Ahnert, Rickert and Lamb, 2000; Anderson, 1980; Lee, 2006). This is because the professional caregiver has to monitor all children's emotional needs that she cares for, but this is easier and more effective in small groups, or in those with low child-adult ratio, than in large groups (Ahnert et al., 2006). The professional caregiver cannot provide the same individual attention as the mother at home, so the involvement with individual children is lower, especially in big groups. Ahnert, Rickert and Lamb (2000) found that caregiver's involvement was better when the adult-child ratio was 1:3, which facilitates positive child-caregiver interactions.

However, group size and child-adult ratio may affect the associations between attachment and dyadic sensitivity but not the direct association between attachment and

group-related sensitivity: this suggests that associations between child-caregiver attachment relationship and dyadic sensitivity were evident only in small groups with low child-adult ratio (Ahnert et al., 2006).

2.3.3. The contribution of Emmi Pikler to non-parental care

Emmi Pikler gave an interesting perspective on child care, taking as a practical example the *Lóczy institute* that she founded and which influenced care practices in extra-family care contexts. Pikler was a Hungarian pediatrician, she founded in 1946 a residential nursery in Budapest (Hungary) for orphaned children after the Second World War. Being the context poor and with few resources, she developed a method focused on preserving the competence, autonomy and integrity of the young child, ages 0 to six years.

Attachment theory underlines some parental key characteristics: be accessible, available, sensitive to child needs, responsive, synchronized with the child and investing emotionally on him/her. Winnicott said that a mother has naturally all these qualities (and nowadays we know that it depends overall on hormonal changes), but what about professional caregivers in institutions or childcare services? The *maternage* that takes place in the childcare context is defined as "unusual" because it is not the same as the maternal one (Pierrehumbert, 2012).

Lóczy's experience teaches that professional caregivers and mothers have different roles and, consequently, they behave differently. Professional caregivers provide maternal care to the child, not simulating the mother's relationship trying to replace her when she is absent, but offering the child a *different* relationship. Pierrehumbert (2012) calls it "*maternage insolite*". This maternal care is "unusual" because the professional caregiver enters into a relationship with the child, but *professionally* (Pierrehumbert, 2009). Child-professional caregiver relationship is not

characterized by emotional moments naturally present in the maternal relationship, but of course, this close relationship exists and is compatible with the collective dimension of childcare context (Appel & David, 1978). The "control" that the professional caregiver has over their emotional relationships with children is not synonymous with "emotional lack", because caretaker's care is not cold or distant, but it is balanced, professional and gives the possibility to build a bond with the child (Pierrehumbert, 2009). Affection exists and even if moderated it is an important support (or "holding", quoting Winnicott) for child development (Appel & David, 1978).

Lóczy's experience is opposed to the idea that "unusual" maternal care provided by professional caregivers may have negative consequences for the child; on the contrary, it supports that a positive relationship with the caretakers is really important for child growth, his/her affective regulation, resilience and discovery of the world (Pierrehumbert, 2012).

Pikler's (1996) idea was that moments of care (such as the diaper change, the bath, the mealtime, etc.) are the privileged occasions in which the child-caregiver relationship is built. The child care includes gentle gestures, child participation, speaking and explaining what is being done, waiting for the child and his own time, and being predictable for the child. The moment of care is an intimate moment in which the child receives individual care, and where emotional attunement, non-verbal dialogue, joint attention and affective sharing develop into the relationship; all these mutual exchanges allow the establishment of a positive bond between the caregiver and the child. The professional caregiver has to be available and responsive to child needs, even though it is difficult since she must necessarily take care of many children (Pierrehumbert, 2012).

In summary, in Lóczy, when the child was not cared for by the caregiver, he/she was left free to explore and play, while the caregiver took care of another child. And

when it was the child's turn, the caregiver's attentions were directed only to him/her, and into this moment of care the relationship of trust is built, that is, the relationship that will allow the child to explore later.

Emmi Pikler affirmed that a significant relationship with an adult that can provide security encourages a child's interest in the outside world, exploration, planning and acting on the environment in which he/she stays. The role of the caregiver is to provide a safe and adequate environment for development, in which the adult should not interfere in child acting. Essentially, the adult gradually distances himself, so that the child can acquire autonomously the ability to choose, to regulate him/herself, and to be an active player in the world, and meanwhile, he/she is secure that the adult is still available and sensitive for his/her needs (Pikler, cited in Cocever & Zucchi, 2012).

SECTION II

Research Part

General Introduction to the Research Part

In the previous chapters, the attachment theory was described and how it has been recently adapted to other important figures who take care of the child was explained, especially referring to the professional caregiver. Attachment theory has changed the way childcare services are viewed over time and has increasingly highlighted the importance of child care practices, such as the transition from family to childcare centre. Therefore, the role of professional caregivers during child early years of life has recently started several studies on the importance of quality of care and many interventions to improve caregiver's practices.

This current doctoral project is part of this growing literature on the relationship between children and professional caregivers and child care practices, aimed to create a method and tool that would fill the gaps in research and educational practice in this field. The project consisted of adapting the *Parent Attachment Diary* (PAD; Stovall and Dozier 2000) to the childcare centre context and create a new tool, the *Professional Caregiver Attachment Diary* (PCAD; Molina & Macagno, 2019), in order to follow the early attachment developments in the new context of care.

The current doctoral project has two main objectives, one focused on practical and educational aspects, and one more research-oriented. Specifically, they are:

(1) offer to professional caregivers a method and a tool to observe and support the settling-in phase, as in-service training (*practical* purpose);

(2) observe the formation of children's relationships with professional caregivers during the earliest months into childcare centre, from a process-oriented perspective (*research* purpose).

In the following chapters, different studies using the PCAD will be presented, aimed to respond to these two main objectives.

In *Chapter 3*, the PCAD and its adaptation and validation process will be described, with the aim of answering the question: can this new tool be useful for professional caregivers to observe the construction of the secure base in childcare centre?

Chapter 4 introduces preliminary results with the PCAD. Two studies are described in which the main focus was to verify the adaptation of the PCAD to childcare centre setting, assessing its ability to catch children attachment behaviors. In other words, we want to verify the applicability of the PCAD in order to observe how children's behaviors change within the new context.

Step by step, as a direct continuation of the previous chapters, the results lead us to the implementation of the study presented in *Chapter 5*: here, the development of children's relationship to professional caregivers was observed, and a more accurate analysis was done about children familiarization in childcare centre during the first 2 months of childcare attendance. Furthermore, it was explored whether variables such as children's gender, age and childcare attendance could influence the building of the relationship with professional caregiver.

In *Chapter 6*, a more in-depth analysis was performed, exploring *how* specific behaviors and items change over time and depending on each situation observed with the PCAD, in order to study how the child-caregiver relationship is built.

Lastly, in a longitudinal perspective, *Chapter 7* reports the last study in which we examined children's attachment behaviors with professional caregivers one year later, that is, about one year before children entered childcare centres. So, if in previous studies we focused on the very early developments of child-professional caregivers relationship (at 1-2-4 months enrolled in childcare), here the goal was to observe whether the relationship changes in the course of a year.

CHAPTER 3

The *Professional-Caregiver Attachment Diary*: a new observational method and tool

3.1. Introduction

As described in the introductory part above, there are two main objectives in this doctoral project. The current chapter focuses on the first one, that is, the practical implication of the PCAD: with this new diary, we want to offer to professional caregivers a method and a tool to observe and support the settling-in phase at childcare, as in-service training.

In the following paragraphs, first, the most used tools to assess the child-caregiver relationship will be presented, focusing on the limitations of their use in the childcare centre context and in relation to our specific purposes. Then, the PCAD and its adaptation and validation process will be described, following the steps below:

1. Presentation of the PAD, the original tool from which the PCAD was adapted;
2. Presentation of the adaptation stages, from the pilot study to the current version of the PCAD;
3. Description of the PCAD 1.3: structure, coding system, scoring and how to interpret the results;
4. Feedback of its use by professional caregivers through assessment questionnaires;
5. Validation of the PCAD comparing it with the AQS (convergent validity);
6. Discussion on why this observational tool could be important for both research and educational practice purposes.

3.2. Measuring attachment behavior at childcare

In childcare centre experience, caretakers are relevant figures for children's development, not just for cognitive development, but also because they promote relational skills and emotional regulation competence (Howes, 2016). For this reason, professional caregivers should adopt relational strategies that transmit security to the child, balancing the necessary closeness (physical and emotional), but at the same time maintaining the right professional distance; this distance should not be perceived as disinterest or promoting an insecure attachment (Mantovani, Restuccia Saitta, Bove, 2003).

Recently, Howes (2016) underlines the importance to improve childcare programs focused to move professional caregivers toward responsive care and teaching. These attachment relationships are part of children's internal representations of self and others, which will form future relationships with peers and other people. That means the relationship with professional caregivers at childcare influences child social and emotional experiences outside of the family, as relationships with teachers and peers (Howes, 2016; Howes, Hamilton & Matheson, 1994; Howes, Phillips & Whitebook, 1992).

Specific programs have been developed for professional caregivers to improve the quality of care and supportive child-caregiver relationship. For example, Biringen and colleagues (2012), Driscoll and Pianta (2010), and Elicker and colleagues (2013) examined interventions such as *Project Secure Child in Child Care, Banking Time*, and *Early Head Start Relationships program*, which have the aim of support caregiver-child relationship. These interventions essentially consist of sessions in which professional caregivers *reflect* on their educational practice and are offered possible changes that would lead to a closer relationship with children. The authors mentioned above describe

these programs as useful for improving caregivers' interaction, sensitivity, interactive involvement, and positive caregiving. In general, these interventions reported that caregiver–child relationships varied, developing more positive and secure relationships with children.

Definitely, as childhood is a sensitive period for social and emotional competence, the role of relationships both in and out-of-home context is critical for future healthy development. For this reason, responsive teaching is more and more important in order to ensure a positive climate within the childcare context, where children can trust the caregivers and having a favorable development (Howes, 2016; Biringen et al., 2012). Special attention must be paid to all those moments that are naturally critical for the mother-child dyad. The transition from the family to a new care setting is one of them, it is a delicate period and it needs particular attention and awareness.

As mentioned in *Chapter 1*, there are some tools such as the SSP and the AQS to assess the attachment relationship to the professional caregiver; however, these tools have received some criticisms on the effectiveness of assessing the specific and particular relationship with the professional caregiver in childcare centre context. Furthermore, these tools were created only for assessing purposes, so are useful just for research-related objectives, and they do not have any value for educational aims.

Generally, the literature reports intervention programs for professional caregivers which then are evaluated through different tools that have some limitations in childcare context; furthermore, to our knowledge, there are no specific tools and methods with the aim of support the settling-in phase. The current doctoral project instead aims to integrate these two dimensions, offering a method and a tool that could be useful for both research and practical purposes.

Limitations of SSP e AQS

The most used methods to measure and assess child attachment with non-parental child providers are the *Strange Situation Procedure* (SSP: Ainsworth et al., 1978) and the *Attachment Q-Sort* (Waters e Deane, 1985), but with some limitations of their use in the childcare centre context and for our specific research purposes.

First of all, both SSP and AQS are methods based on child-mother relationship and aimed to assess the child in a defined period, so these tolls are not specific for childcare centre context and do not specifically study the attachment *development* over time. As we have seen above, many studies examined the relationship between professional-caregiver and child and the importance of secure attachment in childcare centre, but studies that specifically observed the development of the attachment relationship over time are little, and results concerning the time of relationships building are mixed (e.g., Ereky-Stevens et al., 2018; Lee, 2006; Raikes, 1993, Datler et al., 2012; Howes and Oldham, 2001).

Especially the SSP had been criticized for its artificiality and situation-specific, studies using only this tool give a limited view on children's relationships, and should include naturalistic observations in day-care centres (Anderson et al., 1981). Several studies using the SSP with children attending the childcare reported that relationships between caregiver and children are mostly insecure (Belsky, 2001), but when the AQS has used children's secure attachments with care providers and with mothers are equally high (Ahnert, Pinquart & Lamb, 2006). How can this difference be explained?

Several authors (especially Clarke Stewart, 1989) questioned the validity of the SSP as a reliable method with children who already attended childcare: since the SSP is based on behaviors that the child shows during a separation from the caregiver, the doubt is that this type of procedure may not elicit the same attachment behaviors in children

who, attending the childcare, already experience daily episodes of separation from the primary attachment figure. Therefore, it would be possible that children who are attending childcare centres are less stressed during the SSP procedure, and then they could be evaluated as "insecure" whereas they simply are more used to separate from the caregiver.

Moreover, the SSP is not suitable for longitudinal studies, because it cannot be used for repeated measurements: the procedure requires that (at least) 6 months pass between one measurement and the next one, to prevent the child could have any memories about the strange situation. Another limitation is due to the restrictive age of the sample: the SSP can be only used with infants in the 2nd year of their life, which neglect attachment development during later stages of life (van Ijzendoorn et al., 2004).

Currently, the most used method to assess attachment relationship in non-maternal care is the Attachment Q-Sort (Waters e Deane, 1985), that has some advantages over the SSP: it can be used for children over the age of 2 years; observations are conducted in the natural setting; it may be used more frequently in repeated measures. The AQS scores range from -1.0 to +1.0, where higher scores indicate more similarity to the ideal-type security sort, thus a more secure attachment relationship. With this method, the AQS score is continuous and without categories, so it fails to differentiate between avoidant and resistant types (van Ijzendoorn et al., 2004). Furthermore, in a meta-analysis about the validity of the observer AQS, van IJzendoorn and colleagues (2004) stated that the AQS is considered an appropriate tool for attachment assessment when applied by external observers, but not by the caregivers. Finally, the authors suggested that more work in child-professional caregiver area should be conducted before establishing the validity of the AQS for this type of caregiving.

Therefore, as we can see, the increasing interest in studying multiple attachments needs new methods that can be adapted and suitable for extra-family care contexts. The attachment literature, which expresses some concerns especially about the SSP (in particular in school-based context), encourages developing new assessments and tools to measure attachment (Friedman & Boyle, 2008).

A method that assesses not only the attachment relationship between a new caregiver and child but also the formation of attachment relationship as a *process* is the *Parent Attachment Diary* (PAD) created by Stovall and Dozier (2000). It is a structured diary, filled daily by foster parents from the arrival of the child in the foster family, so in this way, the PAD is a useful method to examine the formation of attachment relationship with new caregivers over time. This tool was created in the field of "multiple attachments", but still oriented for a family context. However, Howes (1999) stated that the construction of the attachment relationship between the child and his/her child care providers appears to be similar to the construction of infant-mother attachment: as well as the child seeks and follows the mother when distressed, at day-care he/she directs the same attachment behaviors towards the caretaker. A research gap on this topic area is that there are no specific tools that study relationship building with a new caregiver. Then, our research question is: can an adapted version of PAD be useful to observe the construction of the secure base in childcare centre?

3.3. Adapting the PAD to childcare: the *Professional Caregiver Attachment Diary*

3.3.1. Aims of the project

In childcare, toddlers open their eyes to new settings, new people and new routines, so they need a "secure base" from which can be able to explore, play, and feel

protected. However, this transition is delicate, not easy and rarely without any conflicts. Their secure base develops progressively, the relationship with the new caregiver is significant to bridge mother-child separations during this process (Anderson, 1980) and the "settling-in phase" is thought up for this. This transaction is not easy for anyone: not for the child, not for the parent, and not even for the professional caregiver, who has to manage a delicate situation.

Considering the relevance of child–caregiver relationship in non-maternal care, it is important to explore *how* the relationship-building process develops in this context: therefore, a process-oriented perspective in which child–caregiver relationship is a continuum developing over time could be interesting for both research and practice (Lee, 2006).

Based on these considerations, our purpose was to adapt and apply the *Parent Attachment Diary* (Stovall & Dozier, 2000) to childcare centre context: based on the assumptions that (1) the PAD is a useful and valid method for assessing the development of the child attachment relationship to a *new* caregiver (Stovall-McClough & Dozier, 2004), (2) the formation of child-alternative caregivers is similar to the formation of child-mother attachment relationship (Howes, 1999), and (3) it is important to improve childcare programs focused on child-caregiver relationship (Howes, 2016), we adapted the PAD to childcare centre context, with the aim to examine the relationship-building process to professional caregivers and support it. Therefore, the *Parent Attachment Diary* becomes the *Professional Caregiver Attachment Diary* (PCAD, or in Italian *Diario dell'Attaccamento all'Educatrice/Educatore*, DAE) (Molina & Macagno, 2019). It consists of a structured diary that is filled daily by professional caregivers during and after the settling-in process. With this method, it could be possible to follow the

development of children's first attachment behaviors in the early months into childcare centre.

As mentioned above, the current doctoral project has both research and educational purpose. In fact, this project is part of the research field about the observation in the childcare and the importance of the "reflective practice" (Molina, Marotta & Bulgarelli, 2016; Schön, 1984). One of the objectives of this study includes the use of the PCAD as an in-service training and self-assessment tool for professional caregivers. Adopting the observational method that the PCAD proposes and supports, we expect that caregivers will be able to: exercise and improve their observation skills; be more aware of the attachment relationships with children in settling-in phase; reflect on the attachment behaviors that children show, especially the insecure ones; monitor child familiarization in childcare; reflect on their educative responses, to become a "secure base" for children.

We expect, through the observation and analysis of specific situations in which the child may experience distress (separation from caregivers, little frights with other children, difficulty in sleeping or eating, etc.), that the diary could be an opportunity for caregivers to reflect and re-elaborate their professional skills, such as observational techniques, educational skills, responsive care and competence to intervene adequately.

Therefore, the aims of this study are: (1) to offer to professional caregivers an observational method and tool to monitor and support the settling-in phase, in order to improve their professional skills, and (2) to verify the applicability and the possibility to use the PCAD in the childcare centre context, in order to observe children familiarization during the earliest months in childcare centre.

3.3.2. Starting point: the Parent Attachment Diary

The *Parent Attachment Diary* (PAD) by Stovall and Dozier (2000, translated into Italian by Molina and Casonato, 2009) is a tool designed to assess the construction of child attachment with foster parents in the U.S. context. This tool was created in the field of "multiple attachments" and aimed to measure infants' daily attachment behaviors to a *new* caregiver.

The PAD is a structured diary, filled daily by foster parents for 2-3 months from the arrival of the child in the foster family. Foster parents were asked to record child behaviors during tree stressful situations that should activate attachment behaviors, in order to follow the early attachment developments in the new context of care:

1) the child got *physically hurt* (e.g. falling down, scraping a knee, bumping into something, etc.);
2) the child was *frightened* or *afraid* of something (excluding separation);
3) the *child and the caregiver were separated* (leaving to go out, going to another room, dropping the child off, etc.).

For each of these situations, parents should briefly describe the episode (as a diary), then choose from a checklist the behaviors the child showed during the episode. The description in a diary-format provided by parents is used to verify and better understand what is marked in the checklist. Specifically, each situation is divided into two parts where is asked:

A) what did the child do to let know he/she was upset, or how did the child respond to the separation (e.g., turns to caregiver for help or not?);
B) after the caregiver responded, what did the child do next, for the first and the second stressful situation (e.g., is easily soothed by the caregiver or not?), or the

child reaction when reuniting with the caregiver in the third situation (e.g., is happy to see her again or not?).

(see *Appendix 1*)

Items (behaviors) that we find in the checklists are coded based on attachment behaviors observed by Ainsworth (1978): the behaviors in the diary were coded in a way that was theoretically and methodologically consistent with attachment theory and the Strange Situation (Stovall & Dozier, 2004). The behavioral sequence is scored depending on the child responses that are summarized in the following categories: *Proximity Seeking/Contact Maintenance* includes looking at and moving closer to the parent, calling him, signaling to be held; *Ability to be Calmed* includes child's facility to be soothed by the parent, without showing anger or resistant behavior; *Avoidance* includes ignoring the caregivers or turn away as if nothing was wrong; *Resistance* includes reactions of anger or frustration, such as kicking, hitting, biting, as well as the difficulty to be soothed (Stovall & Dozier, 2000). The first two categories (proximity and calm) in scores' calculation constitute a single *Security* score (Molina & Casonato, 2013).

In addition, in part A of the third situation (how did the child respond to the separation with the caregiver) the checklist has also some items that if marked alone are coded as *Non Distressed* (e.g. "was happy to keep doing what he/she was doing"): it means that the child may not be distressed when parents leave. *Non distressed* behavior is different from *avoidant* one, since Avoidance means that the child shows in some way that he/she is upset, but does not seek out comfort from caregivers (Stovall et al., 1997).

Validation of the diary was examined by comparing the means of secure, avoidant, and resistant behavior with Strange Situation scores. Compared with the SSP, the PAD showed a good concordance, scores correlate positively, especially with *proximity* and *avoidance* scores (Molina & Casonato, 2013). In fact, children classified

as *secure* in the SSP obtained lower *avoidance* scores and higher *security* scores on the PAD, and vice versa, children classified as *avoidant* in the SSP obtained higher *avoidance* scores on the diary than secure babies. Specifically: security in the diary was significantly correlated with SSP proximity seeking scores (r = .53) and contact maintenance scores (r = .46); security was negatively correlated with SSP avoidance scores (r = -.46); avoidance in the diary was negatively correlated with SSP proximity seeking (r = -.74), and contact maintenance (r = -.67); finally, avoidance in the diary correlated with avoidance in the Strange Situation (r = .58). In summary, Stovall-McClough and Dozier (2004) reported a significant concordance between SSP and PAD, which confirms the validity of the diary.

3.3.3. Stages in adapting and revising the PCAD to childcare context

The Pilot Study

The adaptation of PAD began in October 2015, with a Pilot Study which was the subject of my degree thesis with Prof. Molina. The Pilot Study was conducted during the 2015/2016 school year and had the aim to observe the professional caregiver-child relationship in childcare centres first with the PAD: the objective was to verify whether this tool could be suitable and useful for professional caregivers to observe children's attachment behaviors. Therefore, we first used the original version of the PAD to understand how to adapt it to childcare centre context.

The Pilot Study involved a total of 34 children (aged from 7 to 35 months, M = 24.96, SD = 7.92) from two different Italian childcare centres, they were observed during two months by 24 professional caregivers who filled the PAD daily.

However, during the first data collection, the number of filled situations was quite low: professional caregivers reported that the first two situations (when the child “gets

hurt" and "is scared/frightened by something") were highly specific, and it was difficult to observe these episodes in a childcare context. Actually, PAD' situations are more easily observed at home, that is the context for which it was designed, and it seems they are not so representative of what happens in everyday life within the childcare, especially during toddlers' settling-in phase (children do not get hurt and get scared so often). In fact, after 2 months, diaries compilation was rather low, about 34%.

Despite the sample of the Pilot Study was small and results were not statistically relevant, it has been very useful to apply the PAD to discuss with professional caregivers about its critical aspects, in order to modify the diary and better adapt it to childcare context. Anyway, focus-groups with professional caregivers made it possible to rework the diary's structure to better adapt it to childcare context and everyday life. Therefore, along with professional caregivers, we modify the situations to observe and the revised version that we applied right after was the *Professional Caregiver Attachment Diary 1.1* (PCAD 1.1).

The new stressful situations to observe are:

1) *when parents leave* the childcare at morning time;
2) a *generic stressful situation* in which the child is upset or distressed (e.g. the child gets hurt, fights with another child for a toy, has difficulty eating, or sleeping during the nap, etc.);
3) when there is *separation* from the professional caregiver during the day [this one remains the same from the PAD].

In this childcare version also, each situation is divided into two parts: A) how the child responded to the stressful situation; B) child subsequent response to caregiver intervention, or child's reaction when reuniting with the caregiver.

Items' codification and scores' analysis was almost the same indicated by Stovall and Dozier (2000) for the PAD. Differently from the PAD, in this PCAD version, there are two situations of separation from caregivers (separation from parents and separation from the professional caregiver) that have similar checklists behaviors in part A.

This PCAD first revised version better reflected childcare centre everyday life and situations in which child attachment behaviors could be activated. In effect, the first important result was that diaries' compilation increased from 34% to 74%: this means that the adjusted version, modifying the situations to observe, was best adapted to the childcare context. About this, it was useful to compare notes and experiences with professional caregivers that were filling the diary, to discuss the PCAD complication and how we can improve it. In fact, we think that methods have to be adapted to reality, and not vice versa.

Further adjustment

Over time and after several observations, discussing with professional caregivers involved in the studies conducted with the PCAD, we realized that some adjustments had to be done, especially regarding "Non Distressed" behaviors.

PCAD 1.2 In the previous version (1.1) the third situation's checklist (separation from the caregiver) was not completely representative of all possible child behaviors. In the third situation, we find "Non distressed" behaviors just in part A, when the caregiver leaves the classroom, but not in part B, when she comes back. Observing the diaries, we noticed that in part B the most marked item was "*continued doing what he/she was doing before (didn't notice me)*" that was coded as *avoidant* behavior (Stovall & Dozier, 2000), but caregivers interpreted this item as a *positive* behavior, since it means

that children remain calm and not distressed even in their absence. Therefore, our doubt was: could this behavior in childcare be not always really avoiding, but be a consequence of child positive adaptation to contextual practices? In childcare, infants are supposed to get used to receiving care from all caregivers of the classroom, forming with all of them attachment relationships. Moreover, caregivers often have to leave the classroom and come back a few minutes later. Therefore, one can doubt if this specific item really expresses an avoidant attitude of the child, or if it simply reflects a *good adaptation* within the context. We hypothesized that, experiencing frequent separations from the caregivers and having always another familiar figure to refer to, children may not be distressed by this situation of separation over time, and so they do not show particular reactions or distress even when caregivers comes back.

For this reason, we divided the item into two different sentences with two different codings: "continued *quietly* doing what he/she was doing before" coded as *Non distressed* behavior, and "continued doing what he/she was doing before, *ignoring me (as if he/she didn't notice me)*" coded as *Avoidance*.

This PCAD version was used in the studies reported in *Chapter 4*, and it results that with this adaptation of the checklist, diaries compilation was even simpler and it increased to 81% (Macagno & Molina, 2020).

PCAD 1.3 Another critical issue was found in the first situation, when parents leave the child at morning time: professional caregivers noticed that in part A, in the checklist, there was no item describing "the happy entry of the child who greets the caregiver and then goes to play": this is a common behavior, that could be coded as *secure* and not be reduced as *non distressed* conduct. So, in PCAD 1.3 (Molina & Macagno, 2019) we added the item "*he/she greeted smiling and went happily to play*", which reports

proximity seeking to the professional caregiver without there being a stressful situation (we will see in *Chapter 6* that this difference is important).

3.4. The PCAD 1.3 (final version)

To date, the PCAD adaptation process has involved 7 childcare centres in Turin, and a total of 87 professional caregivers and 404 children. The last diary revised version is the *PCAD 1.3* shown below.

PCAD: Professional Caregiver Attachment Diary

Date: _____ Child Code: _____

Directions:

Try to answer all the questions as honestly as possible. There are no "right" or "wrong" answers. Neither your name nor child's name should be anywhere on this form. This form will be identified by a code number and will only be seen by research staff.
This diary works best when filled out every day. If for some reason you are not able to fill it out during the working time, you may fill it out in the evening, at the end of the day. Please do not fill it out any later.

I filled this diary out:

- ❑ during children's nap time
- ❑ at the end of working time
- ❑ when I return home
- ❑ at evening

For questions 1-3 try to think of a *specific event that occurred today*. Do not use the same incident for more than one question.

1. **How did the child behave when parents leave at morning time?**

* Describe child's reaction to the PROFESSIONAL CAREGIVER (and not the behaviors to the parents);
* If you answer "cried, screamed, or yelled" you should also mark another answer, which better describes child behavior.

Describe this situation in 2-3 sentences, including how you responded to the child: _____
_____
_____
_____

A/ How did the child respond to the separation?

___ cried, screamed, or yelled
___ acted as if nothing happened
___ called after me
___ wanted to be picked up or held
___ hit, kicked, or pushed me
___ went off by him/herself
___ came after parents
___ held on to me, wouldn't let go
___ went with other children
___ acted angry or frustrated (ex. stomped feet, kicked legs)
___ was upset but did not indicate that he/she wanted or needed anyone
___ whimpered or cried briefly and kept going, did not look at me
___ greeted smiling and went happily to play
___ other(s) _____

B/ After you responded to the child, what did the child do next?

___ was soon calmed or soothed
___ pushed me away angrily or in frustration
___ continued to play, did not notice me
___ stomped and/or kicked feet
___ hit or kicked at me
___ remained upset, was difficult to soothe
___ turned from me angrily or in frustration
___ did not indicate he/she needed my help
___ ignored me
___ became quiet and then fussy again
___ turned away when picked up or made contact
___ sunk into me or held on to me until calmed down
___ did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)
___ held on to me or went after me if I tried to put him/her down or go away
___ turned, walked, or crawled away from me as if nothing was wrong
___ other(s) _____

2. **Think of one time today when the child felt upset:** gets hurt (this includes anything like falling down, scraping a knee, bumping into something, etc.), or was frightened or afraid of something (this should not include dropping the child off, leaving child, or any other separations), or fights with another child for a toy, has difficulty eating, or sleeping during the nap time, etc.

* If you answer "cried" you should also mark another answer, which better describes child behavior.

Describe this situation in 2-3 sentences, including how you responded to the child: _____
_____
_____
_____

A. What did the child do to let you know he/she felt upset?

___ looked at me for assurance
___ went off by him/herself
___ acted as if nothing was wrong
___ acted angry/frustrated (ex. Stomped feet, kicked legs)
___ called for me
___ looked at me briefly then looked away and went on
___ came to me
___ signaled to be picked up or held, reached for me
___ cried
___ did not indicate he/she wanted or needed me
___ cried and remained where he/she was, did not signal for me
___ moved closer to me (but actual contact did not occur)
___ other(s) _____

B/ After you responded to the child, what did the child do next?

___ was soon calmed or soothed
___ pushed me away angrily or in frustration
___ continued to play, did not notice me
___ stomped and/or kicked feet
___ hit or kicked at me
___ remained upset, was difficult to soothe
___ turned from me angrily or in frustration
___ did not indicate he/she needed my help
___ ignored me
___ became quiet and then fussy again
___ turned away when picked up or made contact
___ sunk into me or held on to me until calmed down
___ did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)
___ held on to me or went after me if I tried to put him/her down or go away
___ turned, walked, or crawled away from me as if nothing was wrong
___ other(s) _____

3. **Think of a time today when you and the child were separated** (this can include leaving to go out, going to another room, dropping the child off, etc. *but do not include putting the child to bed for nap time*).

Describe this situation in 2-3 sentences, including how you responded to the child: _____
_____
_____
_____

A/ How did the child respond to the separation?

___ cried, screamed, or yelled
___ acted as if nothing happened
___ called after me
___ wanted to be picked up or held
___ hit, kicked, or pushed me
___ went off by him/herself
___ came after me
___ held on to me, wouldn't let go
___ was happy to keep doing what he/she was doing
___ acted angry or frustrated (ex. stomped feet, kicked legs)
___ was upset but did not indicate that he/she wanted or needed anyone
___ whimpered or cried briefly and kept going, did not look at me
___ other(s) _____

B. What was child's immediate reaction when he/she saw you again?

___ greeted me (ex: smiled, said my name, said hello)
___ stomped and/or kicked feet
___ signaled to be held and/or picked up
___ hit, kicked me
___ cried and remained where he/she was
___ cried, screamed
___ came to me
___ brought me a toy or other object
___ turned away as I picked up or made contact
___ if upset, was easily soothed and calmed by me
___ sunk into me or held on to me until calmed down
___ did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)
___ whimpered quietly to him/herself (may have looked at me briefly)
___ wanted to be held, fussed and wanted to get down, then wanted to be picked right back up again
___ continued quietly doing what he/she was doing before
___ looked at me briefly then looked away, did not smile or greet me
___ started to approach me then turned and wondered somewhere else
___ if upset, was NOT easily soothed and/or calmed by me
___ continued doing what he/she was doing before, ignoring me (as if he/she didn't notice me)
___ other(s) _____

In summary, in this final version, professional caregivers are asked to describe in a few sentences child behaviors during the three situations and then mark the corresponding items in the checklists. These three situations should be particularly stressful during the early month in the new context of care: (1) when parents leave the childcare at morning time; (2) the child is upset or distressed because e.g. fights with another child for a toy, has difficulty eating or sleeping during nap time, etc.; (3) when is separated from the professional caregiver during the day.

The diary should be filled out every day from child entry to childcare centre for the duration of time of interest. Observing daily child's behaviors during these stressful events, that should activate attachment behaviors, it could be possible to follow the early attachment developments in the new context of care. A presentation and training meeting with caregivers before using the tool is recommended, as explained below (*paragraph 3.5.*).

3.4.1. Coding System

The items (behaviors) were coded whit reference to the attachment theory and the scoring in the SSP. The PCAD uses Ainsworth and colleagues' (1978) attachment classification (secure, avoidant and resistant behaviors) and includes the concept of balance between attachment and exploratory behaviors (*non distressed* category).

The coding system and scores' analysis was almost the same used in the PAD indicated by Stovall and Dozier (2000), except for the *non distressed* category. As explained above, in the PAD "n*o distressed*" items are just in the checklist when the caregiver leaves (the third situation, part A), but in PCAD we can find them in 3 episodes: when parents leave at morning time and when the caregiver leaves and then comes back.

For this reason, differently from the studies with foster parents (PAD), we considered interesting and important to investigate also this type of “neutral behavior” trend, considering it as child *positive adaptation* within the new childcare context and everyday life (for an extensive explanation, see *paragraph 3.4.3.*).

Then, items (behaviors) are classified as:

- *Secure* (SC): the child actively seeks caregiver close proximity and contact when he/she need it (*Proximity*), and he/she is easily soothed by the caregiver (*Calm*). Ex: “came to me”, or “was soon calmed or soothed”;
- *Avoidant* (AV): the child ignores the caregiver or goes away even when he/she needs them, acts as if he/she does not need to be taken care of. Ex: “looked at me very briefly then looked away and went on”;
- *Resistant* (RE): include reactions of anger, frustration and difficulty to be soothed by the caregiver. Ex: “pushed me away angrily or in frustration”, or “remained upset, was difficult to soothe”.
- *Non Distressed* (ND): the child is not distressed when parents or the professional caregiver leave, but he/she remains quiet and calm. Ex. “was happy to keep doing what he/she was doing”.

Items as "cried, screamed, or yelled" are not coded, as only crying cannot be codified: for example, crying can be followed by caregiver proximity seeking (secure behavior) or by anger reactions (resistant behavior). Therefore, the caregiver is asked to mark also another item that better describes the child's behavior.

Finally, at the end of each checklist, there is an empty space ("others") in which the caregiver can record behaviors that are not present in the checklist. Doing so, the caregiver keeps track of what happened, without forcing the behavior observed in an item

that does not represent it. Later, researchers will verify and codify the behavior according to the theoretical basis of attachment theory. For detailed item coding system see the *Italian Coding Manual* in *Appendix 2*.

3.4.2. Scoring

For each child, we computed the scores adding up the occurrences of *Secure* (differently to the PAD, *Proximity* and *Calm* are not counted separately, but are counted together), *Avoidant, Resistant* and *Non distressed* behaviors marked in the three situations for each day. Since each situation is divided into 2 parts (A and B), in any given day, children can show 0-6 *secure* behaviors, 0-6 *avoidant* behaviors, 0-6 *resistant* behaviors and 0-3 *non-distressed* behaviors. The daily score of security, avoidance, resistance and non-distress are calculated proportionately, depending on how many situations are filled each day: to get a proportionate score, raw scores (of security, avoidance, resistance and non-distress) are divided by the number of observations completed. For example: if the caregiver filled out all the 3 situations, and both parts A and B, the raw scores for security, avoidance, resistance will be divided by 6, and non distressed scores will be divided by 3; if the caregiver filled out just 2 situations, the raw scores for security, avoidance, resistance will be divided by 4 and non distressed scores will be divided by 2.

3.4.3. How to interpret "Non Distressed" category

Howes and Smith (1995) in their study on the relationship between children and their caregivers using the AQS found that the avoidant group of their sample was strangely heterogeneous: in facts, over one-quarter of the children who were placed in the avoidant profile because they have high avoidant scores, but at the same time they

also had high-security scores; contrary to what one might think, they observed that these “avoidant” children were engaged in positive interaction with the caregiver. This suggested that some children may be simply more independent, still having a secure attachment relationship with the caregiver and seeking her only when they really need. Therefore, Howes and Smith warned on the overrepresentation of *avoidance* using AQS measurement, because some children could be misclassified as insecure with it. On the other hand, in the PCAD this type of behavior could be more effectively classified as "Non Distressed".

After several studies and discussing with professional caregivers, we came to the conclusion that *Non Distressed* behaviors can be considered as an *index of good adaptation* within the childcare centre. We find "Non Distressed" items in situations of separation of the child from parents and professional caregivers, and these items are reflecting a quite attitude during these episodes: the child is not distressed when left at the childcare centre or with other familiar caregivers, so he/she not needs help or to be soothed. We can also read it in the diaries written by caregivers: for example, during the first week of observation, in a diary we found this description in Situation 1: “The mother is holding R. that starts to cry. I talk to her, so R. stretches her arms towards me, and I hold her. R. clung to me and then she calms down” (*Secure* behavior) and about the same child, after two months, the caregiver wrote in the diary “R. came in smiling and went towards some children who were playing” (*No Distressed* behavior) (Macagno & Molina, 2020).

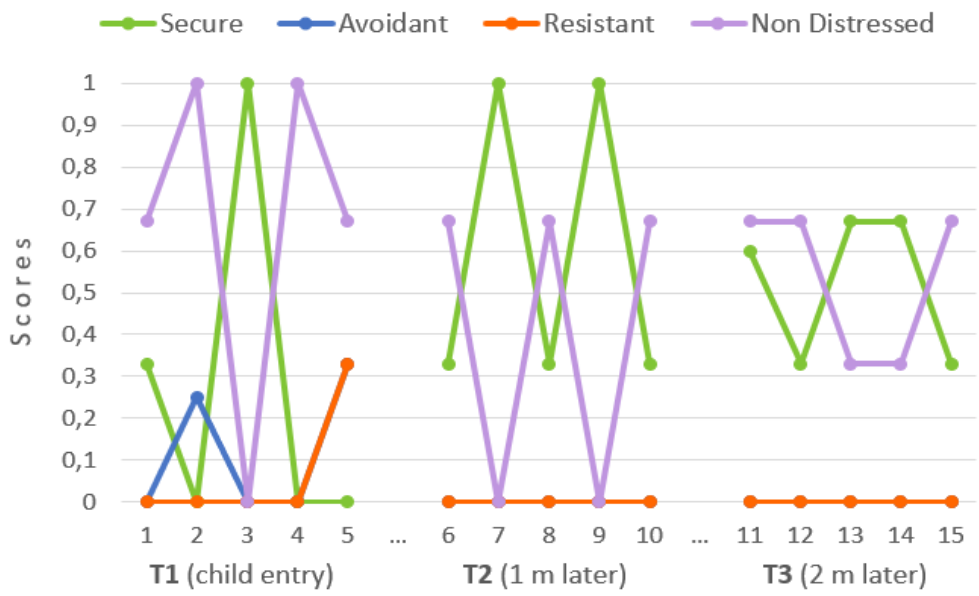
In reference to attachment theory, the concept of "secure base" is a dynamic equilibrium between attachment system and exploration: when the child feels safe, attachment behaviors are deactivated and explorative ones are activated, which allows the child to open up to the surrounding environment (Ainsworth, 1967). Bowlby

(1969/1999) and Ainsworth (1967) identified the exploration as a behavioral scheme of a secure attachment system. The behaviors codified as Non Distressed in the PCAD refer to that: when the child arrives serene at childcare centre and stays in the classroom exploring and playing quietly means that he/she feels protected and his/her proximity needs are satisfied. Because only when the child feels safe and secure, he/she can dedicate his/her resources and energy to explore.

Therefore, *Non Distressed* conduct is the downside of *Security*. This hypothesis is reinforced by correlations analysis on PCAD, which shows that *secure* and *non distressed* scores are strongly negatively correlated (r = -.68) (see below, *Table 3.3* in *paragraph 3.6.3*): it seems that filling the diary secure behaviors are "compensated" by non distressed conducts that reflect explorative behaviors, and so, a positive and good adaptation to childcare centre context. This dynamic balance between exploratory and attachment behaviors is well shown in *Figure 3.1** , where one can see that these two conducts are alternated and compensate each other: when attachment behaviors are activated (secure) exploratory behaviors are deactivated (non-distressed) and vice versa. Moreover, these "no-reactions" are the purpose of professional caregivers: when a child does not cry anymore when come at childcare centre, but is calm and quiet to explore and play, it is a sign of a successful familiarization.

* This line chart refers to data collected in *Study 3* (*Chapter 5*). The chart represents the attachment behavior scores of a child who was observed daily for a week (days 1-5, 6-10, 11-15) for three time-points (T1, T2, T3). The x-axis (horizontal) refers to observations over time; the y-axis (vertical) refers to attachment behavior scores.

Figure 3.1. Example of a child's individual chart showing daily attachment behaviors. In this chat it is particular evident the balance between exploratory and attachment behaviors.



3.4.4. Caregiver's Observational Form

As has been pointed out several times, the PCAD is a tool that wants to be useful especially for professional caregivers. Therefore, to better supervise children's behaviors over time, caregivers can also fill in an "Observational Form" that allows them to see the progress of children's conduct. In order to give immediate feedback, the caregiver marks in the Observation Form with a pencil the category of the attachment behaviors (secure, avoidant, resistant and non-distressed) that the child shows for each situation (including part A and B); doing so, the caregiver could *see* more simply the progress of the child behaviors over time.

As we can see from the example in *Figure 3.2*, the professional caregiver filled in daily the Observational Form for 4 weeks from the child's enrollment in the childcare centre (on September 14th). During the first week, it can be said that entry at morning

time was particularly difficult, as the caregiver has always marked resistance behaviors, both in part A and in part B: e.g., the child acted angry and frustrated and was difficult to soothe. In the situation of separation between child and caregiver instead, the child showed avoidant behaviors, so he was upset but did not indicate that he wanted or needed anyone. To sum up, the caregiver can see in this Form that the child's first week in the childcare centre was very stressful. The second week, on the other hand, seems to have gone a little better: at morning time the child shows avoidant behaviors (e.g., ignores the caregiver even if he is stressed, or cried alone) but began to show some secure behavior, especially in part B, which it means that he began to be soothed by the caregiver. In the situation of separation from the educator, the child began to show non-distressed behavior. The third and fourth weeks have gone much better: in the Form, we see more secure and non-distressed behaviors, there are few avoidant conducts. Especially in the last week of observation, the child seemed to enter at morning time easily and without the need of the caregiver (all the behaviors are non-distressed in part A). When the child felt upset during the day, he reached the caregiver proximity and was easily soothed her (all the behaviors are secure in both parts A and B). Finally, when the caregiver left the classroom, the child was no longer upset (all the behaviors are non-distressed in part A) and when he saw her again he was happy and greets or came to her (all the behaviors are secure in part B).

Figure 3.2. Example of an **Observational Form** filled in daily by a professional caregiver. The caregiver first fills the diary (a) and then the Observational Form (b) marking the category of the attachment behaviors that the child shows in each situation.

Data inizio 14/09/2016		L	M	Me	G	V		L	M	Me	G	V		L	M	Me	G	V		L	M	Me	G	V
1. Uscita del genitore																								
Evitamento	A			X					X			X			X		X							
	B								X															
Sicurezza	A									X								X						
	B									X	X	X			X	X	X	X						
Resistenza	A	X	X	X	X											X								
	B	X	X	X	X	X																		
No distress	A							X						X							X	X	X	X	X
2. Disagio																								
Evitamento	A											X												
	B											X												
Sicurezza	A							X								Y	Y	Y		X	X		Y	
	B							X								Y	Y	Y		X	X		Y	
Resistenza	A																							
	B																							
3. Uscita dell'educatore																								
Evitamento	A			X	X					X		X			X									
	B			X	X			X	X	X	X	X			X									
Sicurezza	A													Y		Y	Y							
	B													Y		Y	Y	Y		Y	Y	Y	Y	Y
Resistenza	A																							
	B																							
No distress	A							X	X	X	X	X			X			X		X	X	X	X	X
NOTE/ motivo della non compilazione (BA: bambino assente, EA: educatore assente)																								

1. Quale è stata oggi la reazione della bambina all'allontanamento del genitore?

Descriva la situazione in 2-3 frasi, includendo il modo in cui lei ha risposto alla bambina:

la bimba è arrivata con il papà, io le ho tolto le bretella e lei è venuta da me, ha salutato il suo papà con la manina e poi siamo entrate in sezione.

A/ Come ha risposto la bambina alla separazione? *Numeri soltanto le condotte che la bambina ha manifestato, nell'ordine in cui si sono verificate.*

--- Ha pianto, urlato o gridato
--- Ha fatto come se niente fosse
--- Mi ha chiamato
4 Ha voluto essere presa o tenuta in braccio
--- Mi ha colpito, tirato un calcio o mi ha spinto via
--- Se ne è andata per conto suo
--- Ha cercato di seguirlo/a
--- Si è aggrappata a me, non voleva lasciarmi andare
--- E' stata contenta di continuare a fare quello che stava facendo
--- Ha manifestato rabbia, frustrazione (per es., ha battuto i piedi, ha scalciato, ...)
--- Era agitata, ma non ha dato segno di aver bisogno di qualcuno
--- Ha piagnucolato o pianto brevemente e ha continuato a fare quello che stava facendo, non mi ha guardato
--- Altro (anche più di una)

B/ Dopo che lei ha risposto alla bambina, cosa ha fatto la piccola? *Numeri soltanto le condotte che la bambina ha manifestato, nell'ordine in cui si sono verificate.*

--- Si è subito calmata e tranquillizzata
--- Mi ha spinto via con rabbia o frustrazione
--- Ha continuato a giocare, come se non si fosse accorta di me
--- Ha battuto i piedi o scalciato
--- Mi ha colpito o tirato un calcio
--- E' rimasta agitata, era difficile da consolare
--- Si è allontanata da me con rabbia o frustrazione
--- Non ha mostrato in nessun modo di aver bisogno del mio aiuto
--- Mi ha ignorato
--- Si è tranquillizzata ma poi è stata di nuovo piagnucolosa
--- Si è girata dall'altra parte quando l'ho presa in braccio o l'ho toccata
--- Si è rannicchiata contro di me o si è aggrappata a me fino a quando non si è calmata
--- Non mi ha permesso di tenerla in braccio facilmente, ma è rimasta agitata (ha inarcato la schiena, mi ha allontanato con le braccia)
--- Si aggrappava a me o mi seguiva se provavo a metterla giù o ad allontanarmi
X Si è voltata e si è allontanata camminando o gattonando, come se non ci fosse niente che non andava
--- Altro (anche più di una)

(a)

Data inizio 14/09/2016		L	M	Me	G	V	L	M	Me	G	V		L	M	Me	G	V
1. Uscita del genitore																	
Evitamento	A			X			X		X		X		X		X		
	B						X										
Sicurezza	A							X									Y
	B							X			X					Y	Y
Resistenza	A	X	X	X	X												
	B	X	X	X	X	X											
No distress	A						X							X			
2. Disagio																	
Evitamento	A										X						
	B										X						
Sicurezza	A						X									Y	Y
	B						X									Y	Y
Resistenza	A																
	B																
3. Uscita dell'educatore																	
Evitamento	A			X	X												
	B			X	X		X	X	X	X	X			X			
Sicurezza	A														Y	Y	
	B														Y	Y	Y
Resistenza	A																
	B																
No distress	A						X	X	X	X	X				X		
NOTE/ motivo della non compilazione (BA: bambino assente, EA: educatore assente)																	

(b)

Therefore, the Observational Form is particularly useful to summarize child familiarization in the new context: by filling it, caregivers have effective and visual feedback which reflects the child-caregiver relationship from a process-oriented perspective. Thanks to the Observation Form, professional caregivers have visual “data” on which could reflect: how child familiarization is going? what are the most frequent behaviors of the child? which situation is more critical? after two weeks here, is the entrance at morning time getting better? how does the child react when I intervene to console him/her?

This is the purpose of the intervention with PCAD on caregivers' practice, which is to improve their observational skills and stimulate reflection on what they have observed, so that observation is not just "seeing something" but observing it *professionally*.

3.5. The PCAD as a new observational method and tool for professional caregivers

To evaluate the PCAD as a useful method and tool for practical purposes, professional caregivers’ opinions and perspectives were essential. This point is crucial since the attachment diary is filled directly by caregivers and so has to be suitable for them. This is the main conceptual difference from the most used *Attachment Q-sort*: the AQS is considered an adequate assessment of attachment only when an external person observes the child-caregiver dyad, but not when is the caregiver who uses the AQS as a self-report (van IJzendoorn et al., 2004). That means the self-reported AQS cannot be used for caregivers’ in-service training. On the other hand, the PCAD is filled in directly

by caregivers, so that they can be aware and reflect on the attachment relationship they build with children.

To collect caregiver's feedback about the PCAD, we gave them a short *questionnaire* (*Appendix 3*) on the key points on the use of the PCAD as a useful tool for professional training.

3.5.1. Method

Subjects

We administered the *Caregiver's Questionnaire* to a total of 54 professional caregivers who used the PCAD from 2015 to 2017. The total sample was divided into two subsamples because in Sample-1 (*Trained*) the caregivers received specific training on the theme of "attachment to professional caregiver" and how to use the PCAD and interpret it, whereas Sample-2 (*Non-Trained*) did not receive any training. Moreover, Sample-1 was composed of 18 professional caregivers from the two childcare centres involved in our Pilot Study and who participated in modifying and adapting the PCAD, so they were more involved in the PCAD project. On the other hand, Sample-2 included 36 professional caregivers from other 3 different childcare centres in Turin that joined the study at a later stage.

Caregiver's Questionnaire

As mentioned above, the PCAD has educational proposes that concern the opportunity for professional caregivers to reflect on their professional competences, such as

observational techniques, educational skills, responsive care and competence to intervene adequately.

In relation to these purposes, the *Caregiver's Questionnaire* aimed to explore caregivers' opinion on the use of PCAD with regard to 4 specific objectives: (1) acquire more knowledge and reflect on child-professional caregiver attachment relationship; (2) improve caregivers' observation skills; (3) give the opportunity to caregivers to reflect on their profession and practice (e.g. be more aware on child-caregiver attachment relationship, on settling-in phase, and/or on children insecure behaviors); (4) self-assess their educative responses to children.

The questionnaire is composed of 4 questions and caregivers were asked:

1. Did the training provide you new knowledge about child development?
2. Did the PCAD help you to observe children more carefully?
3. Have you reflected on problems that you have never thought about before?
4. Do you feel more competent in responding to children's needs?

Each answer has four-point Likert items with categories "NO, not at all", "more NO than yes", "more YES than no" to "YES, absolutely". Symmetry and balance are respected: answers contain equal numbers of positive and negative choices whose respective distances apart are symmetric about the neutral value; the distance between each choice is the same (Burns & Burns, 2008). Then, for each question, caregivers are also asked to give an example or a comment based on their personal experience (see *Appendix 3*).

Sample-2 (Non-Trained) filled in the same questionnaire but without the first question because they did not receive any training on the theme of "attachment to professional caregiver", so they could not assess this aspect.

3.5.2. Data Analysis

We hypothesized that receiving specific training and having a different involvement in the study could be two important variables that could influence the responses of the two different samples. Furthermore, the questionnaires were different, because in Sample-1 there was a question to assess the training. For these reasons, questionnaires of the two samples were analyzed separately.

For both samples, each question was analyzed separately. Likert-scale data were analyzed with frequencies analysis.

Open responses (examples/comments) were analyzed with a Text analysis: starting from the analysis of total responses, some "sentences-type" (categories) were obtained and then were analyzed with frequencies analysis.

3.5.3. Results

Sample-1 (Trained)

The tables down here show the caregiver's feedback of Sample-1 assessing the training on "attachment to professional caregiver" and the use of PCAD for their profession. 10 professional caregivers are from the Childcare centre *1* and 8 are from the Childcare centre *2*.

Question 1. **Did the training provide you new knowledge about child development?**

	Childcare centre 1	Childcare centre 2	**Totale Frequencies**	**Total %**
NO, not at all	0	1	1	5.6
more NO than yes	4	4	8	44.4
more YES than no	6	3	9	50.0
YES, absolutely	0	0	0	0

Comments
It clarified to me some doubts and refreshed some concepts about attachment theory (7)

Question 2. **Did the PCAD help you to observe children more carefully?**

	Childcare centre 1	Childcare centre 2	**Totale Frequencies**	**Total %**
NO, not at all	0	0	0	0.0
more NO than yes	1	0	1	5,6
more YES than no	6	1	7	38,9
YES, absolutely	3	7	10	55,6

Comments
It helps me to practice a more careful and intense observation (6)
I have paid more attention to child-professional caregiver separation (4)
It is useful to know *what* to observe and have specific situations to focus on (3)
I am more aware of the settling-in process (2)
Now I pay more attention to children's requests (2)
I have been able to notice children's changes over time (1)
Writing relevant moments is useful, in order to focus on these next time (1)

Question 3. **Have you reflected on problems that you have never thought about before?**

	Childcare centre 1	Childcare centre 2	**Totale Frequencies**	**Total %**
NO, not at all	0	0	0	0,0
more NO than yes	3	2	5	27,8
more YES than no	4	3	7	38,9
YES, absolutely	3	3	6	33,3

Comments
I've reflected on the importance of observing children *individually* (2)
I've reflected on the importance of child-professional caregiver relationship (2)
I've reflected more on parents-child separation at morning time (1)
I've reflected on children *individual* needs (1)
I've reflected more on resistant behaviors (1)

Question 4. **Do you feel more competent in responding to children's needs?**

	Childcare centre 1	Childcare centre 2	**Totale Frequencies**	**Total %**
NO, not at all	0	0	0	0,0
more NO than yes	2	1	3	16,7
more YES than no	5	3	8	44,4
YES, absolutely	3	4	7	38,9

Comments
Now I pay more attention to child needs and I feel more competent to respond (7)
I am more sensitive and empathetic in understanding what the child feels during distress moments (4)

The PCAD helped me to improve my welcoming at morning time *(momento dell'accoglienza al mattino)* (1)
Now I pay more attention to the care of children (1)
It is like children know that you are observing them, and they feel more considered and are more serene (1)
Observation is a useful method to improve as a professional caregiver (1)
I've learned to not interfere in child's activities (1)

Results support our hypothesis on the usefulness of the PCAD for professional caregivers. Concerning the evaluation of the training, half of the sample (50%) found it quite useful ("more YES than no") as it served mostly to clarify doubts and "refresh" some concepts about attachment theory.

In reference to the PCAD, a total of 95% of professional caregivers ("more YES than no" and "YES, absolutely" together) answered that the tool helps to observe children more carefully and most of them emphasized that it "helps to practice a more careful and intense observation", especially when they are separated from children. Someone emphasized the usefulness of PCAD structure, that is, knowing "what to observe and have specific situations to focus on" and write it. Moreover, caregivers referred to pay more attention to the settling-in phase process and children's behavioral changes.

About the third question, 72% ("more YES than no" and "YES, absolutely" together) of caregivers answered that the tool gave them the possibility to reflected on problems that they have never thought about before, such as "the importance of observing children *individually*", focusing on their personal and individual needs and resistant behaviors. They also have reflected more on the importance of child attachment relationship with the professional caregiver figure.

Finally, most of the caregivers, about 83% ("more YES than no" and "YES, absolutely" together), answered that the PCAD helped them to feel more competent in responding to children's needs: that is because some of them described themselves as more empathetic with children feelings needs, and then could improve, for example, the welcoming at morning time.

Sample-2 (Non-Trained)

The tables down here show the caregiver's feedback of Sample-2 assessing only the use of PCAD for their profession (Question 1 was omitted). 9 professional caregivers are from the Childcare centre *3*, 11 are from the Childcare centre *4* and 16 are from the Childcare centre *5*.

Question 1 (2). **Did the PCAD help you to observe children more carefully?**

	Childcare centre 3	Childcare centre 4	Childcare centre 5	**Total Frequencies**	**Total %**
NO, not at all	0	3	1	4	11.1
more NO than yes	1	2	1	4	11.1
more YES than no	5	6	12	23	63.9
YES, absolutely	3	0	2	5	13.9

Comments
It helps me to practice a more careful and intense observation (12)
I have been able to notice children's changes over time (9)
I have payed more attention to child-professional caregiver separation (5)
I am more aware on settling-in process (4)
Now I pay more attention to children's requests (2)
It is useful *writing* relevant moments to be able to focus on the next time (2)
It is useful to know *what* to observe and have specific situations to focus on (1)

Question 2 (3). **Have you reflected on problems that you have never thought about before?**

	Childcare centre 3	Childcare centre 4	Childcare centre 5	**Total Frequencies**	**Total %**
NO, not at all	2	5	3	10	27.8
more NO than yes	1	2	8	11	30.6
more YES than no	5	3	4	12	33.3
YES, absolutely	1	1	1	3	8.3

Comments
I've reflected on the importance of child-professional caregiver relationship (15)
I've reflected on the importance of observing children *individually* (7)
I've reflected more on parent-child separation at morning time (5)
I've reflected on child's *individual* needs (5)

Question 3 (4). **Do you feel more competent in responding to children's needs?**

	Childcare centre 3	Childcare centre 4	Childcare centre 5	**Total Frequencies**	**Total %**
NO, not at all	1	4	3	8	22.2
more NO than yes	4	3	2	9	25.0
more YES than no	2	4	9	15	41.7
YES, absolutely	2	0	1	3	8.3

Comments
Now I pay more attention and I feel more competent in responding to the child (12)
Now I pay more attention to child needs (7)
It helped me improve my welcoming at morning time (momento dell'accoglienza al mattino) (3)
Observation is a useful method to improve as a professional caregiver (1)
I am more sensitive and empathetic in understanding what the child feels during distress moments (1)

Results of Sample-2 are quite different as expected. Most of the professional caregivers, that is 78% ("more YES than no" and "YES, absolutely" together), answered that the PCAD helps them to observe children more carefully: 33% of them described that it "helps to practice a more careful and intense observation" and 25% highlighted they noticed changes in children behaviors thanks to this. Moreover, some caregivers referred to pay more attention to child-caregiver separation and to be more aware of the settling-in phase process.

About the second question, only 42% ("more YES than no" and "YES, absolutely" together) of caregivers answered that the tool helped them reflecting on problems that they have never thought about before, whereas 58% did not so much. However, 15 out of 36 caregivers pointed out that they have reflected more on the importance of child-professional caregiver attachment relationship and on "the importance of observing children *individually*". Someone could also reflect more on children's different and individual needs and when children and parents are separated at morning time.

Finally, 50% of caregivers ("more YES than no" and "YES, absolutely" together) answered that the PCAD helped them to feel more competent in responding to children's needs (33% emphasized this change also in their open comments): of these, 20% observed that it is because they pay more attention to child individual needs, and someone reported they improved their welcoming at morning time.

3.5.4. Discussion

In general, both samples reported that the PCAD is a useful tool and method for the observation of children at childcare: it seems it leads to observe children more

carefully, and this helps caregivers to be more aware of behavioral changes during the settling-in phase. This method gave also the opportunity to reflect on the childcare profession, especially on the importance of child-caretaker relationship that is built over time, which seems not to be so obvious. Moreover, several caregivers recognized the importance of taking some time to observe children individually. As a consequence, most of them generally described themselves as more competent in responding to children's needs.

As expected, receiving a specific training and having a greater involvement in the study most likely influenced responses of Sample-1, which gave more positive feedback overall.

To sum up, professional caregivers described the diary as a useful observational method and tool to improve their professional and educational skills. Observing children more carefully, they could better understand them, as they considered details that were unnoticed before; then, they could analyze and respond to distressing situations in a different and better way. In fact, the observation that the PCAD promotes is not limited only on child, but focuses also on caregivers: remembering and writing on the diary the episodes they observed, caregivers reflect also on their educational response and can improve their pedagogical skills. The function of this observational method is "training caregiver's look" (Szanto-Feder, 2014), not just on child behaviors but also on caregiver ones.

In conclusion, based on overall caregivers' positive feedback, it seems that the PCAD could be a highly vocational tool, useful for improving caregivers' observational skills, the possibility to reflect on their educational practice and responsive care.

3.6. Validation of the PCAD

A first step to assess the reliability and construct validity of the new tool, we tested the *construct validity* and the *convergent validity* of the PCAD.

A *construct* is an abstract concept that indicates a part of the subject psychic life, such as the attachment relationship. A construct cannot be observed directly, but can be inferred from observable *indicators*, such as child behaviors, which are translated in *items* in the PCAD (Pedon & Gnisci, 2004). To verify whether the relationships between the categories identified in the PCAD maintain the structure provided by the attachment theory (Security, Avoidance, Resistance, Non Distressed) Pearson's correlations analysis was performed.

On the other hand, convergent validity is the agreement between two measurements with different methods of the same construct (Pedon & Gnisci, 2004). This indicates the degree to which the PCAD could be related to instruments measuring the same construct, such as the *Attachment Q-Sort* (Waters e Deane, 1985). For a preliminary validation, 24 children were observed with the AQS on the days they were also observed with the PCAD. By doing so, scores obtained with the PCAD and the AQS on the same child were compared and we expected to find a moderate association.

3.6.1. Method

Subjects

A total of 148 children were involved in data collection between 2016 and 2018 (see *Study 3* in *Chapter 5*) and they were all observed by their caregivers with the PCAD. The sample was composed of 85 boys and 63 girls, aged between 4 and 34 months (M = 17.8,

SD = 7.2) when they were enrolled in the childcare centre. Of these, 24 children were randomly selected from the total sample and were observed with both PCAD and AQS; 14 were male and 10 were female, aged between 14 and 46 months old (M = 31.0 months) when they were observed with the AQS.

Measures

To assess the convergent validity of the new tool, we compared the PCAD with the *Attachment Q-Sort* (Waters e Deane, 1985) that has been translated into Italian, adapted and validated by Rosalinda Cassibba and Laura D'Odorico (2000).

The AQS assess children between 12 and 48 months of age which are observed at childcare centre during daily routine. The tool, in a Q-set format, consists of 90 items (cards) that describe a wide range of behaviors that reflect the "secure base". After 3-6 hours of observation, the observer ranks the cards into 9 piles (10 items each) from ‘‘most descriptive of the child” to ‘‘least descriptive of the child’ (Cassibba & D'Odorico, 2000). The AQS scores range from -1.0 to +1.0, where higher scores indicate a more secure attachment relationship.

As a trained observer, I personally observed each child for 3 hours, twice a week, for a total of 6 hours. The evaluation was carried out according to the procedure described by Cassibba and D’Odorico (2000), which results in ranking the 90 items into 9 piles (10 items each) (forced distribution). The procedure consists of: (1) After the first day of observation, I ranked the 90 cards (items) into 3 piles according to the similarity of observed behaviors: A- more similar behaviors, B- neither similar nor different behaviors, and C- less similar behaviors; (2) After the second and last observations, I further ranked the cards in order to form 9 piles from ‘‘most descriptive” to ‘‘least descriptive” of the

child; (3) Finally, I checked the piles and where appropriate I shifted some item to obtain 9 piles of 10 cards each.

Each item is scored depending on in which group it was placed. The AQS final score is the correlation between the Q-sort of the observed child and the behavioral profile of a prototypical secure child. The AQS security score ranges from -1.0 to +1.0, where higher scores indicate a positive correlation with the ideal-type security sort (Cassibba & D'Odorico, 2000). Conventionally, .33 is the cut-off point dividing secure from insecure children (Howes and Oldham, 2001).

3.6.2. Procedure

First, Pearson's correlation coefficient was performed in order to explore the relationship between the different attachment behavior categories (construct validity). Analysis were performed on the total sample of 148 children who were observed 2-3 times during the data collection; so, a total of 408 observations were collected, and *secure, avoidance, resistant* and *non distressed* scores were compared to analyze the structure of the relationships. The hypothesis was that positive behaviors (*secure* and *non-distressed*) correlate negatively with insecure conducts (*avoidant* and *resistant*).

Then, convergent validity was examined by comparing the overall means of *secure, avoidant,* and *resistant* behavior as measured in the PCAD with AQS scores. To establish convergent validity, we estimated the degree to which the two measures are related to each other, using the correlation coefficient. Specifically, we expected to find that high PCAD secure attachment behaviors positively correlated with higher AQS scores, and high PCAD avoidant and resistant attachment behaviors should be correlated with lower AQS scores. We examined the convergence between attachment behaviors as

assessed in the PCAD and through the AQS, and we expected to find a relation between the two methods.

3.6.3. Results and Discussion

Results reported in *Table 3.3* shows that *Secure* conducts have significantly moderate negative correlations with both *Avoidant* ($r = -.43$, $p<.01$) and *Resistant* ones ($r = -.31$, $p<.01$). Furthermore, *Secure* scores correlate significantly strongly negatively with *Non Distressed* behaviors ($r = -.68$, $p<.01$). Moreover, *Non Distressed* scores also correlate significantly negatively with *Resistant* scores ($r = -.23$, $p<.01$) but not with *Avoidant* ones ($r = -.04$, $p = NS$). Finally, *Avoidant* behaviors do not correlate with *Resistant* ones ($r = .08$, $p = NS$).

Table 3.3. Pearson's correlations between PCAD scores (Security, Avoidance, Resistance and Non Distressed).

	Security	Avoidance	Resistance	Non Distressed
Security	1			
Avoidance	-.43**	1		
Resistance	-.31**	.08	1	
Non Distressed	-.68**	-.04	-.23**	1

**p<.01

Overall, results reported a moderate association between the attachment categories: correlations tend in the expected direction and then relationships between the behavioral categories identified in the PCAD seem to maintain the structure provided by the attachment theory. In line with the reference theory (Bowlby, 1969/1999; Ainsworth, 1967), children who show more secure behaviors have lower avoidance and resistance scores as expected. Furthermore, as described above (*paragraph 3.4.3.*), attachment and

explorative behaviors (secure and non distressed) are balanced according to child needs, and in fact, are negatively correlated. Therefore, these results confirm the PCAD categories' reliability and its construct validity.

On the other hand, concerning the convergent validity analysis, the collected AQS scores ranged from -.13 to +.64, and an average observer AQS score of .39 was found (SD=.17). See *Table 3.4* for the detail of children's scores.

Table 3.4. PAD and AQS scores for each child observed with both methods.

Children	**PAD's Attachment Behavior scores**				**AQS scores**
	Secure	Avoidant	Resistant	Non Distressedsed	
B1	.65	.10	.05	.38	.54
B2	.75	.06	.00	.29	.44
B3	.60	.08	.08	.40	.39
B4	.50	.11	.06	.67	.34
B5	.39	.22	.00	.67	.32
B6	.53	.28	.05	.54	.23
B7	.47	.29	.04	.30	.42
B8	.09	.32	.23	.67	.32
B9	.40	.00	.00	.60	.62
B10	.56	.00	.04	.00	.17
B11	.79	.00	.00	.27	.64
B12	.43	.00	.11	.77	.33
B13	.66	.00	.09	.20	.46
B14	.61	.00	.00	.34	.55
B15	.33	.00	.00	.67	.63
B16	.85	.00	.00	.27	.41
B17	.77	.04	.12	.07	.47
B18	.63	.00	.23	.00	.22
B19	.40	.00	.00	.00	.49
B20	.13	.20	.54	.42	-.13
B21	.80	.00	.40	.00	.34
B22	.58	.00	.14	.40	.41
B23	.29	.00	.00	.87	.53
B24	.76	.00	.09	.42	.29

Results reported in *Table 3.5* showed that: AQS security (higher scores) weakly positive correlate with attachment secure behaviors derived from the PCAD (r = .26);

higher scores from the AQS were negatively correlated (r=-.40) with diary avoidant behaviors, which indicated a moderate association between AQS and PCAD; resistant scores in the PCAD appeared to be strongly related to extremely low AQS scores, as resistant diary behaviors negatively correlated (r=-.70) with higher AQS scores; non distressed behaviors reported by PCAD do not correlate with AQS scores (r=.11) (see *Table 3.5*).

Table 3.5. Pearson's correlation between AQS and PCAD scores (N=24).

	Security	Avoidance	Resistance	Non distressed
AQS	.26	-.40	-.70	.11

Resistant scores on the diary proved to be the strongest predictor of insecure attachment in the AQS. In general, results show that children classified as insecure in the AQS (score <.33) obtained on average higher avoidance and resistance scores with the PCAD. However, Howes and Smith (1995) warned on the overrepresentation of avoidance using the AQS, which may explain the weakly correlation with *Non Distressed* category: they found that with the AQS some children could be misclassified as insecure because they spend little time in close contact with their caregivers, but actually, they have positive interaction with caregivers and are just more independent. On the contrary, this conduct could be detected by the PCAD and codified as *non distressed* behavior. This is particularly evident in *Table 3.4* (see above) where for example subjects B4, B12 and B24 in the diary have highly secure and non-distressed scores, low avoidance and resistant scores, but contrary to expectations, their AQS score is very low, supporting Howes and Smith's evidence. The AQS was designed to be used,

We concluded that the PCAD showed modest converge with the AQS. The association of course is not perfect, both measures assess overlapping but also different

dimensions of the same construct. In fact, the PCAD focuses on the dynamics of the attachment behavioral system in stressful situations in childcare and shows child's expectations of caregiver protection in distressed episodes; on the other hand, the AQS emphasizes on child's behavior during the day in home observations, and it not specifically observe stressful interactions in child care (Howes and & Hamilton, 1992a).

In summary, correlation analysis tend in the expected direction, and this is a good result for PCAD validation. The items appear to be good indicators of children's behaviors and the PCAD categories are in line with the reference attachment theory. Comparing the diary with the AQS, the correlations are far from perfect but consistent with our hypothesis, as these two tools focus on different situations to observe during the day. However, as Howes and Smith (1995) found, the AQS tends to underestimate secure behaviors and overestimate avoidant ones.

3.7. Conclusions

Methodological issue

The revised version of the *Profession Caregiver Attachment Diary* (PCAD 1.3) is a structured diary, in which professional caregivers record daily the attachment behaviors that children show in specific stressful situations that would elicit attachment behaviors, in order to follow the early attachment developments in childcare centre during the earlier months of attendance.

Although the SSP and the AQS cannot be replaced by the PCAD for assessment purposes, our diary has some unique advantages. Indeed, the PCAD project was born to fill methodological gaps of measurement methods currently most used in this field of research. The attachment literature has expressed some concern especially about the use

of *Strange Situation* as a reference tool for the measurement of attachment. The reasons are that (1) the SSP could be not the best tool to evaluate children who usually experience separation from the main caregivers and (2) the SSP uses a categorical classification model. For these reasons, also the NICHD results stimulate the development of new attachment instruments for extra-family contexts (Friedman and Boyle, 2008).

About the reliability of SSP for childcare context, as mentioned above (*paragraph 3.2.*), some researchers suggested developing a new assessment tool that would avoid the possibility of misclassifying secure children who are used to frequent separation in child care as avoidant (Clarke Stewart, 1989).

In reference to the second issue, some studies found no consistent evidence for the categorical model of attachment organization used in the SSP (Fraley & Spieker, 2003). Ainsworth and her colleagues (1978) decided to adopt a three-type classification system, as the "classificatory groups [help] retain the picture of patterns of behavior, which tend to become lost in—or at least difficult to retrieve from—the quantification process" (p. 57). Therefore, the SSP method places observed children into three taxonomic groups in terms of their "attachment security", so the traditional attachment patterns are *secure, avoidant* and *resistant*. Consequently, the longstanding view in the field of attachment is that attachment patterns are typological variables, and researchers have always assessed the differences between children classifying them as secure, avoidant, and resistant in a qualitative way in which the attachment system can be organized (Fraley & Spieker, 2003). But Fraley and Spieker (*ibidem*) found that the data are most consistent with a *multivariate dimensional view* of individual differences. They stated that the use of the typological model (as in the SSP) may be impeding rather than facilitating the study of attachment; on the contrary, a multivariate dimensional approach allows patterns of behavior to be better captured and provides highly precise, flexible,

and dynamic ways to represent individual differences in the organization of behavior. A dimensional approach can be used to capture patterns of behavior, maintaining the same functional interpretation as the traditional Ainsworth et al. (1978) types, but in a better and more complete way.

The PCAD structure tries to avoid exactly this latter issue: the PCAD method does not force observations into one category, and it does not classify children as secure, avoidant or resistant. The PCAD gives to researchers and caregivers 4 scores (security, avoidance, resistance, non distressed) about the different attachment behaviors that the child can show. As we have seen in the Observational Form (*paragraph 3.4.4., Figure 3.1*), the caregiver can see the behaviors the child shows during the day: the child could act with anger at the beginning but then be soothed by the caregiver, he/she could have quiet days and others more difficult. These data are not meant to classify the child in a category, but have the purpose to observe and reflect on these behaviors. The PCAD scores do not simply represent frequencies, but they were designed to capture something more complex and dynamic about the patterning and organization of behavior. Observation with the PCAD does not give a “label” to children, but respect their individual differences and keeps the dynamic process of construction of attachment, especially in the settling-in phase. At the end of the observation, the child won't be classified as "secure" or "resistant" as with the SSP, but the caregiver will observe his/her Form and reflect on what are his/her most frequent behaviors, which situation is more critical, how is the familiarization is going, etc. The PCAD codify just the behaviors but not the child.

In reference to the AQS methodological limitations, Howes and Smith (1995) warned on the overrepresentation of avoidance using this measurement. Further examination of cluster showed that the avoidant group was the most heterogeneous: over

one-quarter of the children who were placed in the avoidant profile because they have high scores in "avoiding the caregiver" had also high security scores. These avoiding children with high security scores were more engaged in positive negotiations and interaction with caregivers than avoiding children with low security scores. This suggests that some children (usually older children) may construct a secure attachment relationship even spending little time in close contact with the caregiver, but seeking out her only when they need her. Therefore, these children were misclassified as insecure, but actually, they are just more independent.

The specific PCAD category "Non Distressed" (extensively explained in *paragraph 3.4.3. How to interpret "Non Distressed"*) is thought up for this, avoiding the possibility of misclassifying independent children as insecure. We believe this category is particularly important to identify in a multiple-care context, as it is a positive sign of children's familiarization and exploratory behaviors.

With these methodological solutions, it seems that the PCAD structure could solve some important methodological issues that concern the most used tools for the measurement of attachment. This makes it, in methodological terms, a strong tool suitable for childcare context, which could fill the gaps in that field of research.

A useful tool for educational practice

Concerning the adaptation of this tool, the first important result is that diaries' compilation has increased from 34% in the Pilot Study (Macagno, 2016) to 81% in its revised version (Macagno & Molina, 2020): this means that the adapted version fits better to child care context. It is important to mention that it was useful to organize focus-groups with professional caregivers who were involved in the study, to discuss on PCAD

compilation and how we can improve it. The work of reviewing the diary over time reflects the importance to adapt the method to the reality of the specific context: a prime example is the *Non distressed* category, which gives important information on child familiarization, as explained above.

Even if convergent validity is modest, the process of PCAD adaptation together with the professional caregivers has increased the *content validity* of the PCAD, that is, the degree the items of the tool represent all those possible behaviors relating to the construct we want to measure (Pedon & Gnisci, 2004). The professional caregivers were a precious element to add and modify items that could really represent child daily behavior in the context of childcare centre.

Based on professional caregivers' feedback, they described the diary as a highly useful vocational tool for improving their observational skills, the possibility to reflect on their educational practice and responsive care. Observing children more carefully, caregivers considered details that were unnoticed before, and so they could better analyze them and properly respond. They can focus better on both children's and caregivers' behaviors, reflecting also on their educational response and pedagogical skills.

The adapted PCAD seems to be a useful method to observe and monitor children's attachment behaviors and familiarization progress within the childcare centre from a process-oriented perspective, that is, in which child–caregiver relationship is a continuum developing over time, what is innovative and interesting for both research and practice (Lee, 2006).

Compared to AQS, the PCAD appears to be a reliable tool for assessing child attitude to his/her professional caregiver at childcare. However, our goal is not to demonstrate that one tool is better than the other: this depends on the *goal* of the specific type of observation. The AQS is useful for an assessment limited in time and with more

evaluative objectives, whereas the PCAD is helpful for more careful and deeper observation. For these reasons, the PCAD may be really useful for interventions in which repeated or longitudinal attachment assessments are required. Indeed, the PCAD is not a simply assessing tool, but it offers the caregiver an *observational method*: the caregiver focuses her attention on specific episodes and behaviors, analyzes and uses them for professional reflection and considerations. In addition, the Observational Form helps better to *monitor* the settling-in process. Therefore, the PCAD can be used as a childcare intervention focused to move professional caregivers toward responsive care and observational skills, especially during the delicate transition to extra-family care.

CHAPTER 4

Preliminary results with the *Professional Caregiver Attachment Diary*

4.1. Introduction

From their origins, Italian early childhood services paid attention to the transition from family to childcare centre explicitly referring to the attachment theory (Mantovani, 1987, 2001; Mantovani, Restuccia-Saitta and Bove, 2008). This transition is delicate, not easy and rarely without any conflicts, and the *inserimento* (*settling-in phase*) is thought up for experience this period as serenely as possible. During the *inserimento*, that generally lasts for two weeks, a familiar person (the mother or others main caretakers, such as fathers or grandparents) stays at the childcare centre to support the child building new relationships, to gradually manage the separation, offering him/her the possibility to experience separation and reunion.

The two weeks of *inserimento* are not enough to be familiar with the new context. Relationship building is a process that needs time, in which the child and the professional caregiver understand and get to know each other (Goossens and van IJzendoorn, 1990; Raikes, 1993). At the beginning, the toddler views the caregiver as a stranger, but over time, the new figure will be the main caretaker in the new context, preferred play partner and then his/her secure base (Lee, 2006).

The literature mixes different opinions about this point: some studies found that in general it takes around 6 to 8 weeks to build a firm relationship with the new supportive caregiver (i.e. Lee, 2006); others argue that more than 4 months are needed to observe secure attachment increasing (Datler et al., 2012; Howes & Oldman, 2001; Ereky-Stevens

et al., 2018; Raikes (1993) observed that at least nine months attending the childcare centre are needed to develop secure child-teacher relationship. However, to our knowledge, little empirical research (for instance, see Dalli, 2000) addresses the development of relationship with the professional caregiver(s) during this time, and there are no tools specifically designed for it.

As explained in the previous chapter, this doctoral project aimed to adapt and use the *Professional Caregiver Attachment Diary* (PCAD) in order to observe the formation of children's relationship to their professional caregivers during the earliest months of childcare centre attendance. After a pilot study, in which the original version of the *Parent Attachment Diary* was used to explore how to adapt it to childcare centre context (Macagno, 2016), in the current chapter the revised versions of PCAD 1.2 was applied (*not* the final version 1.3, which will be designed after this step). The two studies presented in this chapter are still part of the PCAD improvement and revision process to better adapt it to non-parental child care context (see *Chapter 3, paragraph 3.3.3*.). Here, the main focus was to verify the adaptation of the PCAD to childcare centre situations, assessing its ability to catch children attachment behaviors.

Our objective was not to respond whether the relationship with the professional caregiver in childcare is actually an *attachment* relationship, but our goal here was to verify if the child behavior observed by the professional caregivers using the PCAD, expressed in terms of *Secure*, *Resistant* and *Avoiding* behaviors, can be an indicator of adaptation to the childcare setting, describing child's conduct in terms of a *process* and not just as an *outcome*. In other words, we want to verify the applicability of the PCAD to childcare setting, observing how children's behaviors change within the new context.

Our hypothesis was to find significant changes in children's behaviors over time. Stovall and Dozier' studies (2000, 2004) using the PAD with foster families found

significant changes in child's attachment behaviors after two months in the new context: secure behaviors increase over time, whereas avoidant and resistant behaviors decrease. Moreover, considering the childcare centres and nursery schools, Lee (2006) found that normally it takes around 6 to 8 weeks to build a firm and positive relationship with the professional caregiver, and Howes and Oldham (2001) affirm that children in *settling-in phase* tend to show a rapid decrease in avoidance behavior. The hypothesis of the present research is that using the PCAD at childcare centre we can find the same changes in infant's attachment behaviors towards the caregiver during the earliest months of attendance. And then, our research question was: can the PCAD be useful to study the construction of a secure base in the childcare centre?

4.2. Method

4.2.1. Overview of procedure

Data collection took place in the school year 2016-2017, starting in September, as a part of an in-service training financed by the social cooperative that managed the childcare centre.

The current chapter includes two studies which involved different samples and time-points: in *Study 1*, a group of children was observed daily with the PCAD during the first 2 months after enrolled in childcare; in *Study 2*, another group of children was observed at 2 and 4 months after their entry in their childcare centres. The two studies contributed to having preliminary results on how the child-caregiver relationship is built over time, and they were necessary steps for the adaptation of the new tool.

For both studies, protocol was approved by the Bio-ethical Committee of the University of Turin. Parents and professional caregivers were informed and asked to sign a consent form. Anonymity of data was guaranteed.

4.2.2. Measure

In both studies the PCAD 1.2 was used. Professional caregivers keep daily records of children's behavior during stressful situations (separation from parents at morning time, distress episode, separation from the professional caregiver), which could elicit attachment behaviors, in order to follow the early attachment behaviors developments in the new context. Child behaviors are classified into the following categories: s*ecurity*, *avoidance*, *resistance* and *non distressed*.

The structure, coding system and scoring of the PCAD has been extensively described in *Chapter 3*.

4.3. Data Analysis

Through the caregivers' completion of the daily diaries, in any given day, children can show 0-6 secure behaviors, 0-6 avoidant behaviors, 0-6 resistant behaviors and 0-3 non-distressed behaviors. Then, a daily score of *security*, *avoidance*, *resistance* and *non-distress* are calculated in a proportionate manner, depending on how many situations are filled each day. Means for each time-point (T1 and T2) are computed on daily scores on the basis of how many observations are available for each child during the week. The Attachment Diary scores range from 0.0 to +1.0.

In both studies, we compared means scores obtained during the first week of observation (T1) with the last one (T2), using the paired-samples T-test (confidence interval: 95%). Mean differences effect sizes (Cohen's d) between the two-time intervals

(T1 and T2) were performed to evaluate the magnitude of these differences. The following established ranges were used to interpret standardized mean difference magnitude: from 0.0 to 0.19 = no effect; from 0.20 to 0.49 = small; from 0.50 to 0.79 = medium; from 0.80 = large (Cohen, 1988). In order to observe the relationship between the different attachment behaviors, also Pearson correlation coefficient was performed.

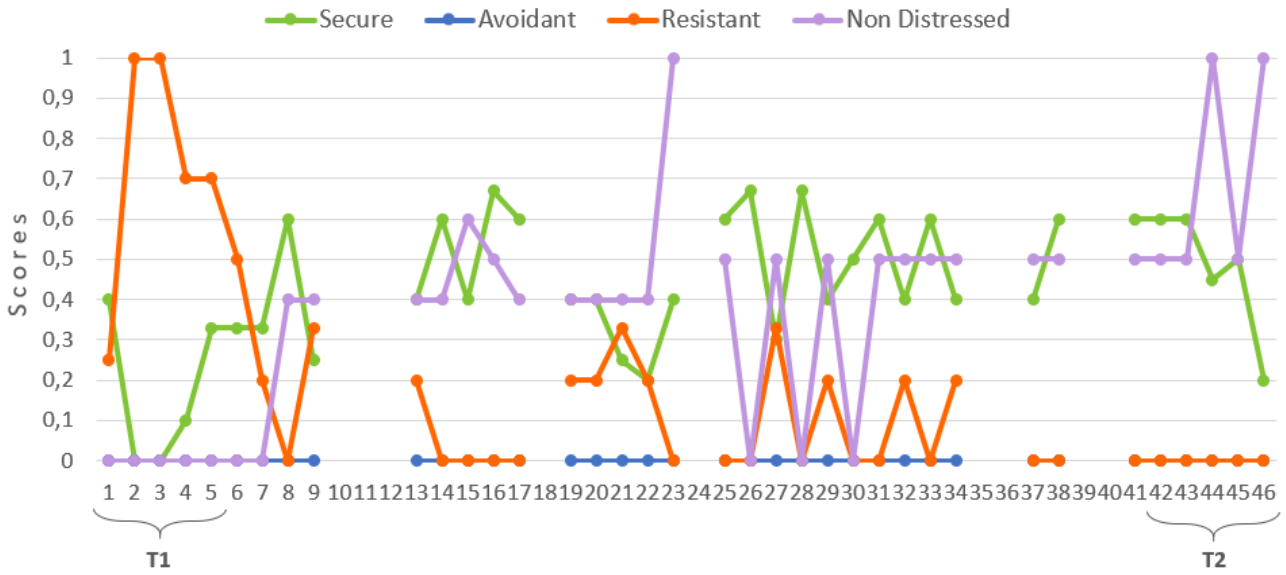
4.4. STUDY 1

In this first study, it was observed how children's attachment behaviors changed during the first two months of attendance at the childcare centre. As shown in *Figure 4.1** , professional caregivers observed and filled daily the PCAD for each child for a period of 2 months from his/her arrival to childcare centre. Attachment behaviors' means scores obtained during the first week of children attendance (T1) and after 2 months (T2) (M=59 days later) were compared.

Our hypothesis was to find that after 2 months from entry into childcare centre there would be an increase in *Secure* and *Non-distressed* behaviors and a decrease of *Avoidant* and *Resistant* scores.

* The chart represents the attachment behavior scores of a child who was observed daily for 2 consecutive months, for a total of 46 days of observation (weekends are excluded). The x-axis (horizontal) refers to observations over time; the y-axis (vertical) refers to attachment behavior scores.

Figure 4.1. Example of a child's individual chart (Study 1) with daily scores of *Secure*, *Avoidant*, *Resistant*, and *Non-distressed* behaviors for 2 months (for a total of 46 days of observation, excluding weekends). Means scores at T1 and T2 were compared, in order to study changes in attachment behaviors over time.



Sample

In this study, twenty-five professional caregivers from two different Italian childcare centres filled the diaries, and each one observed 2-5 children for approximately 2 months (M=59 days). Initially, a total of 80 children had been involved, but just 57 of them have been selected, since others did not have enough days of diary compilation (>40 days), mainly due to children's absences and illness[5]. Of these 57 infants, 28 were boys and 29 were girls, aged between 4 and 30 months (M = 15.74, SD = 6.63) when they started to attend the childcare centre. Children were observed by the professional caregiver who were their *reference person* (*key-person*) (Goldschmid & Jackson, 1994) during the settling-in phase.

[5] Of the 24 excluded children, 18 were boys and 5 were girls (we did not receive any information about one child), aged between 7 and 27 months (M=17).

Results

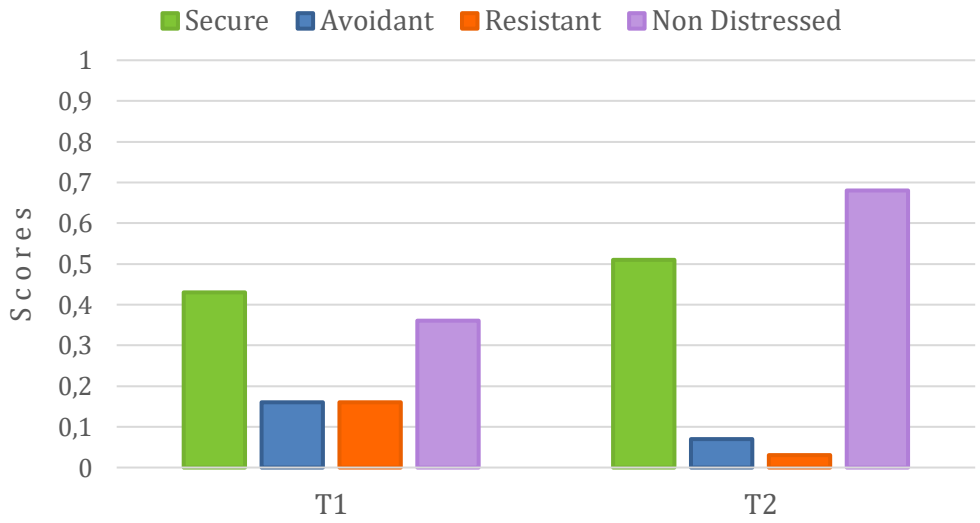
Considering the difference between the first (T1) and the last week (T2) of observation, i.e. after 2 months of childcare centre attendance, *Secure* behaviors do not change considerably (from .43 to .51) (t(56) = -1.59, p = NS) also suggested by the small effect size (d=.30). However, *Avoidant*, *Resistant* and *Non distressed* behaviors change significantly. Specifically, children show a significant decrease of *Avoidant* (from .16 to .07) (t(56) = -3.52, p = .001, d = .60) and *Resistant* behaviors (from .16 to .03) (t(56) = -4.47, p < .001, d = .86), whereas *Non Distressed* behaviors increase significantly (from .36 to .68) (t(56) = 6.03, p < .001, d = .95) over time (see *Table 4.1* and *Figure 4.2*).

Diaries filled during the second observation show the following distribution of behaviors: 6% *Avoidance* (A), 39% *Security* (B), 2% *Resistance* (C) and 53% *Non distressed*.

Table 4.1. *Study 1*: Comparison between means scores at T1 (after entry into childcare centre) and at T2 (after 2 months). Paired-samples *t*-test (confidence interval: 95%) and Cohen's *d*. Sample: 57 children.

	Mean (SD)		**Mean Difference**	**t** (56)	**p** (Sig.)	**Cohen's *d***
	T1	**T2**				
Secure	.43 (.27)	.51 (.26)	-.08	1.59	.116	.30
Avoidant	.16 (.18)	.07 (.11)	.08	-3.52	.001	.60
Resistant	.16 (.20)	.03 (.07)	.13	-4.69	<.001	.86
Non distressed	.36 (.33)	.68 (.34)	-.33	6.03	<.001	.95

Figure 4.2. *Study 1*: Bar chart showing means scores at T1 and T2 for each attachment behavior.



In relation to correlation analysis, at T2 *Security* correlates significantly negatively with *Avoidance* ($r = -.44$, $p < .01$) as expected, but not with *Resistance* ($r = -.02$, p = NS). Furthermore, *Security* correlates significantly negatively also with *Non Distressed* behaviors ($r = -.81$, $p < .01$) (see *Table 4.2*).

Frequently, not all the diary situations are filled every day: e.g. the child remains serene along all the day, there is no separation with the caregiver or the child is absent for 1-2 days during the week of observation. For this reason, compared to the total of possible situations to fill, diaries' compilation was about 74%.

Table 4.2. *Study 1*: Correlations between attachment behaviors at T2, after 2 months of childcare attendance (N=57).

	Security	Avoidance	Resistance	Non Distressed
Security	1			
Avoidance	-.44**	1		
Resistance	-.02	.01	1	
Non Distressed	-.81**	.19	-.21	1

** $p < 0.01$

Discussion

In this study, results partially support our research hypothesis: over time, children in settling-in phase showed a significant decrease in *Avoidant* and *Resistant* behaviors, but *Secure* scores did not increase substantially.

About this, Datler and colleagues (2012) in their study with children in settling-in phase report that, after 4 months of observation, most children do not show a significant increase in secure behaviors, suggesting that attachment is a process that requires more time. Howes and Oldham (2001) affirm that children in settling-in phase tend to show a rapid decrease in avoidance behavior at the end of the second month after joining the childcare centre, and do not show an increase of behaviors of secure attachment until 4-6 months. In addition, Stovall and Dozier (2000) in their studies with PAD suggested that two months of observations might be not enough for some children to develop a stable pattern of attachment to a new caregiver.

It is important to underline that *Secure* scores are already high and more frequent than the other ones (both in the first and the last observation). Moreover, we found a considerable and significant increase in *Non distressed* conducts: this may indicate that the child is positively familiarizing to childcare centre context over time, even without showing specific secure behaviors (as proximity seeking). *Non Distressed* behaviors' increase could compensate the non-increase of proximity behaviors (secure ones): in fact, the correlation analysis shows that *Security* and *Non Distressed* are negatively correlated ($r = -.81$, $p < .01$). For example, for the same child, in a diary we found this description during the first observation: "G. cried as soon as her mother left, she looked for my physical contact" (*Secure*) and this same child referenced after two months: "G. came in serene and immediately went to play" (*Non Distressed*). This could also explain why the

studies by Datler, Howes and colleagues have not specifically observed an increase in secure behavior: some child may simply not need to show it.

With reference to the adaptation from the original PAD's structure, this PCAD revised version better reflects childcare centre everyday life and situations in which child's attachment behaviors could be activated. In effect, in this study, the percentage of filled diary increase from 34% (of the *Pilot Study, paragraph 3.3.3*) to 74%, which means the PCAD now is simpler for professional caregivers to fill in.

4.5. STUDY 2

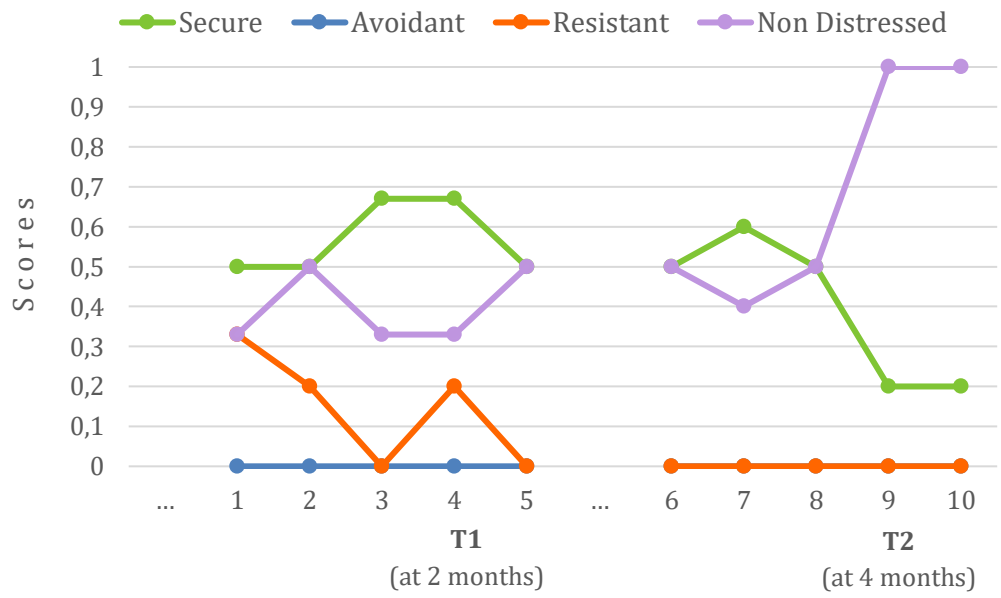
Considering the results of our previous study and what research about the topic proposes (e.g., Datler et al., 2012; Howes & Oldham, 2001; Lee, 2006), in this second study we decided to examine the development and changes of child-caregiver attachment relationship after two months more, that is, 4 months after child's entry into non-maternal care.

In this study, each caregiver observed 2-5 children at a time and filled the PCAD (version 1.2) for each child for one week at two time-points: after 2 months (T1) (M=66 days, SD=9) and after 4 months (T2) (M=140 days, SD=18) from child's attendance at the centre (see *Figure 4.3**). Attachment behaviors' means scores obtained during the first (T1) and second observation were compared.

We expect that *Secure* and *Non Distressed* scores increase over time, whereas *Avoidant* and *Resistant* behaviors continue to decrease.

* The chart represents the attachment behavior scores of a child who was observed daily for one week at T1 (days 1-5) and then for one week at T2 (days 6-10) daily. The x-axis (horizontal) refers to observations over time; the y-axis (vertical) refers to attachment behavior scores.

Figure 4.3. Example of a child's individual chart (Study 2) with daily scores of *Secure*, *Avoidant*, *Resistant*, and *Non-distressed* behaviors for one week (5 days) at T1 (2 months after child entry) and T2 (at 4 months).



Sample

In this study, a new sample of children and professional caregivers from five different Italian childcare centres were involved. A total of 62 caregivers used and filled the PCAD, and 165 children of 235 have been selected, since 69 infants had observations that did not meet the requirements to be included in the sample: 18 caregivers did not fill the second observation; 8 children were observed for less than 3 days per week; 3 children stopped attending childcare; 3 families did not provide the consent on research participation; 23 observations started too soon or too late; about 4 children we did not receive any personal data. Of these 69 children, 34 were boys and 35 were girls, aged between 3 and 27 months (M=17).

The final sample of our second study was composed by 165 children, 84 boys and 81 girls, aged between 4 and 34 months (M = 16.62, SD = 6.8).

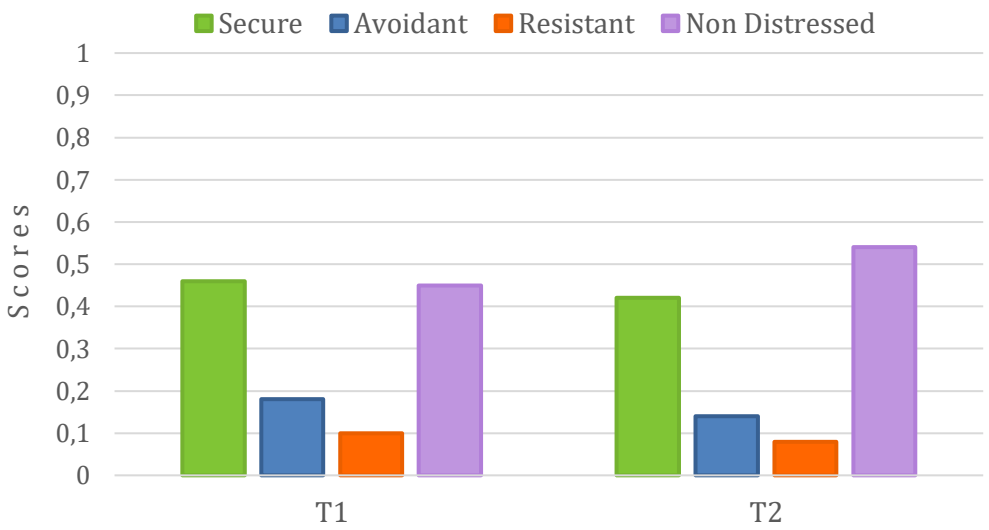
Results

As shown in *Table 4.3*, both *Avoidant* (from .18 to .14) (t(164) = -3.01, $p < .005$, d = .26) and *Resistant* (from .10 to .08) (t(164) = -2.80, $p < .01$, d = .19) behaviors decrease significantly as expected, even if their effects size are quite small. We also found that *Non Distressed* scores increase significantly (from .45 to .54) (t(164) = 3.83, $p < .001$, d = .34) with a medium effect size. Unexpectedly, children show a significant decrease of *Secure* behaviors (from .46 to .42) (t(164) = 2,41, $p < .05$, d = 1.00) (see *Figure 4.4*).

Table 4.3. *Study 2*: Comparison between means scores after 2 months (T1) and after 4 months (T2) attending the childcare centre. Paired-samples *t*-test (confidence interval: 95%) and Cohen's *d*. N = 165 children.

	Mean (SD)		**Mean Difference**	**t** (164)	**p** (Sig.)	**Cohen's *d***
	T1	**T2**				
Secure	.46 (.02)	.42 (.02)	.04	-2.408	.017	1.00
Avoidant	.18 (.16)	.14 (.15)	.04	-3.010	.002	.26
Resistant	.10 (.11)	.08 (.10)	.03	-2.797	.006	.19
Non distressed	.45 (.27)	.54 (.26)	-.09	3.831	<.001	.34

Figure 4.4. *Study 2*: Bar chart showing means scores at T1 and T2 for each attachment behavior.



In relation to correlation analysis, it results that in T2: *Security* correlates negatively with *Avoidance* (r = -.25, $p < .01$) and *Non Distressed* (r = -.61, $p < .01$) scores, but not with Resistance (r = -.06, p = NS) (as in the Study1); *Avoidance* correlates positively with *Resistance* (r = -.17, $p < .05$) as expected; *Non Distressed* behaviors also correlates negatively with both *Avoidance* (r = -.37, $p < .01$) and *Resistance* scores (r= -.28, $p < .01$) (see *Table 4.4*).

Table 4.4. Study 2: Correlations between attachment behaviors at T2, after 4 months of childcare attendance (N=165).

	Security	Avoidance	Resistance	Non Distressed
Security	1			
Avoidance	-.25**	1		
Resistance	-.06	.17*	1	
Non Distressed	-.61**	-.37**	-.28**	1

* p < .05 ; ** p < 0.01

At T2, that is, after 4 months attending the childcare, the sample shows the following distribution of attachment behaviors: 12% *Avoidance* (A), 36% *Security* (B), 6% *Resistance* (C) and 46% *Non Distressed*.

Finally, the overall completion rate of the diaries was about 81% (considering the total of possible situations to fill in).

Discussion

Even in this study, results support in part our research hypothesis: after 4 months attending the childcare, as expected, *Avoidant* and *Resistant* behaviors still decrease, even if less intensity than in *Study 1*. Then, unexpectedly, *Secure* attachment behaviors decrease over time. However, *Non Distressed* scores significantly increase: it is important to highlight also here that these two conducts compensate each other, and *Non Distressed* could be considered as an index of good familiarization of the child within the childcare setting. Also in this case, we give an example about the same child, who shows the following behavior at T1: "The mother is holding R. that starts to cry. I talk to her, so R. stretches her arms towards me and I hold her. R. clung to me and then she calms down" (*Secure*) and then, at T2, the caregiver wrote: "R. came in smiling and went with some children who were playing" (*Non Distressed*). This type of conduct seems to reflect the activation of the *exploration* systems: when the child feels safe, attachment behaviors are deactivated and explorative ones are activated, which allows the child to open up to the surrounding environment (Ainsworth, 1967).

Also in this study, this hypothesis is reinforced by correlations analysis, which shows, as in Study1, that *Security* and *Non Distressed* scores are negatively correlated ($r=-.61$, $p<.01$): therefore, even if child's specific secure behaviors (such as seeking for

proximity or to want to be soothed by professional caregivers) do not increase over time, these are compensated by *Non Distressed* behaviors that reflect a positive and good adaptation to childcare centre context. Therefore, the increase of *Non Distressed* scores is an important data, which mean that overall after 4 months attending childcare children feels more secure in the new context of care.

4.6. General Conclusions

In summary, the revised version of the *Professional Caregiver Attachment Diary* (PCAD 1.2) has been used by professional caregivers in order to follow how develops the relationship with their children during the earlier 4 months of attendance.

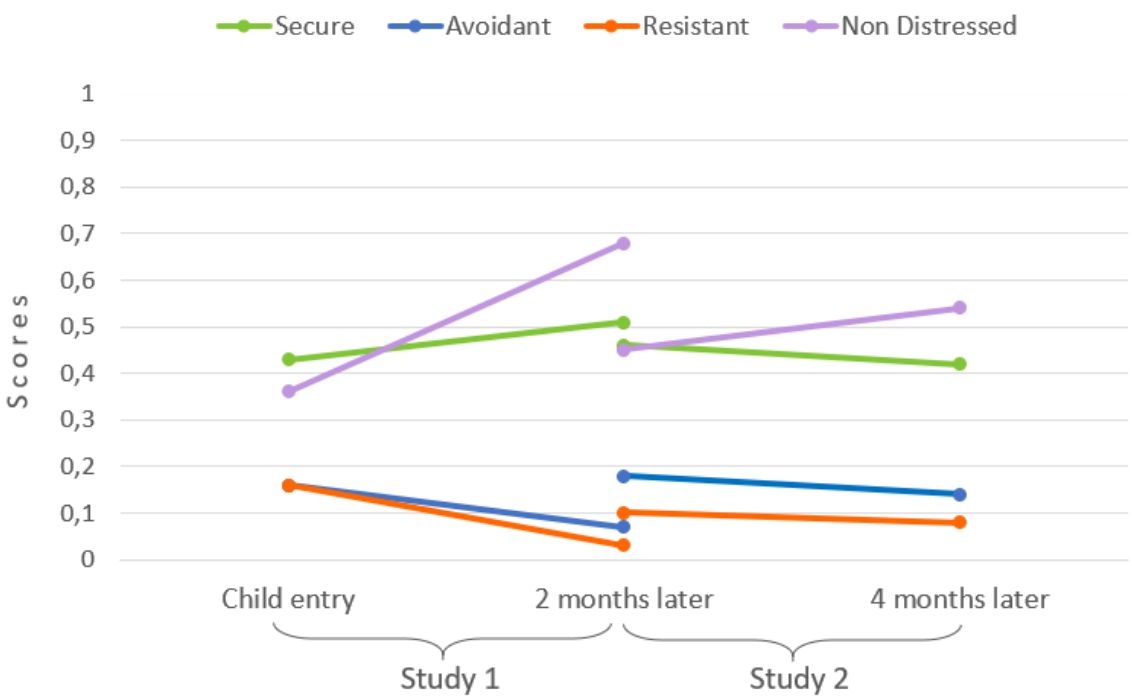
First, the main objective of these studies was to verify whether the PCAD could be an effective and sensitive tool for capturing the behaviors of the children observed. Concerning the adaptation of the tool, the first important result was that diaries' compilation has increased from 34% in the Pilot Study to 74% in Study 1 and 81% in Study 2: this means that the revised version is better adapted to the childcare context.

It is important to mention that it was essential to compare notes and experiences with professional caregivers that were filling the diaries, discussing about PCAD's compilation and how we can improve it. The work of reviewing the diary during the whole project reflects the importance to adapt the method to the reality of the specific context. This consideration also reflects how is important and necessary to adapt a measurement method to a different context: an explanatory example is the analysis of *Non distressed* category, as explained above.

On the other hand, concerning the results of the studies, overall, our research hypothesis are supported: during early months of childcare centre attendance, children

showed less and less insecure conducts, such as avoidant and resistant behaviors. During the first two months, secure behaviors tended to slightly increases, but then, on the contrary, decreased over the next two months. On the other hand, explorative behaviors strongly increased over time indicating that children positively familiarized with the new context of care. The two studies' results are joined and summarized in *Figure 4.5*, that can give and idea about the *process* of formation of children relationship with their professional caregivers. As expected, scores are not perfectly coincident because in the two studies different groups of children with a different sample size were observed.

Figure 4.5. Summary chart of behavioral trends across both studies.



Lastly, the findings of these studies must be interpreted with regard to their limits. First, the PCAD 1.2 has not been validated: the main objective of these two studies was to verify if the adjustment made from the previous version could work with caregivers. And in fact, after this step, the tool will be further modified in the final version 1.3 which

was validates (see *paragraph 3.3, Chapter 3*). The main study of this doctoral project will be described in the next chapters. However, these two studies are important because they were necessary steps for the adaptation of the new tool, and then contributed to having preliminary results on how the child-caregiver relationship is built over time.

These results were published on EECERJ, that is the first publication about the PCAD (see Macagno & Molina, 2000).

CHAPTER 5

Building the "Secure Base" at childcare: How the child-caregiver relationship develops in the early months

5.1. Introduction

As we've seen previously, the transition from in to out of home is delicate, the secure base in a childcare context develops progressively, and the relationship with the professional caregiver is significant to bridge mother-child separations during the settling-in phase (Anderson, 1980).

The previous *Chapter 4* illustrated the first two studies with the PCAD, thanks to which a more reliable and definitive version of the observational tool was developed. As a direct continuation of that work, in this current *Study 3* a more accurate analysis was done about how attachment behaviors change during the first 2 months of childcare attendance, and how variables such as children's gender, age and childcare attendance could influence the building of the relationship with professional caregiver.

As shown in the previous chapter, research that explores relationship-building processes in the early months of childcare is scarce and mixed. Some studies found that in general, it takes around 6 to 11 weeks to build a firm relationship with the new caregiver (Lee, 2006; Sekino, Chen, & Recchia, 2001), others researchers have identified that more than 4 months are needed (Datler et al., 2012; Howes & Oldman, 2001; Ereky-Stevens et al., 2018), others observed that at least nine months attending the childcare centre are needed to develop a secure child-teacher relationship (Raikes, 1993), and finally, we showed that the relationship is continuously developing and positively

changing from the first months of childcare attendance (Macagno & Molina, 2020; *Chapter 4*).

Regarding the difference depending on children's gender, Ahnert and colleagues (2006) in their meta-analysis shows that often girls could develop more secure relationships with their care providers than boys. However, many studies did not find any gender differences (De Schipper et al., 2004; Howes & Hamilton, 1992a; Howes & Oldham, 2001; Raikes, 1993).

Considering age differences, Howes and Smith (1995b) reported that secure relationships were more common when children were younger: their study showed that younger children had higher security scores than older children, whereas children in the avoiding profile were older than those classified as secure or difficult. Furthermore, the study reported that younger children engaged in more comfort-seeking behaviors than older children. On the other hand, many studies (Ahnert et al., 2006; De Schipper, Van Ijzendoorn, & Tavecchio, 2004; Howes, & Hamilton, 1992a; Raikes, 1993) do not support these conclusions, but stated that there are no differences for infant's age of entry.

Finally, several studies report that when children have discontinuous histories of child care it is more difficult to form secure attachments to their care providers, therefore, a stable care experience is important in forming positive relationships with professional caregivers (Ahnert et al., 2006; Barnas & Cummings, 1994; Howes& Hamilton, 1992b). Goossens and van Ijzendoorn (1990) found that more time in childcare centre seems to promote a secure relationship between infants and caregivers: children who they observed in their study were more securely attached to their professional caregivers when spent more time in day-care.

Therefore, the aims of this *Study 3* were:

(1) Observing the development of children's relationship to professional caregivers and familiarization in childcare centre during the first 2 months of attendance;

(2) Investigating whether children's attachment building to professional caregivers in the early months of childcare differs depending on children's gender, age of entry and childcare attendance.

Our hypothesis was to find significant changes in children's behaviors across the time-points over 2 months. Using the PCAD as observational tool, we expected that secure behaviors (*Secure* and *Non Distressed*) increase over time, whereas insecure ones (*Avoidant* and *Resistant*) decrease. Our hypothesis was also not to find any significant difference depending on children's gender and age of entry, as the literature suggests, whereas we expected to find some difference between children who attended childcare more than those who attended less.

5.2. Method

5.2.1. Overview of procedure

Data collection took place in the school year 2017-2018, starting in September, and seven Italian childcare centres were involved in the study.

The study design was longitudinal, since each professional caregiver observed and filled the *Professional Caregiver Attachment Diary* (PCAD; Molina & Macagno, 2019) for each child for one week at three time-points: the first week the child was left in the centre without the parent's presence (T1) and after 1 (T2) and 2 (T3) months.

When possible, children were observed by the professional caregiver who was their *reference person* (*key-person*) (Goldschmid & Jackson, 1994) during their settling-in phase (6 centres of 7 use this type of practice). Each caregiver observed 2-5 children at a time and filled the PCAD *version 1.3* (*Chapter 3*).

Research protocol was approved by the Bioethical Committee of the University of Turin. Parents and professional caregivers were informed and asked to sign a consent form. Anonymity of data was guaranteed.

5.2.2. Sample

The study has involved 7 childcare centres in Turin (Italy), that are in different neighborhoods of the city, all belonging to a social cooperative. A total of 55 professional caregivers used and filled the PCAD, and 148 children of 189 have been selected. From the initial sample, 36 parents did not give their consent and 5 children stopped attending the childcare. Then, the final sample was composed of 148 children, 85 boys and 63 girls, aged between 4 and 34 months (M = 17.8, SD = 7.2) when they started to attend the childcare centre. Depending on the age of entry, the sample was composed of 31 children aged from 4.0 to 11.9 months (group 0-1 year-old), 83 aged from 12.0 to 23.9 months (group 1-2 years-old) and 34 from 24.0 to 34.0 months (group 2-3 years-old) (see *Table 5.1*).

Regarding the childcare attendance, the average of children's attendance was 80% of the total time, so 80% was considered the cut-off value between children with low attendance (N = 65) and children with high childcare attendance (N = 79).

Over the 148 children, 5 of them did not have the first observation, 2 of them did not have the second observation and 29 did not have the third one. The majority of

missing data were the result of participant absence (both children and caregivers) in the period of data collection. The number of observed children was: 143 in Time 1; 146 in Time 2; 119 in Time 3. Participants that completed all three observations were 112 (i.e., 76% of the sample) (see *Table 5.2*).

Table 5.1. Contingency table describing the sample by gender and age.

		Age of entry			Total
		0-1 y-o	*1-2 y-o*	*2-3 y-o*	
Gender	*male*	15	47	23	85
	female	16	36	11	63
Total		31	83	34	148

Table 5.2. Children observed at each measurement occasion.

		T1	T2	T3	Total
No. of children		143	146	119	148
Gender	*male*	82	83	67	85
	female	61	63	52	63
Age of entry	*0-1 y-o*	30	30	27	31
	1-2 y-o	81	83	63	83
	2-3 y-o	32	33	29	34
Attendance	*Low*	61	64	54	65*
	High	78	78	64	79*

* We have not this information about 4 children.

5.2.3. Measure

Professional Caregiver Attachment Diary 1.3.

Children's relationships to care providers were measured at T1, T2, and T3 using the *Professional Caregiver Attachment Diary* 1.3 (PCAD) in order to observe how each

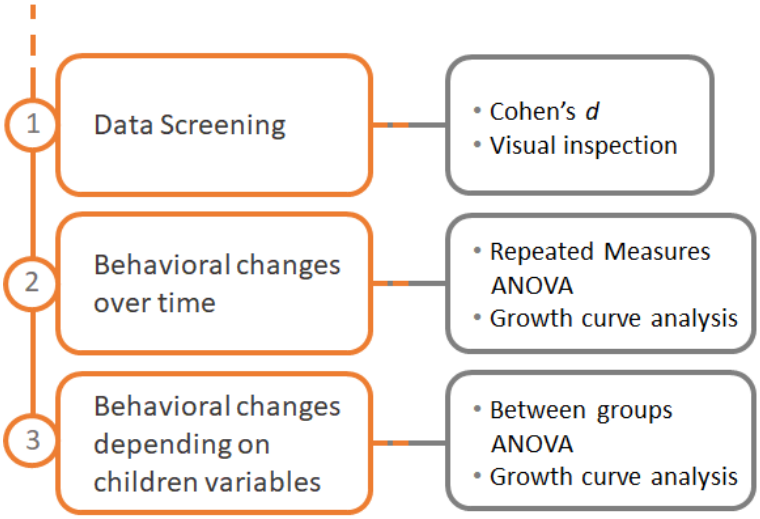
type of attachment behavior (secure and insecure) changes over time, providing an overview of children's familiarization during the earliest months in childcare centre. The structure, coding system and scoring of the PCAD has been extensively described in *Chapter 3*.

5.2.4. Data Analysis

The study design was longitudinal, since professional caregivers observed children at three time-points throughout their early month in childcare: caregivers started the first observation when the child was left in the centre without the parent's presence (T1; M= 13.5 days from child entry, SD=6.4), and again after 1 month (T2; M= 32.2 days from T1, SD=6.2) and 2 months (T3; M= 35.4 days from T2, SD=8.3, and M= 67.5 days from T1, SD=10.2). At each time-point, each observation lasts one week, and a minimum of 3 days of PCAD compilation was required.

With the PCAD, in any given day, children can show 0-6 *secure* behaviors, 0-6 *avoidant* behaviors, 0-6 *resistant* behaviors and 0-3 *non-distressed* behaviors. Then, a daily score of *security, avoidance, resistance* and *non-distressed* are calculated proportionately, depending on how many situations are filled each day. Means for each time-point (T1, T2 and T3) are computed on daily scores based on how many observations are available for each child during the week. The Attachment Diary scores range from 0.0 to +1.0.

Multiple types of analyses were performed to better understand and interpret data in their complexity:



1) Data screening

First, data screening and mean differences effect sizes (Cohen's *d*) between the three-time intervals (T1, T2 and T3) were performed, evaluating the magnitude of these differences. The following established ranges were used to interpret standardized mean difference magnitude: from 0.0 to 0.19 = no effect; from 0.20 to 0.49 = small; from 0.50 to 0.79 = medium; from 0.80 = large (Cohen, 1988).

Visual inspection of graphic information was also performed to provide preliminary suggestions on data, such as overall behavioral trends and children's individual trajectories.

2) Behavioral changes over time

In order to study how each type of attachment behavior develops over time, two types of data analysis were performed: the Repeated Measures ANOVA and the Growth curve analysis (GCA).

Data were first analyzed with the **Repeated Measures ANOVA**, since it is the simpler longitudinal method to investigate changes in mean scores over three or more

time points. However, this method would only estimate the model in a balanced repeated-measures design, and any missing data are eliminated through listwise deletion; then, the sample was reduced from 148 to 112 children, who have all three waves of observation (i.e., 76% of the whole sample). Of these, 62 were boys and 50 were girls, aged between 4 and 34 months (M = 17.6, SD = 7.44). Means scores of *security*, *avoidance*, *resistance* and *non-distressed* obtained during the three time-point were compared using the Repeated Measures ANOVA (confidence interval: 95%) and Post-hoc tests.

Then, a more complex design was performed, the **Growth curve analysis (GCA)** models, to estimate the growth trajectories of each PCAD's attachment behavior. Statistical analyses were performed with SPSS 26 software, following step-by-step Shek and Ma (2011) and Heck, Thomas and Tabata's (2014) procedures. In support of RM-ANOVA results, the GCA method was also performed due to its many advantages, which overcome the limitation of other conventional statistical techniques: fist, it does not need perfectly balanced data across different time-points, so it can incorporate missing data, and it is more flexible and powerful even with partial data (*ibidem*); second, it explores both intra- and inter-individual differences in the growth parameters (e.g., slopes and intercepts), capturing a global picture of developmental changes across time (Shek and Ma, 2011); it does not require homogeneity of variance for different levels of between-subjects factors, so it is a valid approach when RM-ANOVA sphericity is not met (Heck, Thomas & Tabata, 2014).

Therefore, these data analysis considered the whole sample of 148 children. Data in each GCA model were computed with maximum likelihood (ML) estimation: this method is appropriate when studying both individual changes over time and difference in change depending on specific predictors.

Following the strategy suggested by Singer and Willet (2003, in Shek & Ma, 2011), several models were tested for each attachment behavior separately (*security*, *avoidance*, *resistance* and *non-distressed*). These are:

(1) a *null model*, to provide a baseline comparison and examine any mean differences in the outcome variable across individuals, calculating the intraclass correlation coefficient (Model 0);

(2) a *linear model* with time as a predictor was performed to explore whether the growth curves are linear (Model 1). The linear slope assumes that the rate of growth remains constant across each interval of time (a straight line, like in *Figure 1*);

(3) a *quadratic model* (a higher-order polynomial model) was estimated to determine a change in the rate of growth (Model 2). The quadratic growth curves suggest that the trajectory is not the same over time, and it accelerates or decelerates across the intervals of time (see *Figure 2*). It was not possible to test a cubic trajectory (i.e., S-shaped, see *Figure 3*) because the study consists of just 3 time-points.

Specific equations of each estimated model were reported in *Table 5.3*.

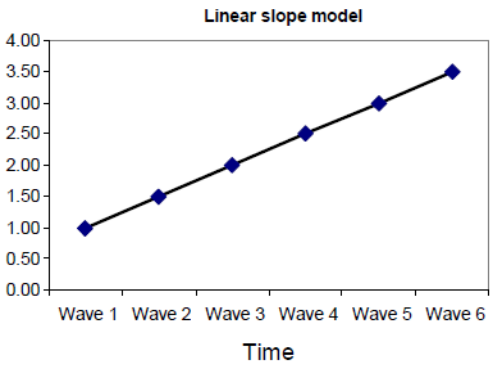


FIGURE 1. A hypothesized linear slope model.

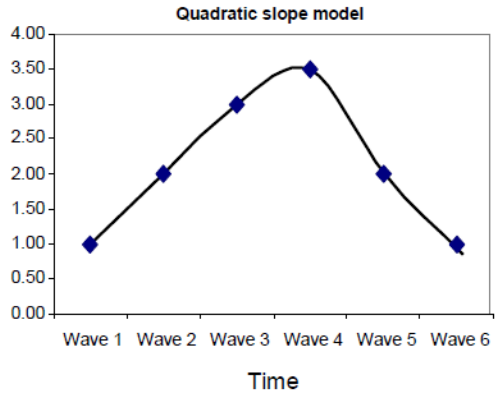


FIGURE 2. A hypothesized quadratic slope model.

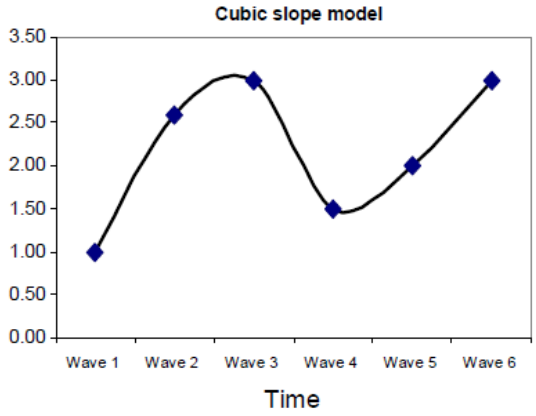


FIGURE 3. A hypothesized cubic slope model.

(Shek & Ma, 2011)

To select the best model, information criteria such us *-2 log likelihood* (χ^2), *Akaike Information Criterion* (AIC), and *Bayesian Information Criterion* (BIC) were used: generally, the smaller values are used to select the best model that fits the data (Shek & Ma, 2011). However, it could happen that, when comparing models, at the same time the AIC value is bigger but the BIC one is smaller than the compared model. In fact, researchers specify that these values are used for the selection of an estimated best *approximating* model for data analysis and inference; literature agrees that there is not a simple "true model", but modeling is an approximation of the explainable information in the empirical data (Burnham & Anderson, 2002). Moreover, recent publications go

beyond the concept of a single best model data (Burnham & Anderson, 2004) Therefore, these information criteria should not be used as the sole criterion on selecting models without considering also theoretical interpretation of data (Kwok et al., 2008) and data visualization in observational studies (Burnham & Anderson, 2002).

Table 5.3. Equations of each estimated model.

	Model	Equations
M0	Null Model	$Y_{ij} = \beta_{0j} + u_{0j} + e_{ij}$
M1	Linear Model	$Y_{ij} = \beta 0_j + \beta_{1\,j}\,(\text{Time}) + e_{ij}$
M2	Quadratic Model	$Y_{ij} = \beta 0_j + \beta_{1\,j}\,(\text{Time}) + \beta_{2j}\,(\text{Time}^2) + e_{ij}$
M3	Time*Gender	$Y_{ij} = \beta 0_j + (\beta_{1\,j}\,(\text{Time}) + \beta_{2j}\,(\text{Time}^2)) + \beta 3_{\,j}\,(\text{gender}) + \beta 4_{\,j}\,(\textit{time}*\text{gender}) + e_{ij}$
M4	Time*Age	$Y_{ij} = \beta 0_j + (\beta_{1\,j}\,(\text{Time}) + \beta_{2j}\,(\text{Time}^2)) + \beta 3_{\,j}\,(\text{age}) + \beta 4_{\,j}\,(\textit{time}*\text{age}) + e_i$
M5	Time*Attendance	$Y_{ij} = \beta 0_j + (\beta_{1\,j}\,(\text{Time}) + \beta_{2j}\,(\text{Time}^2)) + \beta 3_{\,j}\,(\text{attendance}) + \beta 4_{\,j}\,(\textit{time}*\text{attendance}) + e_{ij}$

Yij = the outcome, grand-mean intercept across individuals
β0j = the initial status of each Attachment Behaviors mean between individuals
u0j = random component describing differences in average scores between individuals
eij = errors in predicting the average scores for individuals
β1 (Time) = linear rate of change for individual
β2 (Time2) = quadratic rate of change for individual
β3j (*predictor*) = direct influence of predictor (gender or age) on the outcome
β4j (*time***predictor*) = interaction between time (linear and/or quadratic model) and predictor on the outcome

3) Behavioral changes depending on children variables

Background variables as children's gender, age of entry and childcare attendance were analysed as well. The questions we try to answer were: does gender, age and childcare attendance play any role in building a secure relationship with a new caregiver at childcare? To do that, we first inspected data with the one-way between-groups ANOVA,

in order to explore whether at the same time-point there were any statistically significant differences between the means of the different gender, age and attendance-groups.

Then, *three conditional models* (Model 3, Model 4 and Model 5) with GCA were performed adding the interaction of predictors with time to previous GCA models. This had the aim to investigate whether the predictors (gender, initial age of children and childcare attendance) might affect individuals' growth trajectories (linear or quadratic) (see *Table 5.3*). As explained above, different models were compared using the information criteria such as -2 log likelihood, AIC and BIC, as well as visual inspection data.

5.3. Results

5.3.1. Data screening and visual inspection

First, we started by examining descriptive statistics showing the means of PCAD's outcomes (security, avoidance, resistance and non-distressed) on each observation (T1, T2, T3) and the effect size of means difference (Cohen's *d*) as summarized in *Table 5.4* (scores range from 0 to 1, are very low and so 3 decimals are shown).

Table 5.4 shows that for *Security* the mean for the first observation was .513, while for the last observation it was .571 (+.058 points), indicating a little change over time, also suggested by the small effect size (d=.22). The most important change was found between T2 and T3, but it was still very small (d=.18).

Then, for *Avoidance*, the first mean score was .088, while for the last observation it was .063 (-.025 points). Data shows that the major decrease was between the first and second observation (-.023) even if the effect is still small (d=.21), whereas scores did not

change between the second and the third time-point (d=.02). In this case, the most important changes were found during the first month of attending the childcare centre.

Table 5.4 shows a considerable decrease of *Resistant* behaviors over time, whose mean at the first time-point was .179 and at the last one was .076 (d= .70). Examining the means more closely, one can see that the change between T1 and T2 means was about -.082 points (d=.53), while between T2 and T3 it was about -.021 (d=.18). This suggests a slightly less decrease during the latter part of the trend compared with the initial one.

Finally, the table reports that for *Non Distressed* the means considerably increase across observations, but change trajectory has no constant slope: scores distinctly increase between the first and second observation (+.117 points) (d=.40) and then they slightly decrease in the last observation (-.028 points) (d=.09) suggesting a quadratic trajectory.

Examining how the behavioral categories are distributed, *Table 5.4* (column %) shows that the prevalent behavior over time was the *secure* one (increasing from 47 to 52%) followed by *non distressed* behaviors (increasing from 27 to 35%) and then by *resistant* (decreasing from 16 to 7%) and *avoidant* conducts (decreasing from 8 to 6%).

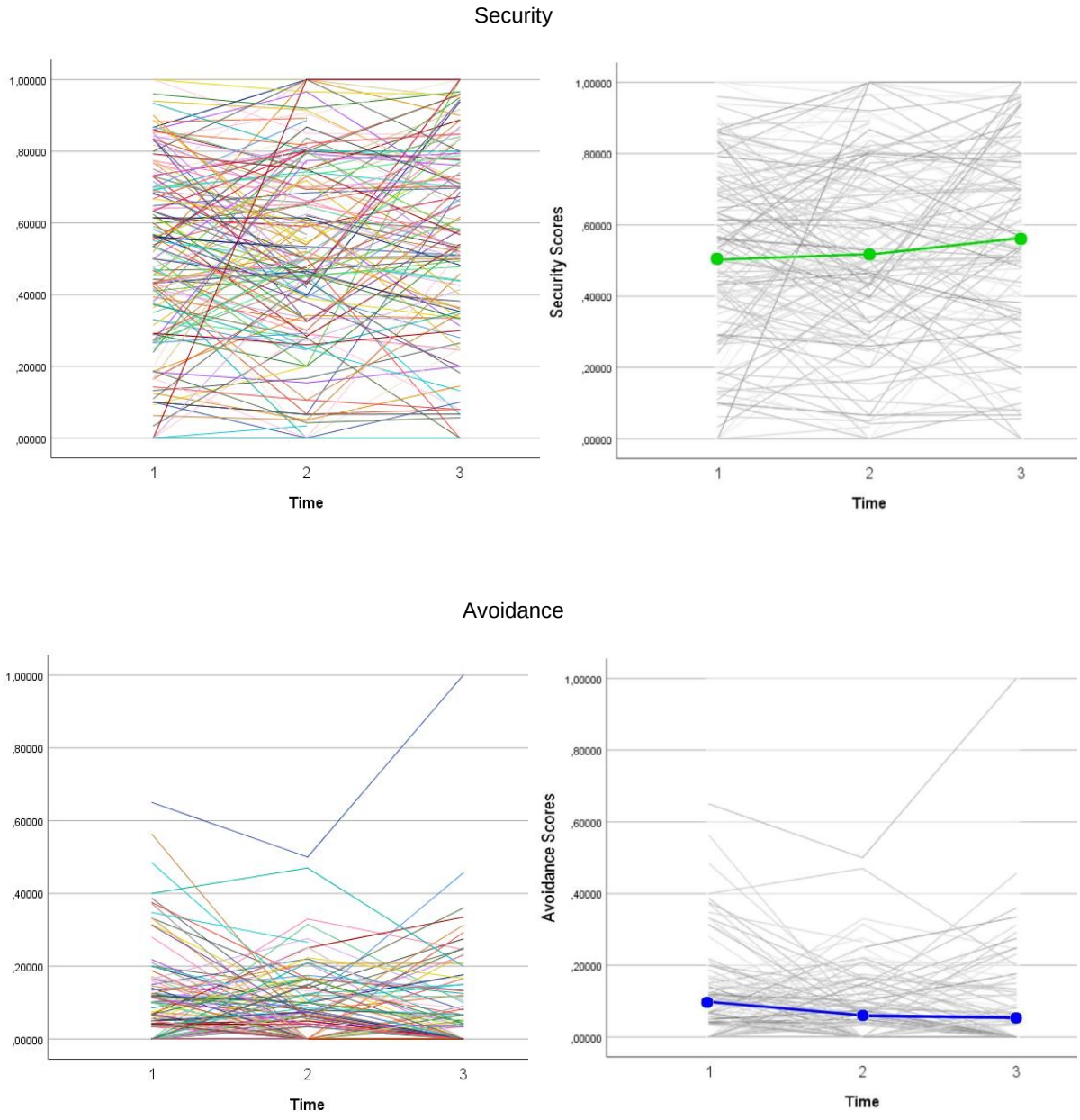
Table 5.4. Means for each measurement occasion and effect size for each time comparison.

		Descriptive		Time comparison (Cohen's *d*)			%
Time	**N**	**Mean**	**SD**	**T1**	**T2**	**T3**	
Security							
1	143	**.513**	.259	-			47.6
2	146	**.522**	.266	.03	-		47.6
3	119	**.571**	.275	.22	.18	-	52.1
Avoidance							
1	143	**.088**	.121	-			8.2
2	146	**.065**	.092	.21	-		5.9
3	119	**.063**	.127	.20	.02	-	5.8
Resistance							
1	143	**.179**	.181	-			16.6
2	146	**.097**	.126	.53	-		8.8
3	119	**.076**	.104	.70	.18	-	6.9
Non Distressed							
1	143	**.297**	.291	-			27.6
2	146	**.414**	.293	.40	-		37.7
3	119	**.386**	.300	.30	.09	-	35.2

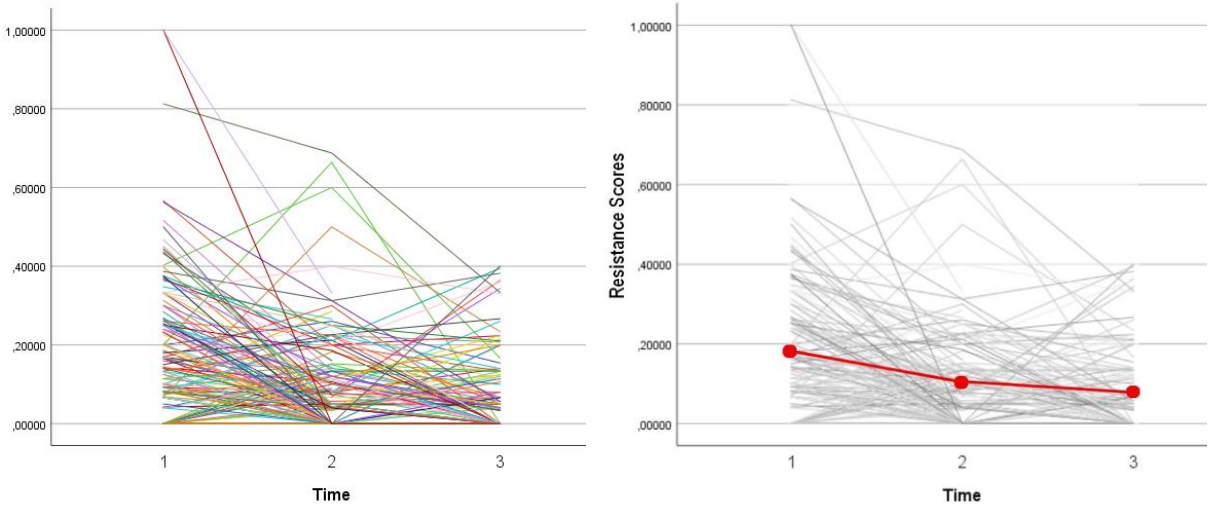
Visual inspection of the data can provide preliminary suggestions about their structure and individual changes over time. The group of *Figures 5.4* provides plots of individual trajectories (left ones) and plots of the means in the data set for each attachment behavior (right ones), considering the whole samples (148 children). It is interesting to see that the means of the plots on the right are extremely reductive data of the complexity and variability of each individual. However, it is visible that *Security* is extremely variable between individuals, but overall tends to rise more between the last two observations; both *Avoidance* and especially *Resistance* tend to decrease over time

(except for some single cases); then, it is particularly evident that *Non Distressed* scores tend to increase between the first two observations and then they slightly decrease.

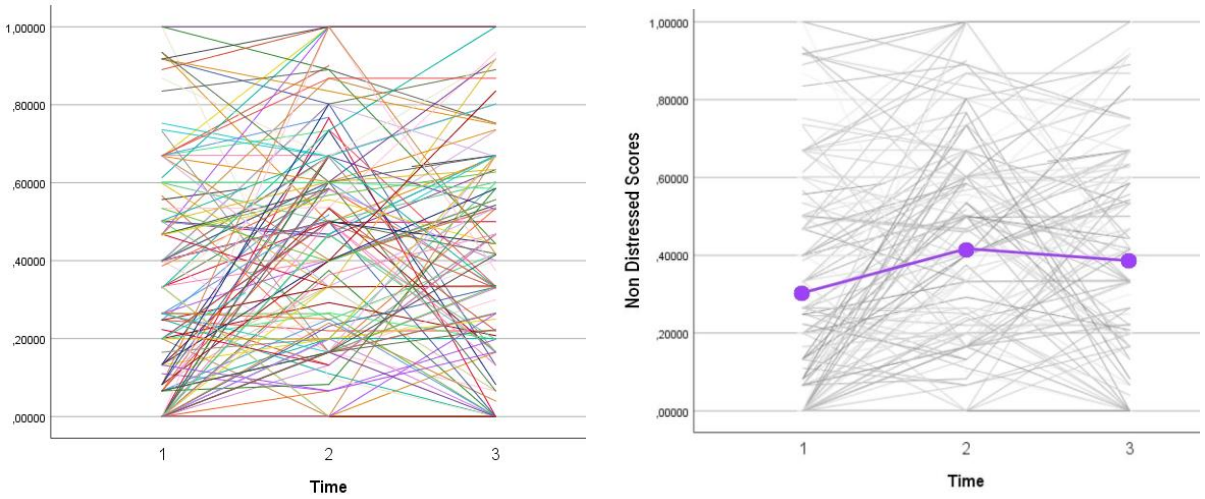
Figures 5.4. On the left, individual trajectories of participants; on the right, the mean for each attachment behavior is marked.



Resistance



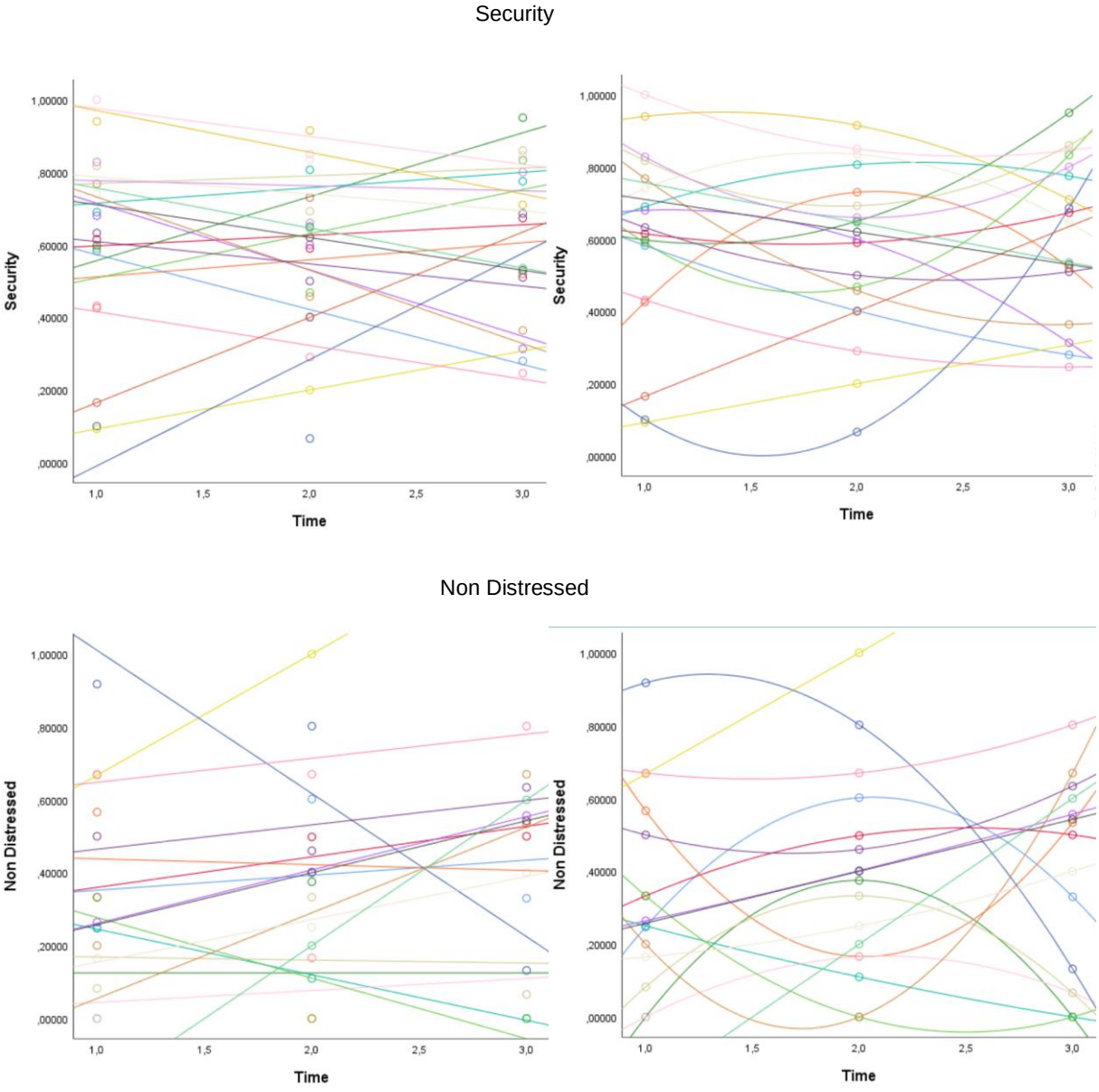
Non Distressed



Examining individuals' scores more closely, one can observe that individual trends are very different, and for some the trajectory is not linear. For purposes of contrast, the group of *Figure 5.5* reports *Security* and *Non Distressed* scores of 20 subjects (the first 20 participants in the data set) using both linear (on the left) and quadratic trajectory (on the right). For some children, a linear shape might be more adequate to describe the growth, especially referring to *secure* scores, but for others, a quadratic

trajectory better describes their growth, especially when one observes the *non distressed* plot (step suggested by Heck, Thomas, & Tabata, 2014).

Figure 5.5. Individual *Linear* (left) vs. *Non-linear* (right) growth trajectories.



5.3.2. Behavioral changes over time - RM ANOVA

First, means scores of *security, avoidance, resistance* and *non-distressed* obtained during the three time-point (T1, T2, T3) were compared using the Repeated Measures ANOVA (confidence interval: 95%) and Post-hoc tests.

Data showed behaviors' significant changes in the expected direction (see *Table 5.5*). First, children showed a significant increase in *Secure* scores ($F(2, 222) = 3.05$, $p < .05$). However, the observed power is low: Cohen (1988) suggested that .80 or higher scores would be an adequate level of power. Thus, results from this power analysis indicate that the degree of power is not satisfactory, since power for this attachment category is .59, and the result could be not correctly interpreted. Therefore, further analysis with GCA models (*paragraph 5.3.3*) will be performed in order to help us for a more complete data analysis and interpretation of the results.

On the other hand, it was observed that insecure behaviors decreased over time: *Avoidant* ($F(1.9, 214) = 4.18$, $p < .05$) and *Resistant* scores ($F(1.7, 196) = 26.22$, $p < .001$) significantly decreased. Both categories have more reliable observed power, even if the observed power of *Avoidance* is still a little below the threshold; here too, the reading of the results will be integrated with the GCA.

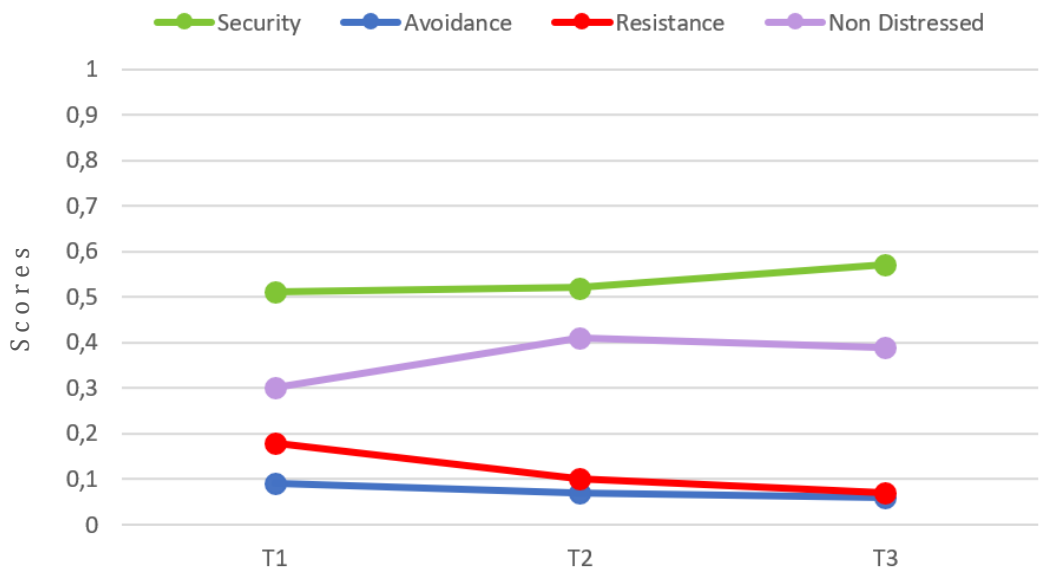
Finally, *Non Distressed* scores ($F(2, 222) = 9.21$, $p < .001$) significantly increase over time, showing a strong observed power (.98) (see *Figure 5.6*).

Table 5.5. Comparison between means scores at T1 (when the child was left in the centre without the parent's presence), T2 (after 1 month) and T3 (after 2 months). Repeated Measures ANOVA (C.I.: 95%). Sample: 112 children.

Behaviors	Mean (SD)			df	*F*	*p* (sig.)	Observed Power
	T1	T2	T3				
Secure	.52 (.26)	.53 (.28)	.57 (.27)	222	3.05	.049	.586
Avoidant	.09 (.12)	.07 (.10)	.06 (.13)	214 [a]	4.18	.018	.720
Resistant	.18 (.17)	.10 (.13)	.08 (.10)	196 [a]	26.22	<.001	1.000
Non Distressed	.29 (.29)	.39 (.29)	.39 (.30)	222	9.21	<.001	.976

a. Mauchly's tests indicate violation of sphericity (p<0.05) and a correction was needed. When Greenhouse-Geisser Epsilon is >0.75, the Huynh-Feldt results are used (*F*, *p* and Observed Power).

Figure 5.6. Line chart of attachment behavioral trends over time (T1-T2-T3) (RM ANOVA). N = 112 children.



Specifically, with reference to Post-hoc tests (see *Table 5.6*), *Secure* and *Avoidant* means significantly differ between T1 and T3 (respectively, p=.031 and p=.006), but not between T1 and T2 or between T2 and T3 (p<.NS). *Resistant* scores showed a significant difference in each comparison: means significantly decreased from T1 to T2 (p<.001)

and from T1 to T3 (p<.001); also the difference from T2 to T3 is statistically significant (p=.036). Finally, regarding *Non Distressed* scores, T1 significantly differs from T2 (p<.001) and then from T3 (p<.001), but means from T2 to T3 are not statistically different (p=NS).

Table 5.6. Pairwise comparison between means scores at T1 (when the child was left in the centre without the parent's presence), T2 (after 1 month) and T3 (after 2 months). Post-hoc tests (Repeated Measures ANOVA; C.I.: 95%). Sample: 112 children.

Pairwise Comparisons

	(I)	(J)	**Mean Difference** (I-J)	***p* (sig.)**	**95% C.I.** Lower Bound	Upper Bound
Secure						
	1	2	-.017	.462	-.062	.029
		3	-.056	.031	-.107	-.005
	2	1	.017	.462	-.029	.062
		3	-.039	.066	-.081	.003
Avoidant						
	1	2	.020	.109	-.004	.044
		3	.032	.006	.009	.056
	2	1	-.020	.109	-.044	.004
		3	.013	.202	-.007	.032
Resistant						
	1	2	.081	<.001	.048	.115
		3	.107	<.001	.074	.140
	2	1	-.081	<.001	-.115	-.048
		3	.026	.036	.002	.050
Non Distressed						
	1	2	-.102	<.001	-.156	-049
		3	-.095	.001	-.149	-.041
	2	1	.102	<.001	.049	.156
		3	.007	.775	-.043	.058

5.3.3. Behavioral changes over time - GCA models

Finally, a more complex design was performed, the Growth Curve Analysis (GCA) models, to estimate the *rate of growth* and *growth trajectories* of each PCAD's attachment behavior. There are two levels in GCA models: Level 1 refers to the within-

person change model (that is, the repeated measurements over time) and it focuses on the individual, describing the rate of change over time for each subject; then, Level 2 explores whether the rate of change varies across individuals due to some background variables/predictors (children's gender, age and childcare attendance) (Shek & Ma, 2011).

Statistical analyses were performed for each attachment behavior separately, following step-by-step Shek and Ma (2011) and Heck, Thomas and Tabata's (2014) procedures. A comparison of the different multilevel growth curve models is shown in *Table 5.7*.

Table 5.7. Model comparisons for each attachment behavior.

		LogLikelihood (χ2)	AIC	BIC	df	p-value
Security						
M0	Null Model	-45.329	-39.329	-27.295		
M1	Linear Model	-57.569	-45.569	-21.502	133.907 (6)	p = .069
M2	Quadratic Model	-58.694	-44.694	-16.615	146.007 (7)	p = .290
Avoidance						
M0	Null Model	-686.242	-680.242	-668.209		
M1	Linear Model	-697.083	-685.083	-661.016	128.437 (6)	p = .007
M2	Quadratic Model	-698.633	-684.633	-656.555	150.084 (7)	p = .209
M3	Time*gender	-697.934	-681.934	-649.844	129.461 (8)	p = .908
M4	Time*age	-698.942	-682.942	-650.852	126.866 (8)	p = .282
M5	Time*attendance	-687,229	-671,229	-639,317	129,580 (8)	p = .184
Resistance						
M0	Null Model	-414.772	-408.772	-396.738		
M1	Linear Model	-496.012	-484.012	-459.944	128.415 (6)	p <.001
M2	Quadratic Model	-503.967	-489.967	-461.889	147.050 (7)	p = .005
M3	Time*gender	-506.233	-486.233	-446.120	146.275 (10)	p = .798
M4	Time*age	-505.668	-485.668	-445.555	144.536 (10)	p = .272
M5	Time*attendance	-506.160	-486.160	-446.270	145.633 (10)	p = .031
Non Distressed						
M0	Null Model	77.394	83.394	95.428		
M1	Linear Model	58.730	70.730	94.797	133.344 (6)	p <.001
M2	Quadratic Model	46.912	60.912	88.990	146.432 (7)	p = .001
M3	Time*gender	42.585	62.585	102.698	145.864 (10)	p = .379
M4	Time*age	45.728	65.728	105.840	143.470 (10)	p = .687
M5	Time*attendance	35.216	55.216	95.106	140.586 (10)	p = .172

SECURE behaviors

Null Model - only Intercept with No Predictors (SE)

The Null Model includes no predictor and it serves as a baseline model to examine individual variation in the outcome Security, without regard to time. This model assesses (1) the mean of the outcome variable and (2) whether the grand-mean intercept varies across (Level 1) and between individuals (Level 2); if the variation is high, it could suggest that a certain amount of outcome variation could be explained by some variables (e.g. time at Level 1 or/and other predictors at Level 2). Specifically, the ICC (intraclass correlation coefficient) describes the amount of variance in the outcome that is attributed to interindividual differences (Shek & Ma, 2011).

Unconditional linear growth model (degrees of freedom=3)

Information Criteria

-2 Log Likelihood	-45.329
Akaike's Information Criterion (AIC)	-39.329
Hurvich and Tsai's Criterion (AICC)	-39.270
Bozdogan's Criterion (CAIC)	-24.295
Schwarz's Bayesian Criterion (BIC)	-27.295

Estimates of Fixed Effects

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0004	.0189	147.658	-.021	.983	-.0376	.0368

Estimates of Covariance Parameters

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Residual	.0296	.0026	11.404	<.001	.0249	.0351
Intercept [subject = id] Variance	.0416	.0062	6.725	<.001	.0310	.0557

To calculate the ICC the last table *Estimates of Covariance Parameters* was considered, by taking *Residual* and *Intercept Variance* values: the ICC was

.0416/(.0416+.0296) = 0.58, suggesting that about 58% of the total variation in the *Security* score was due to differences between individuals.

ICC can be used to help researchers to explore possible predictor effects on the outcome variable. When ICC is low (<0.25), the GCA model might not perform better than the traditional methods like RM-ANOVA, so generally ICC >0.25 is required (Shek & Ma, 2011). In this specific case, the ICC is .58 and so further analysis with the GCA model will be performed.

Model 1 - Linear Model (SE)

This model includes the time-related variable and examines individual changes over time, that is, how each person's rate of change deviates from the true rate of change of the sample. In this model the variable of *TIME* (Time_lin) was added in both *mixed* and *fixed* statements to test the linear growth of the *Security* indicator over time.

Unconditional linear growth model (degrees of freedom=6)

Information Criteria

-2 Log Likelihood	-57.569
Akaike's Information Criterion (AIC)	-45.569
Hurvich and Tsai's Criterion (AICC)	-45.360
Bozdogan's Criterion (CAIC)	-15.502
Schwarz's Bayesian Criterion (BIC)	-21.502

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0234	.0209	148.586	-1.119	.265	-.064905	,017979
Time_lin	.0219	.0119	133.907	1.833	.069	-.001734	,045579

Estimates of Covariance Parameters

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Residual	.0228	.0028	8.020	<.001	.017837	.029079

Intercept + Time_lin [subject = id]	UN (1.1)	.0448	.0079	5.698	<.001	.031727	.063126
	UN (2.1)	-.0039	.0037	-1.069	.285	-.011107	.003265
	UN (2.2)	.0068	.0028	2.402	.016	.003013	.015411

To explore whether time is a predictor in *Security* changes, the table *Estimates of Fixed Effects* was considered. The *intercept* corresponds to children's *security* score at the beginning of the study (T1) (please remember that these analyses were on *centered grand mean*, not on observed means summarized in *Table 5.4*). The estimates (β) of each parameter (excluding the intercept) indicate how much the score decrease or increases for the following intervals. The *t*-test is performed to calculate the significance of each fixed effect（Heck, Thomas & Tabata, 2014).

In this case, the linear slope parameters (Time_lin) indicate that secure behaviors increased over time (from -.023 to .022 points) but the linear growth rate was not significant (β = .022, SE = .012, p = .069), suggesting that time is not statistically significant on the *secure* behaviors when considered a linear change.

Next, the table *Estimates of Covariance Parameters* is considered. The Level 1 estimate is .023 (Wald Z = 8.020, p < .001). At Level 2, UN 1.1 reports the variance estimates for the random intercept, UN 2.2 reports the random linear slope, and UN 2.1 reports the covariance between the Level 2 initial status and linear growth estimates (that is, an estimate of the covariance between them) (Heck, Thomas & Tabata, 2014). In this case, results suggest that the variability in the random intercept explained between individuals is significant (Wald Z = 5.698, p <.001). Moreover, also the linear time slope varies significantly across individuals (Wald Z = 2.402, p =.016). Furthermore, the covariance parameter between the initial status intercept and growth rate is not significant (Wald Z = –1.069, p =.285). This suggests that there is variability between individuals but not due to some background variables or predictors.

Anyway, even if the linear growth analysis resulted not significant, further model testing will be performed, that is, the *quadratic* one.

Model 2 - Quadratic Model (SE)

The quadratic growth curve was tested, to examine whether the rate of growth accelerated or decelerated across the intervals of time. To test the quadratic rate of change, a model with quadratic time (Time_sq) was examined by adding the quadratic parameter in the previous model.

Unconditional linear growth model (degrees of freedom=7)

Information Criteria

-2 Log Likelihood	-58.694
Akaike's Information Criterion (AIC)	-44.694
Hurvich and Tsai's Criterion (AICC)	-44.414
Bozdogan's Criterion (CAIC)	-9.615
Schwarz's Bayesian Criterion (BIC)	-16.615

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0180	.0216	164.703	-,835	.405	-.060672	.024599
Time_lin	-.0108	.0331	172.672	-,328	.744	-.076067	.054411
Time_sq	.0169	.0159	146.007	1,062	.290	-.014548	.048362

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0226	.0028	8.028	<.001	.017726	.028885
Intercept + Time_lin [subject = id]	UN (1.1)	.0449	.0079	5.717	<.001	.031903	.063332
	UN (2.1)	-.0041	.0037	-1.104	.270	-.011237	.003139
	UN (2.2)	.0069	.0028	2.430	.015	.003063	.015375

Both linear (Time_lin) and quadratic (Time_sq) slope parameters indicate that the growth rates were not significant in both trajectories (p=.744 and p=.290, respectively).

The estimates (β) tend to increase over time (from -.018 to .017) but this growth seems to be not significant.

To select the best model, the first table *Information Criteria* of both models 1 and 2 (and the summary *Table 5.7*) was considered: we can see that AIC and BIC's values in the current model are bigger than the previous Model 1 (χ^2 = (-57.570) – (-58.694) = 1.124; Δ AIC = (-45.570) – (-44.694) = .876; Δ BIC = (-21.502) – (-16.615) = -4.887), so Model 2 was rejected.

Therefore, time is not statistically significant on the *Security* outcome when considered both linear and quadratic change. And so, further model testing by adding predictors will not be performed.

AVOIDANT behaviors

Null Model - only Intercept with No Predictors (AV)

With the same procedure *Security* was analyzed, also with *Avoidance* a Null Model was first tested to examine any mean differences in the outcome variable across individuals.

Unconditional linear growth model (degrees of freedom=3)

Information Criteria

-2 Log Likelihood	-686.242
Akaike's Information Criterion (AIC)	-680.242
Hurvich and Tsai's Criterion (AICC)	-680.183
Bozdogan's Criterion (CAIC)	-665.209
Schwarz's Bayesian Criterion (BIC)	-668.209

Estimates of Fixed Effects

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0004	.0075	149.743	-.053	.958	-.015211	.014419

Estimates of Covariance Parameters

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Residual	.0072	.0006	11.461	<.001	.006049	.008516
Intercept [subject = id] Variance	.0057	.0010	5.764	<.001	.004033	.007960

The ICC was .0057/(.0057+.0072) = 0.44, suggesting that about 44% of the total variation in the *Avoidance* indicator was due to interindividual differences. As explained above, the ICC was >.25 so the GCA could be an adequate measure to analyze these data.

Model 1 - Linear Model (AV)

As with *Security*, Model 1 was tested on *Avoidance* outcome to explore whether the growth curve is linear.

Unconditional linear growth model (degrees of freedom=6)

Information Criteria

-2 Log Likelihood	-697.289
Akaike's Information Criterion (AIC)	-685.289
Hurvich and Tsai's Criterion (AICC)	-685.079
Bozdogan's Criterion (CAIC)	-655.221
Schwarz's Bayesian Criterion (BIC)	-661.221

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0134	.0087	147.638	1.542	.125	-.003771	.030555
Time_lin	-.0153	.0056	130.161	-2.750	.007	-.026231	-.004281

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0063	.0008	8.207	<.001	.004981	.008031
Intercept + Time_lin [subject = id]	UN (1.1)	.0054	.0014	3.863	<.001	.003270	.009020
	UN (2.1)	-.0003	.0091	-.027	.978	-.018016	.017521
	UN (2.2)	.0936	.0907	1.032	.302	.014008	.624877

The significant values in the linear slope parameters indicate that there was a significant linear decrease in the *Avoidance* indicator scores (β = -.015, SE = .005, p = .007). The mean estimated initial status and linear growth rate for the sample were .013 and -.015, respectively (please remember these analyses were on *centered grand mean*, not on observed means). The significant linear effect for the *Avoidance* indicator was negative, suggesting that the rate of linear growth decreased over time. And in fact, we have already seen above that also *Table 5.4* reported that the mean for *Avoidance* indicator in the first observation (at T1) was .088 and then it decreased with time until to reach .063 points (at T3), and according to the current analyses this decrease is significant.

Model 2 - Quadratic Model (AV)

These analyses examined whether the rate of growth accelerated or decelerated over time by adding the quadratic parameter (Time_sq).

Unconditional linear growth model (degrees of freedom=7)

Information Criteria

-2 Log Likelihood	-698.633
Akaike's Information Criterion (AIC)	-684.633
Hurvich and Tsai's Criterion (AICC)	-684.353
Bozdogan's Criterion (CAIC)	-649.555
Schwarz's Bayesian Criterion (BIC)	-656.555

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0165	.0091	173.471	1.813	.072	-.001458	.034397
Time_lin	-.0339	.0170	171.336	-1.995	.048	-.067484	-.000359
Time_sq	.0096	.0083	150.276	1.161	.247	-.006726	.025905

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0062	.0008	8.204	<.001	.004875	.007861
Intercept + Time_lin [subject = id]	UN (1.1)	.0057	.0014	3.972	<.001	.003484	.009348
	UN (2.1)	-.0002	.0008	-.278	.781	-.001749	.001314
	UN (2.2)	.0008	.0007	1.198	.231	.000152	.004005

Results showed that growth parameters at linear time (Time_lin) also in this model were significant (β = -.034, SE = .017, p = .048), but not at quadratic time (Time_sq) (β = .009, SE = .008, p = .247), indicating that there was not significant variation in the quadratic time trajectories.

However, in this current Model 2, AIC and BIC's values are bigger than the previous Model 1 (Δ AIC = (-685.083) – (-684.633) = -0.45; Δ BIC = (-661.016) – (-.656.555) = -4.461) (see *Table 5.7*) so the quadratic model does not fit better with data. Given that the linear fit over the quadratic model, only the linear growth curve parameters were retained in the subsequent models in which predictors will be added (see *5.3.4*).

RESISTANT behaviors

Null Model - only Intercept with No Predictors (RE)

As with previous attachment behaviors, a Null Model was tested with *Resistance* to examine any mean differences in the outcome variable across individuals.

Unconditional linear growth model (degrees of freedom=3)

Information Criteria

-2 Log Likelihood	-414.772
Akaike's Information Criterion (AIC)	-408.772
Hurvich and Tsai's Criterion (AICC)	-408.712
Bozdogan's Criterion (CAIC)	-393.738
Schwarz's Bayesian Criterion (BIC)	-396.738

Estimates of Fixed Effects

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-4.9905	.0088	144.61	-.006	.995	-.017505	.017405

Estimates of Covariance Parameters

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Residual	.0169	.0015	11.382	<.001	.014224	.020072
Intercept [subject = id] Variance	.0053	.0015	3.669	<.001	.003128	.009104

The ICC was .0169/(.0169+.0053) = 0.76, suggesting that about 76% of the total variation in the *Resistance* indicator was due to interindividual differences.

Model 1 - Linear Model (RE)

Model 1 was tested on *Resistance* outcome, to explore whether the growth curve is linear.

Unconditional linear growth model (degrees of freedom=6)

Information Criteria

-2 Log Likelihood	-496.012
Akaike's Information Criterion (AIC)	-484.012
Hurvich and Tsai's Criterion (AICC)	-483.802
Bozdogan's Criterion (CAIC)	-453.944
Schwarz's Bayesian Criterion (BIC)	-459.944

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0501	.0138	147.108	3.632	<.001	.022825	.077314
Time_lin	-.0533	.0081	128.415	-6.579	<.001	-.069330	-.037268

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0109	.0013	8.161	<.001	.008572	.013857
Intercept + Time_lin [subject = id]	UN (1.1)	.0184	.0035	5.337	<.001	.012744	.026564
	UN (2.1)	-.0074	.0019	-3.847	<.001	-.011233	-.003650
	UN (2.2)	.0033	.0014	2.405	.016	.001475	.007527

The significant values in both the intercept and linear slope (Time_lin) parameters suggest that the initial status and linear growth rate were not constant over time (Shek and Ma, 2011). Tables reported a significant linear decrease in the *Resistance* indicator scores (β = -.053, SE = .008, p <.001). Results show that the mean *Resistance* indicator was .05 (intercept) and then decreased considerably with time: and in fact, in *Table 5.4* above we already have found that *Resistance* scores in the first observation (at T1) was .179 and then decreased with time until to reach .076 points (at T3).

The covariance (β = -.0074, SE = .0019, p < 0.001) between the intercept and the linear growth parameter was negative (see the last table *Estimates of Covariance Parameters*), suggesting that children with higher *Resistance* scores at the beginning had a slower linear decrease and, on the other hand, children with lower *Resistance* scores had a faster decrease in linear growth over time (Shek and Ma, 2011). Moreover, given that all estimates are significant, these results could suggest that at Level 2 the rate of change varies across individuals due to some background variables/predictors (children's gender, age or childcare attendance) that will be analysed in *paragraph 5.3.4.*

Model 2 - Quadratic Model (RE)

This model examined whether the rate of growth is constant or accelerated/decelerated over time adding the quadratic parameter.

Unconditional linear growth model (degrees of freedom=7)

Information Criteria

-2 Log Likelihood	-503.967
Akaike's Information Criterion (AIC)	-489.967
Hurvich and Tsai's Criterion (AICC)	-489.687
Bozdogan's Criterion (CAIC)	-454.889
Schwarz's Bayesian Criterion (BIC)	-461.889

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0602	.0143	164.768	4.225	<.001	.032053	.088305
Time_lin	-.1129	.0223	181.776	-5.052	<.001	-.156922	-.068779
Time_sq	.0302	.0106	147.050	2.859	.005	.009335	.051151

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0103	.0013	8.159	<.001	.008104	.013102
Intercept + Time_lin [subject = id]	UN (1.1)	.0189	.0034	5.513	<.001	.013288	.027056
	UN (2.1)	-.0078	.0019	-4.049	<.001	-.011601	-.004033
	UN (2.2)	.0037	.0014	2.679	.007	.001769	.007643

This model showed significant values in all growth parameters (intercept, linear and quadratic parameters) indicating that there were significant variations in the initial status and time trajectories, both linear and quadratic. The linear effect for *Resistance* was negative (β = -.113, SE = .022, p < .001), indicating that the rate of linear growth decreased over time. But then, the significant quadratic effect was positive (β = .03, SE = .011, p = .005), showing that the rate of growth is not constant and linear across the time-points. The expected deceleration was found between T2 and T3: *Table 5.4* above shows that *resistant* behaviors rapidly decreased at the beginning (from .179 to .097), but then this trend slowed down later on (from .097 to .076).

Moreover, comparing the *information criteria* of Model 1 and Model 2, this latter one reports smaller values (χ^2 = 7.955; Δ AIC = 5.955; Δ BIC = 1.945) (see *Table 5.7*), so the quadratic model fits better over the linear one. Therefore, both linear and quadratic growth curve parameters were retained in the subsequent models in which predictors will be added (*paragraph 5.3.4*). Here too, all estimates (see the last table *Estimates of Covariance Parameters*) are significant, suggesting that the rate of change varies across individuals due to some background variables/predictors.

NON DISTRESSED behaviors

Null Model - only Intercept with No Predictors (ND)

As with previous attachment behaviors, a Null Model was tested with *Non Distressed* to examine any mean differences in the outcome variable across individuals.

Unconditional linear growth model (degrees of freedom=3)

Information Criteria

-2 Log Likelihood	77.394
Akaike's Information Criterion (AIC)	83.394
Hurvich and Tsai's Criterion (AICC)	83.453
Bozdogan's Criterion (CAIC)	98.428
Schwarz's Bayesian Criterion (BIC)	95.428

Estimates of Fixed Effects

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0024	.0204	147.376	.117	.907	-.037863	.042631

Estimates of Covariance Parameters

Parameter	Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Residual	.0434	.0038	11.403	<.001	.036556	.051553
Intercept [subject = id] Variance	.0453	.0073	6.229	<.001	.033074	.062055

The ICC was .0453/(.0453 + .0434) = 0.51, suggesting that about 51% of the total variation in the *Non Distressed* indicator was due to interindividual differences. As the ICC was >.25 the GCA could be an adequate measure to analyze these data.

Model 1 - Linear Model (ND)

Model 1 was tested on *Non Distressed* outcome, to explore whether the growth curve is linear (Time_lin).

Unconditional linear growth model (degrees of freedom=6)

Information Criteria

-2 Log Likelihood	58.730
Akaike's Information Criterion (AIC)	70.730
Hurvich and Tsai's Criterion (AICC)	70.939
Bozdogan's Criterion (CAIC)	100.797
Schwarz's Bayesian Criterion (BIC)	94.797

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0485	.0230	146.681	-2.108	.037	-.094042	-.003039
Time_lin	.0558	.0129	133.344	4.332	<.001	.030301	.081218

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0392	.0049	8.069	<.001	.030756	.049994
Intercept + Time_lin [subject = id]	UN (1.1)	.0440	.0099	4.425	<.001	.028247	.068500
	UN (2.1)	.0015	.0046	.326	.744	-.007530	.010539
	UN (2.2)	.0011	.0037	.283	.777	1.021927E-6	1.070162

The significant values in both the intercept and linear slope (Time_lin) parameters suggest that the initial status and linear growth rate were not constant over time (Shek and Ma, 2011). Results show that there was a significant linear increase in *non distressed* behaviors over time (β = .056, SE = .013, p <.001). The mean *Non Distressed* indicator

was -.049 (intercept) and then considerably increased with time to .056 points: and in fact, in *Table 5.4* above we already found that *Non Distressed* score in the first observation (at T1) was .297 and then increased with time until to reach .386 points at T3.

Model 2 - Quadratic Model (ND)

This model examined whether the rate of growth is constant or accelerated/decelerated over time adding the quadratic parameter (Time_sq).

Unconditional linear growth model (degrees of freedom=7)

Information Criteria

-2 Log Likelihood	46.912
Akaike's Information Criterion (AIC)	60.912
Hurvich and Tsai's Criterion (AICC)	61.192
Bozdogan's Criterion (CAIC)	95.990
Schwarz's Bayesian Criterion (BIC)	88.990

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0712	.0239	167.705	-2.973	.003	-.118479	-.023922
Time_lin	.1924	.0410	163.892	4.694	<.001	.111445	.273293
Time_sq	-.0698	.0200	146.432	-3.497	.001	-.109296	-.030374

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0363	.0045	8.113	<.001	.028533	.046258
Intercept + Time_lin [subject = id]	UN (1.1)	.0467	.0099	4.733	<.001	.030887	.070709
	UN (2.1)	-.0001	.0045	-.022	.982	-.008957	.008756
	UN (2.2)	.0023	.0035	.654	.513	.000114	.046073

This model showed significant values in all growth parameters (intercept, linear and quadratic parameters) indicating that there were significant variations in the initial

status and time trajectories, both linear and quadratic. The linear effect for *Non Distressed* was positive (β = .192, SE = .041, p < .001), indicating that the rate of linear growth increased over time. But then, the significant quadratic effect was negative (β = -.07, SE = .02, p = .001), showing that the rate of growth is not constant and linear across the time-points. Here too, the expected deceleration was found between T2 and T3: *Table 4* above shows that *non distressed* behaviors rapidly increased between T1 and T2 (from .297 to .414), but then this trend slowed down and decreased between T2 and T3 (from .414 to .386).

Moreover, the current quadratic model fits better over the linear model (χ^2 = 11.818; Δ AIC = 9.818; Δ BIC = 5.807) so both linear and quadratic growth curve parameters were retained in the subsequent models in which predictors will be added.

5.3.4. Behavioral changes depending on children variables

Between-groups ANOVA

Background variables were analysed, exploring whether gender, children's age of entry at childcare centre and attendance could play any role. To do that, data were first inspected with the one-way between-groups ANOVA, to determine whether at the same time-point there are any statistically significant differences between the means of the different gender, age and attendance-groups. When groups were only two (e. g. male-female), it was possible to perform also Cohen's *d*.

Regarding differences about children's gender (see *Table 5.8*), it seems that the only significant difference is on *secure* behaviors at T3, where females have higher scores than males (p = .019; d = .40). Moreover, also *non distressed behaviors* are very different at T3, even though it was at the limit of statistical significance (p = .056; d = .33), and in this case, males have higher scores than females.

As regards children's age of entry at childcare centre, *Table 5.9* does not show significant behavioral differences between age-groups at any time-points.

Finally, regarding the childcare attendance, results show that the only significative difference is at T3 on *avoidant* behaviors (p = .013; d = .63): result shows that after 2 months, children who attended more the childcare centre (>80%) had lower scores of *Avoidant* scores than children who attended less (<80%), that had higher *avoidant* scores (see *Table 5.10*).

Table 5.8. Differences between males and females.

Males at T1 = 82, T2 = 83, T3 = 67 ;
Females at T1 = 61, T2 = 63, T3 = 52.

Behavior & Time-points	**Descriptive**				**Between-groups ANOVA**		**Cohen's d**
	Males		*Females*				
	M	(SD)	**M**	(SD)	**F**	***p* (sig).**	
Secure							
T1	.50	(.26)	.54	(.26)	.84	.361	.15
T2	.51	(.27)	.54	(.27)	.37	.544	.11
T3	.52	(.26)	.63	(.29)	5.67	.019	.40
Avoidant							
T1	.09	(.12)	.08	(.12)	.21	.651	.08
T2	.07	(.11)	.05	(.07)	1.50	.223	.00
T3	.07	(.14)	.06	(.11)	.10	.751	.08
Resistant							
T1	.18	(.17)	.18	(.20)	.09	.765	.00
T2	.10	(.13)	.09	(.12)	.36	.549	.08
T3	.09	(.11)	.06	(.10)	1.73	.191	.28
Non Distressed							
T1	.34	(.30)	.24	(.28)	3.45	.065	.34
T2	.44	(.28)	.38	(.31)	1.15	.286	.21
T3	.43	(.31)	.33	(.29)	3.73	.056	.33

Table 5.9. Differences between the means of the different age-groups.

0-1 years old group at T1 = 30, T2 = 30, T3 = 27.
1-2 years old group at T1 = 81, T2 = 83, T3 = 63.
2-3 years old group at T1 = 32, T2 = 33, T3 = 29.

Behavior & Time-point	Descriptive						Between-groups ANOVA		
	0-1 y		*1-2 y*		*2-3 y*				
	M	(SD)	**M**	(SD)	**M**	(SD)	**df**	**F**	***p* (sig).**
Secure									
T1	.50	(.24)	.52	(.28)	.51	(.24)		.09	.917
T2	.48	(.28)	.54	(.27)	.52	(.26)	2	.58	.560
T3	.52	(.26)	.61	(.30)	.54	(.23)		1.19	.308
Avoidant									
T1	.05	(.12)	.10	(.13)	.09	(.10)		1.49	.228
T2	.08	(.12)	.05	(.09)	.07	(.08)	2	1.25	.291
T3	.07	(.20)	.06	(.10)	.07	(.10)		.19	.827
Resistant									
T1	.13	(.12)	.20	(.20)	.16	(.18)		1.71	.184
T2	.10	(.13)	.10	(.12)	.09	(.14)	2	.03	.973
T3	.06	(.09)	.08	(.10)	.09	(.12)		.64	.531
Non Distressed									
T1	.38	(.33)	.25	(.28)	.33	(.25)		2.73	.069
T2	.44	(.30)	.39	(.29)	.45	(.29)	2	.54	.587
T3	.42	(.29)	.35	(.33)	.42	(.24)		.82	.442

Table 5.10. Differences between children with low (<80%) and high (>80%) childcare centre attendance.
Low attendance at T1 = 61, T2 = 64, T3 = 54.
High attendance at T1 = 78, T2 = 78, T3 = 64.

Behavior & Time-points	Descriptive				Between-groups ANOVA		Cohen's d
	Low att.		*High att.*				
	M	(SD)	**M**	(SD)	**F**	***p* (sig).**	
Secure							
T1	.52	(.25)	.52	(.26)	.05	.823	.00
T2	.53	(.26)	.53	(.26)	.02	.966	.00
T3	.54	(.27)	.60	(.28)	1.63	.204	.22
Avoidant							
T1	.10	(.14)	.08	(.07)	2.14	.146	.19
T2	.08	(.10)	.05	(.08)	2.89	.092	.34
T3	.09	(.08)	.04	(.08)	6.44	.013	.63
Resistant							
T1	.15	(.14)	.20	(.21)	3.46	.065	.27
T2	.11	(.14)	.11	(.11)	.96	.329	.00
T3	.08	(.10)	.07	(.11)	.72	.723	.10
Non Distressed							
T1	.32	(.27)	.28	(.31)	.811	.369	.14
T2	.40	(.28)	.41	(.29)	.084	.772	.04
T3	.40	(.32)	.37	(.32)	.314	.577	.09

Conditional models with GCA

Lastly, Model 3, Model 4 and Model 5 (the *three conditional models*) with GCA were performed in order to investigate whether the three predictors analyzed might affect individuals' growth trajectories (linear or quadratic). Effect of the predictors was tested and added referring to the best Model (1 or 2) which best fits with data.

Since neither the linear nor the quadratic model were significant for *Security*, further model testing by adding predictors will not be performed for this category time (Shek and Ma, 2011).

Model 3 - Interaction with Gender

AVOIDANT behaviors

To test the predictor effect on the shape of individual growth trajectories, the relationships between *avoidant* behaviors and the effect of gender was explored. In this model, the variable of Gender was added in the best model which fitted with data, that is, the *linear* one (Model 1).

Unconditional linear growth model (degrees of freedom=8)

Information Criteria

-2 Log Likelihood	-697.934
Akaike's Information Criterion (AIC)	-681.934
Hurvich and Tsai's Criterion (AICC)	-681.573
Bozdogan's Criterion (CAIC)	-641.844
Schwarz's Bayesian Criterion (BIC)	-649.844

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0181	.0115	148.163	1.575	.117	-.004595	.040688
Time_lin	-.0147	.0074	131.466	-1.991	.049	-.029251	-9.583459E-5
Gender	-.0109	.0175	147.464	-.624	.533	-.045592	.023705
Time_lin*Gender	-.0013	.0112	129.461	-.115	.908	-.023438	.020859

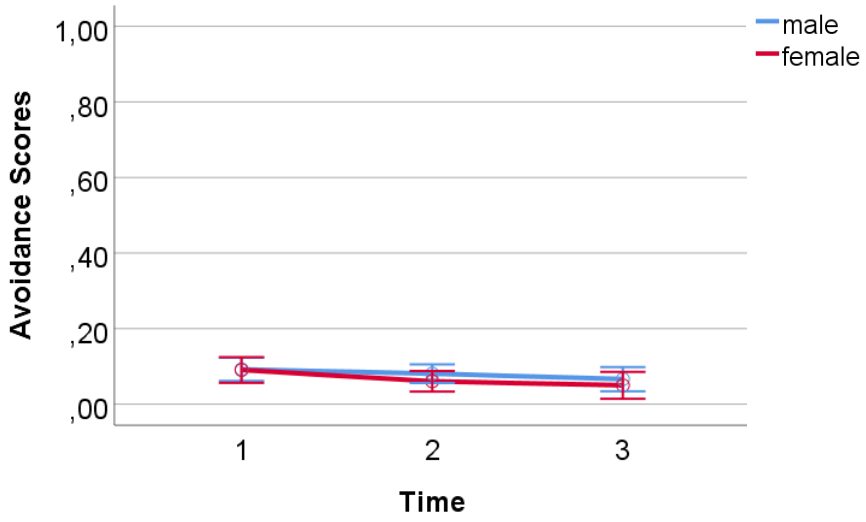
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0062	.0008	8.188	<.001	.004905	.007917
Intercept + Time_lin [subject = id]	UN (1.1)	.0056	.0014	3.926	<.001	.003421	.009286
	UN (2.1)	-.0002	.0008	-.247	.805	-.001730	.001342
	UN (2.2)	.0008	.0007	1.169	.242	.000144	.004100

The linear model with Gender as predictor revealed a non-statistically significant effect of the interaction between time and gender (β = -.001, SE = .011, p = .908), neither the simple main effect of gender (β = -.011, SE = .018, p = .533). Only the main effect of linear time (β = -.015, SE = 0.007, p < 0.05) resulted to be statistically significant in the *Avoidance* indicator scores.

-2 log likelihood, AIC and BIC's values are bigger than Model 1, so this model does not fit better with data. Moreover, as we can see in *Figure 5.7*, growth trajectories for males and females are the same.

Figure 5.7. Avoidant trajectories of male and female.



RESISTANT behaviors

In this model, the variable of Gender was added in the best model which fitted with *resistant* data, that is, the *quadratic* one (Model 2).

Unconditional linear growth model (degrees of freedom=10)

Information Criteria

-2 Log Likelihood	-506.233
Akaike's Information Criterion (AIC)	-486.233
Hurvich and Tsai's Criterion (AICC)	-485.679
Bozdogan's Criterion (CAIC)	-436.120
Schwarz's Bayesian Criterion (BIC)	-446.120

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0559	.0188	164.927	2.971	.003	.018732	.092990
Time_lin	-.1007	.0296	182.058	-3.402	.001	-.159133	-.042294
Time_sq	.0280	.0141	148.622	1.990	.048	.000191	.055742
Gender	.0101	.0288	164.738	.351	.726	-.046742	.066985
Time_lin*Gender	-.0284	.0451	180.956	-.630	.529	-.117397	.060547
Time_sq*Gender	.0055	.0214	146.275	.257	.798	-.036721	.047680

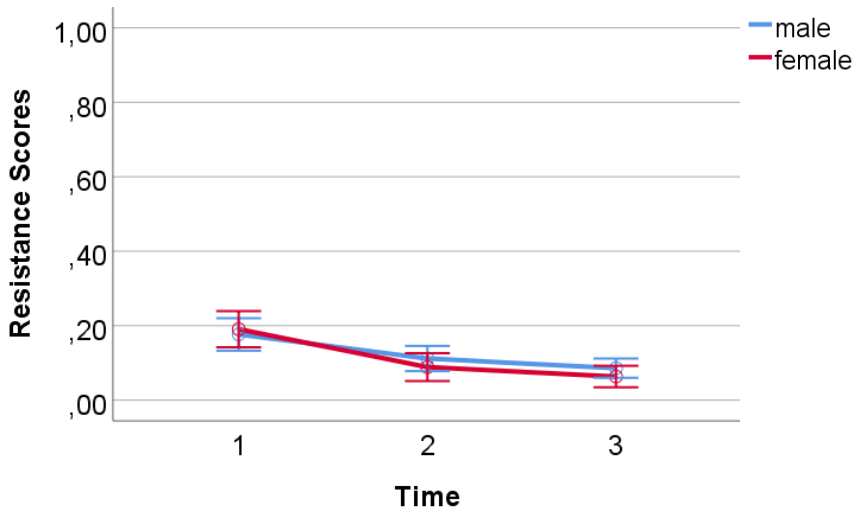
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0103	.0013	8.156	<.001	.008112	.013117
Intercept + Time_lin [subject = id]	UN (1.1)	.0189	.0034	5.508	<.001	.013271	.027038
	UN (2.1)	-.0078	.0019	-4.044	<.001	-.011544	-.004007
	UN (2.2)	.0036	.0014	2.634	.008	.001705	.007552

As showed in these tables, Gender was not a predictor of both linear and quadratic changes in *resistant* behaviors: results revealed a non-statistically significant effect of the interaction between time and gender (p = .529 and p = 0.798, respectively), neither the simple main effect of gender (β = .01; SE = .029; p = .726). Only the main effect of both linear and quadratic time is statistically significant in the *Resistant* indicator scores.

But -2 log likelihood, AIC and BIC's values are bigger than the Model 2, so this model does not fit better with data. Moreover, as we can see in *Figure 5.8*, growth trajectories for males and females follow the same trend: both groups decrease at the same rate over time.

Figure 5.8. Resistant trajectories of male and female.



NON DISTRESSED behaviors

In this model, the variable of Gender was added in the best model which fits with *non distressed* results, that is, the *quadratic* one (Model 2).

Unconditional linear growth model (degrees of freedom=10)

Information Criteria

-2 Log Likelihood	42.585
Akaike's Information Criterion (AIC)	62.585
Hurvich and Tsai's Criterion (AICC)	63.139
Bozdogan's Criterion (CAIC)	112.698
Schwarz's Bayesian Criterion (BIC)	102.698

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0327	.0313	167.906	-1.043	.299	-.094557	.029190
Time_lin	.1618	.0543	164.710	2.982	.003	.054634	.268866

Time_sq	-.0545	.0265	148.234	-2.056	.042	-.106802	-.002109
Gender	-.0903	.0480	167.713	-1.882	.062	-.185111	.004431
Time_lin*Gender	.0709	.0826	163.799	.859	.391	-.092074	.233925
Time_sq*Gender	-.0354	.0402	145.864	-.882	.379	-.114853	.043961

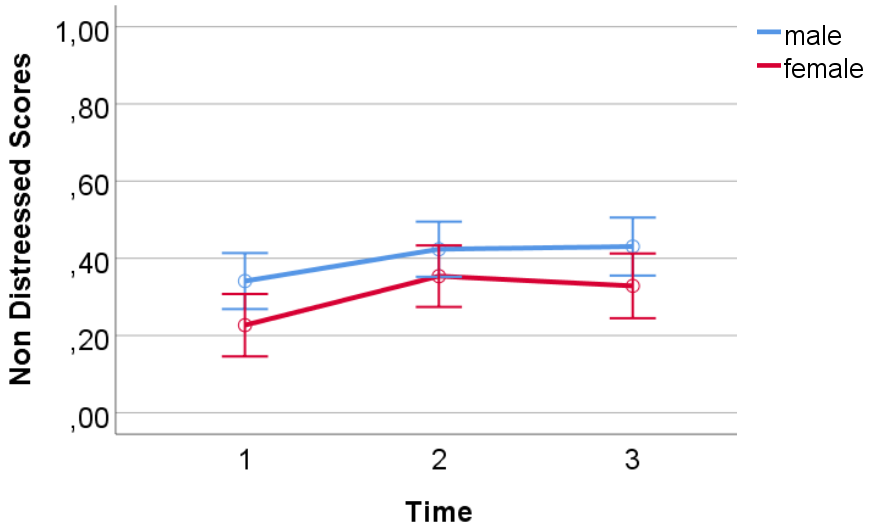
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0361	.0045	8.111	<.001	.028382	.046018
Intercept + Time_lin [subject = id]	UN (1.1)	.0455	.0097	4.680	<.001	.029904	.069101
	UN (2.1)	-.0003	.0045	-.064	.949	-.009121	.008540
	UN (2.2)	.0024	.0035	.690	.490	.000142	.041458

Here too, Gender was not a predictor of both linear and quadratic changes in *non distressed* behaviors: results revealed a non-statistically significant effect of the interaction between time and gender (p = .391 and p = 0.379, respectively), neither the simple main effect of gender (p = .062). Just the effect of time (both linear and quadratic) results significative for *Non Distressed* behavioral changes.

Moreover, -2 log likelihood, AIC and BIC's values are bigger than the Model 2, so this model does not fit better with data. And as we can see in *Figure 5.9*, although there seems to be a slight difference between males and females scores, the growth trajectories of both groups are the same: in both groups, *non distressed* behaviors increased rapidly during the first month and then remained stable between T2 and T3.

Figure 5.9. Non Distressed trajectories of male and female.



Model 4 - Interaction with Age

AVOIDANT behaviors

In this model, the relationships between the *avoidant* behaviors and the effect of children's age of entry at childcare centre were explored. In this model, the variable of Age was added in the best model which fits with data, that is, the *linear* one (Model 1).

Unconditional linear growth model (degrees of freedom=8)

Information Criteria

-2 Log Likelihood	-698.942
Akaike's Information Criterion (AIC)	-682.942
Hurvich and Tsai's Criterion (AICC)	-682.581
Bozdogan's Criterion (CAIC)	-642.852
Schwarz's Bayesian Criterion (BIC)	-650.852

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0172	.0278	148.021	-.617	.538	-.072134	.037787
Time_lin	.0026	.0174	126.539	.146	.884	-.031913	.037003
Age	.0152	.0131	148.510	1.158	.249	-.010729	.041075
Time_lin*Age	-.0089	.0082	126.866	-1.079	.282	-.025071	.007373

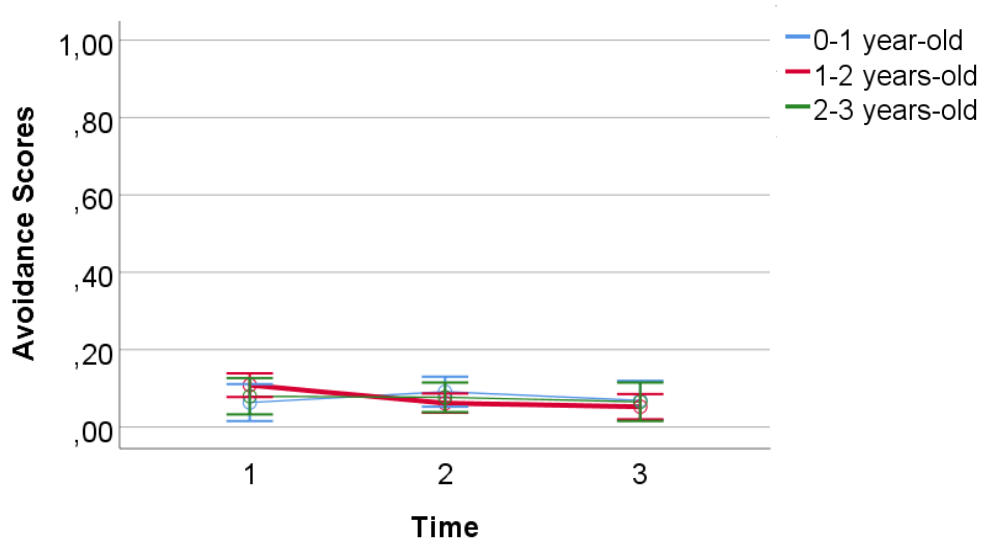
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0062	.0008	8.193	<.001	.004893	.007895
Intercept + Time_lin [subject = id]	UN (1.1)	.0056	.0014	3.922	<.001	003401	.009238
	UN (2.1)	-.0002	.0008	-.200	.841	-.001678	.001367
	UN (2.2)	.0008	.0007	1.151	.250	.000136	.004109

The linear model with Age as predictor revealed a non-statistically significant effect of the interaction between time and children's age (β = -.009, SE = .008, p = 0.282), neither the simple main effect of age (β = .015, SE = .013, p = .249).

However, -2 log likelihood, AIC and BIC's values are bigger than Model 1, so this model does not fit better with data. Moreover, as shown also in *Figure 5.10*, the three age-groups follow the same growth trajectory.

Figure 5.10. Avoidant trajectories of different age-groups.



RESISTANT behaviors

In this model, the variable of Age was added in the best model which fits with *resistant* data, that is, the *quadratic* one (Model 2).

Unconditional linear growth model (degrees of freedom=10)

Information Criteria

-2 Log Likelihood	-505.668
Akaike's Information Criterion (AIC)	-485.668
Hurvich and Tsai's Criterion (AICC)	-485.114
Bozdogan's Criterion (CAIC)	-435.555
Schwarz's Bayesian Criterion (BIC)	-445.555

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0342	.0458	164.996	.746	.456	-.056250	.124633
Time_lin	-.0445	.0718	182.147	-.620	.536	-.186211	.097154
Time_sq	-.0052	.0338	144.133	-.152	.879	-.071916	.061616
Age	.0129	.0216	165.608	.597	.551	-.029744	.055551
Time_lin*Age	-.0339	.0339	183.078	-1.001	.318	-.100719	.032936
Time_sq*Age	.0176	.0159	144.536	1.103	.272	-.013894	.048999

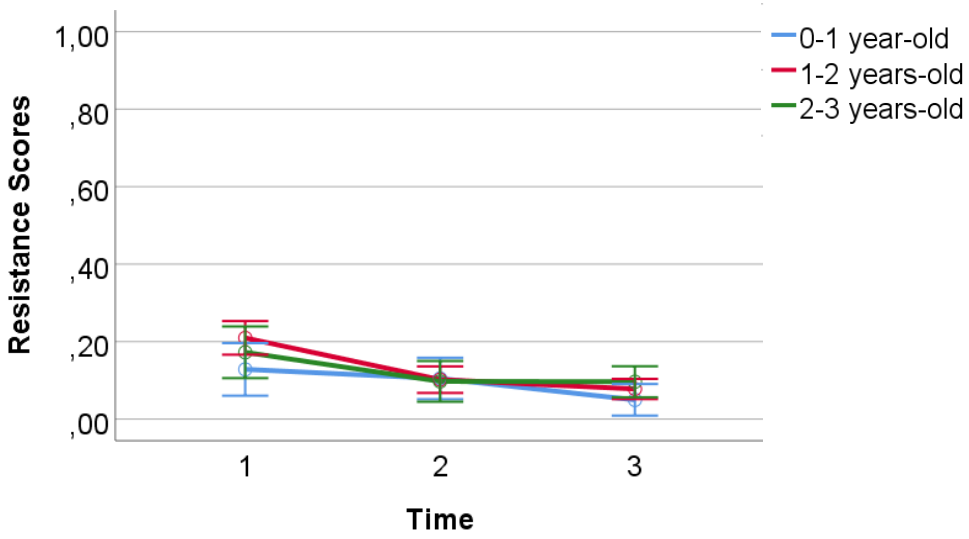
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0102	.0013	8.139	<.001	.008002	.012952
Intercept + Time_lin [subject = id]	UN (1.1)	.0191	.0034	5.546	<.001	.013393	.027155
	UN (2.1)	-.0079	.0019	-4.094	<.001	-.011737	-.004138
	UN (2.2)	.0038	.0014	2.746	.006	.001858	.007745

Age was not a predictor of both linear and quadratic changes in *resistant* behaviors: results reported a non-statistically significant effect of the interaction between time and children's age (p = .318 and p = .272, respectively), neither the simple main effect of age (p = .551). In this model, also linear and quadratic effects of time seem to be not significant.

However, -2 log likelihood, AIC and BIC's values are bigger than the Model 2, so this model does not fit better with data. Moreover, as shown also in *Figure 5.11*, the three age-groups follow the same growth trajectory.

Figure 5.11. Resistant trajectories of different age-groups.



NON DISTRESSED behaviors

In this model, the variable of Age was added in the best model which fits with *non distressed* results, that is, the *quadratic* one (Model 2).

Unconditional linear growth model (degrees of freedom=10)

Information Criteria

-2 Log Likelihood	45.728
Akaike's Information Criterion (AIC)	65.728
Hurvich and Tsai's Criterion (AICC)	66.282
Bozdogan's Criterion (CAIC)	115.840
Schwarz's Bayesian Criterion (BIC)	105.840

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0226	.0769	168.105	-.294	.769	-.174511	.129222
Time_lin	.1058	.1320	163.749	.802	.424	-.154844	.366504

Time_sq	-.0453	.0639	143.280	-.710	.479	-.171544	.080895
Age	-.0241	.0363	168.736	-.666	.507	-.095714	.047451
Time_lin*Age	.0430	.0622	164.464	.690	.491	-.079911	.165816
Time_sq*Age	-.0121	.0301	143.470	-.404	.687	-.071569	.047267

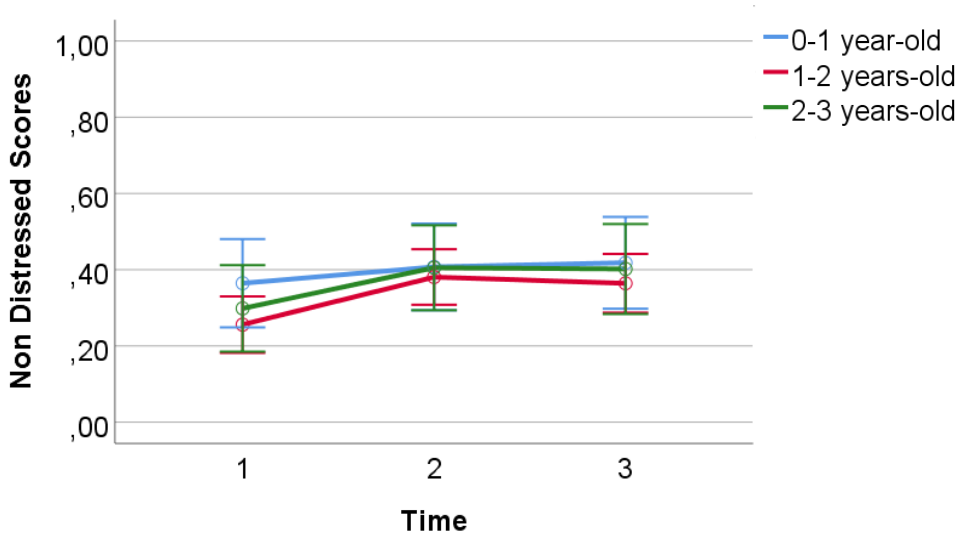
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0361	.0045	8.114	<.001	.028387	.046018
Intercept + Time_lin [subject = id]	UN (1.1)	.0468	.0099	4.745	<.001	.030942	.070686
	UN (2.1)	-3.515	.0045	-.008	.994	-.008864	.008794
	UN (2.2)	.0023	.0035	.654	.513	.000114	.045778

Age was not a predictor of both linear and quadratic changes in *non distressed* behaviors: results revealed a non-statistically significant effect of the interaction between time and children's age (p = .491 and p = .687, respectively), neither the simple main effect of age (p = .507). Adding Age as a predictor, in this model neither the main effects of time are significant.

Actually, in *Figure 5.12* it can be seen that the growth trajectories are slightly different: it seems that very young children (0-1 year-old) have a more constant trend over time, whereas the scores of older children grow faster between T1 and T2. However, this difference seems to be very small and it is not supported by any analysis (neither the ANOVA nor the GCA models). Moreover, -2 log likelihood, AIC and BIC's values are bigger than the Model 2, so this model does not fit better with data.

Figure 5.12. Non Distressed trajectories of different age-groups.



Model 5 - Interaction with Childcare Attendance

AVOIDANT behaviors

In this model, the relationships between the *avoidant* behaviors and the effect of children's childcare centre attendance were explored. In this model, the variable of Attendance was added in the best model which fits with data, that is, the *linear* one.

Unconditional linear growth model (degrees of freedom=8)

Information Criteria

-2 Log Likelihood	-687.229
Akaike's Information Criterion (AIC)	-671.229
Hurvich and Tsai's Criterion (AICC)	-670.860
Bozdogan's Criterion (CAIC)	-631.317
Schwarz's Bayesian Criterion (BIC)	-639.317

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0258	.0131	145.633	1.976	.050	-5.569631	.051634
Time_lin	-.0065	.0083	130.801	-.789	.431	-.022942	.009855
Attendance	-.0244	.0175	144.131	-1.393	.166	-.059024	.010227
Time_lin*Attendance	-.0149	.0112	129.580	-1.335	.184	-.036954	.007171

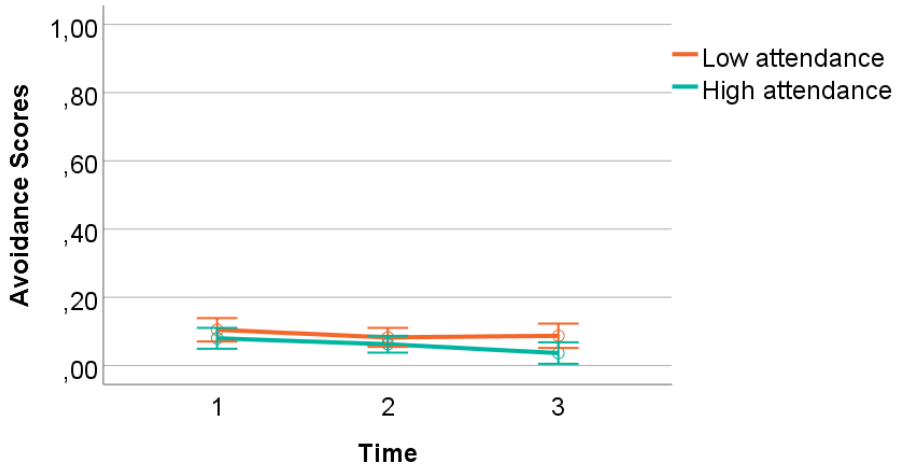
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0063	.0008	8.109	<.001	.004959	.008042
Intercept + Time_lin [subject = id]	UN (1.1)	.0054	.0014	3.728	<.001	.003160	.009044
	UN (2.1)	-.0001	.0008	-.170	.865	-.001654	.001390
	UN (2.2)	.0007	.0007	1.010	.313	9.416221E-5	.004574

The linear model with Attendance as predictor revealed a non-statistically significant effect of the interaction between time and children's attendance (β = -.015, SE = .011, p = .184) , neither the simple main effect of attendance (β = .024, SE = .018, p = .166).

As *Table 5.8* (see previous paragraph) and *Figure 5.13* report, children who had low or high childcare attendance had significantly different *avoidant* scores at T3. It is evident in the chart below that children who attended childcare more have lower avoidant behaviors after 2 months. However, the current GCA Model shows that the *trend* of these two different groups was not statistically different, that is, in both groups scores tend to remain almost stable over time. Moreover, in Model 5, -2 log likelihood, AIC and BIC's values are bigger than in Model 1, so this model could not be the best one to interpret the data.

Figure 5.13. Avoidant trajectories of children who had low and high attendance.



RESISTANT behaviors

In this model, the variable of Attendance was added in the best model which fits with resistant results, that is, the *quadratic* one (Model 2).

Unconditional linear growth model (degrees of freedom=10)

Information Criteria

-2 Log Likelihood	-506.160
Akaike's Information Criterion (AIC)	-486.160
Hurvich and Tsai's Criterion (AICC)	-485.593
Bozdogan's Criterion (CAIC)	-436.270
Schwarz's Bayesian Criterion (BIC)	-446.270

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	.0276	.0217	162.184	1.271	.206	-.015263	.070410
Time_lin	-.0484	.0335	181.855	-1.443	.151	-.114450	.017744
Time_sq	.0066	.0157	143.929	.418	.677	-.024492	.037615
Attendance	.0579	.0290	160.197	1.995	.048	.000571	.115273
Time_lin*Attendance	-.1247	.0449	178.941	-2.779	.006	-.213185	-.036151
Time_sq*Attendance	.0461	.0211	142.724	2.182	.031	.004347	.087931

Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0099	.0012	8.059	<.001	.007793	.012675
Intercept + Time_lin [subject = id]	UN (1.1)	.0192	.0035	5.537	<.001	.013500	.027401
	UN (2.1)	-.0081	.0020	-4.147	<.001	-.011876	-.004253
	UN (2.2)	.0038	.0014	2.760	.006	.001853	.007668

In the current model, Attendance as predictor revealed a statistically significant effect of the interaction with time, both linear and quadratic ($p = .006$ and $p = .031$, respectively). Moreover, also the simple main effect of attendance ($\beta = .058$, $SE = .029$, $p = .048$) was statistically significant.

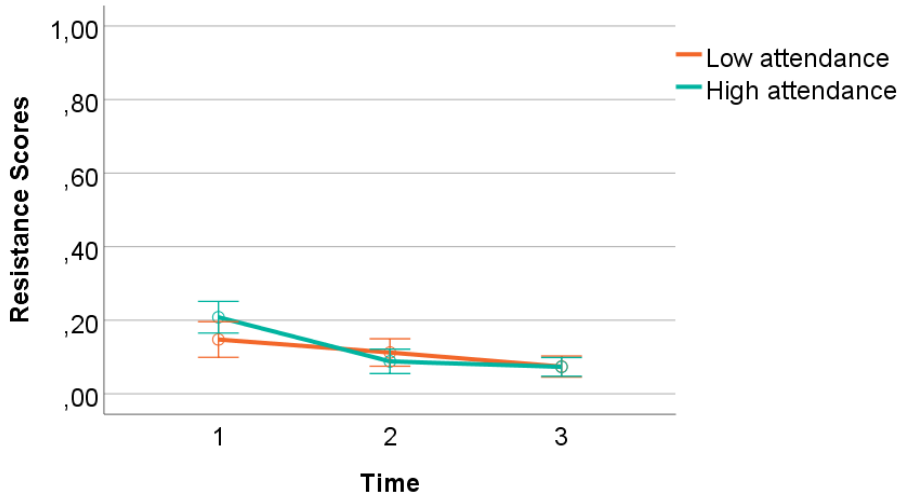
When information criteria are compared, AIC and BIC's values are bigger than Model 2 (but not the -2 log likelihood one): following strictly the guidelines, we should reject the current Model 5. However, these information criteria should be used with caution, also because it is evident, as shown in *Figure 5.14,* that the two groups have different growth trajectories. Burnham and Anderson (2002) explain that the AIC value is not an absolute value but it is on a relative/interval scale: that means an individual AIC value, by itself, is not interpretable, it is the relative values, and the AIC differences (Δ AIC) is particularly important and useful. The authors suggested that when the AIC differences between different models are within 0-2 the support of both models is substantial; Δ AIC within 4-7 has considerably less support; Δ AIC > 10 has essentially no support.

Comparing the information criteria of the current model with those of Model 2, the differences are the following: $\chi 2 = 2.193$; Δ AIC = -3.807; Δ BIC = 15.619. Therefore, as the AIC difference is about 3.8 points, we could also accept the results reported in Model 5 which are likely to fit the data and adequately represent the difference between children who have low or high childcare attendance. As the literature report, the information criteria should not be used strictly and as the sole criterion on selecting models, but it is necessary considering also theoretical interpretation and data visualization (Burnham & Anderson, 2002, Kwok et al., 2008). Furthermore, we found that the covariance between the intercept and the linear growth parameter was significant, which suggested the rate of change could vary across individuals due to some background variables or predictors.

Finally, it can be said that childcare Attendance was a significant predictor of both linear and quadratic changes in the *Resistant* category. Regarding the linear slope, the high-attendance group showed a faster decrease in *resistant* scores as compared with the

low-attendance group, which remained almost stable. In terms of quadratic growth, in the high-attendance group, *resistant* behaviors rapidly decreased at the beginning but then this trend slowed down later on.

Figure 5.14. Resistant trajectories of children who had low and high attendance.



NON DISTRESSED behaviors

In this model, the relationships between the *non distressed* behaviors and the effect of children's childcare attendance were explored. In this model, the variable of Attendance was added in the best model which fits with data, that is, the *quadratic* one (Model 2).

Unconditional linear growth model (degrees of freedom=10)

Information Criteria

-2 Log Likelihood	35.216
Akaike's Information Criterion (AIC)	55.216
Hurvich and Tsai's Criterion (AICC)	55.783
Bozdogan's Criterion (CAIC)	105.106
Schwarz's Bayesian Criterion (BIC)	95.106

Estimates of Fixed Effects

Parameter	Estimate (β)	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	-.0475	.0364	164.313	-1.305	.194	-.119425	.024372
Time_lin	.1126	.0600	163.522	1.876	.062	-.005934	.231188

Time_sq	-.0317	.0289	141.183	-1.095	.275	-.088906	.025515
Attendance	-.0458	.0488	162.254	-.939	.349	-.142218	.050558
Time_lin*Attendance	.1117	.0806	161.130	1.386	.168	-.047415	.270883
Time_sq*Attendance	-.0536	.0390	140.586	-1.373	.172	-.130705	.023568

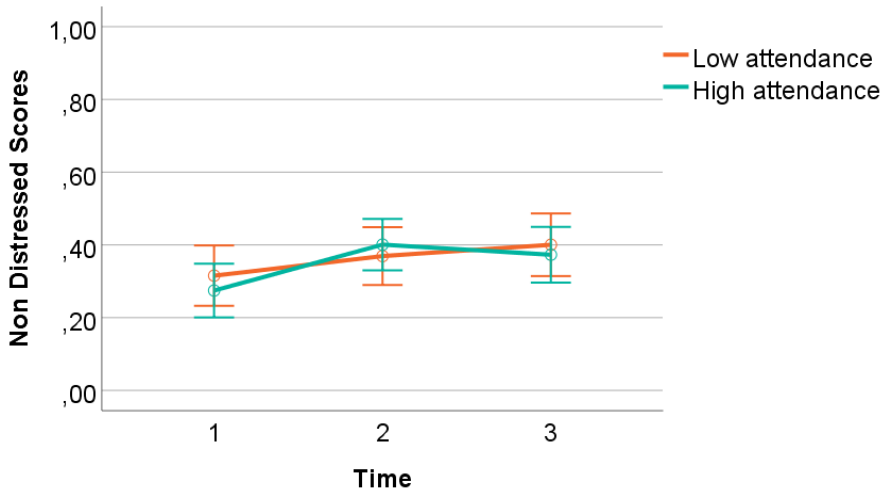
Estimates of Covariance Parameters

Parameter		Estimate	Std. Error	Wald Z	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Residual		.0334	.0042	7.954	<.001	.026116	.042748
Intercept + Time_lin [subject = id]	UN (1.1)	.0494	.0100	4.971	<.001	.033307	.073283
	UN (2.1)	-.0019	.0045	-.427	.669	-.010806	.006936
	UN (2.2)	.0040	.0035	1.142	.253	.000718	.022209

Attendance was not a predictor of both linear and quadratic changes in *non distressed* behaviors: results revealed a non-statistically significant effect of the interaction between time and children's attendance (p = .168 and p = .172, respectively), neither the simple main effect of attendance (p = .349). As shown in *Figure 5.15,* children who had low or high childcare attendance had the same *trend* across the observations, that is, both groups tend to increase over time. However, adding Attendance as a predictor, in this current model the main effects of time (both linear and quadratic) result not significant.

BIC's values are bigger than the Model 2, but AIC and -2 log likelihood's values are smaller than in Model 2. So, in this case, information criteria do not help us in the selection of the model, which must be interpreted using other analysis. Multiple analysis (Cohen's d, RM ANOVA and GCA Model 2) clearly identify that *Non Distressed* behaviors changed considerably and significantly over time, so the current Model 5 should be rejected as better model fitting data.

Figure 5.15. Non-distressed trajectories of children who had low and high attendance.



5.4. Discussion

The main aims of the current study were, first, to study changes in children's attachment behaviors with professional caregivers during the first two months attending childcare centre, and second, to explore whether there are any differences based on children's gender, age and childcare attendance.

We found that, on average, positive attachment behaviors (*Secure* and *Non Distressed*) increase over time, whereas insecure behaviors (*Avoidant* and *Resistant*) decrease. Specifically, to observe a small increase in *secure* behaviors at least 2 months are needed; although not significant, the greatest change is seen during the first month. Furthermore, *non-distressed* behaviors rapidly increase during the first month of childcare and then remain stable. On the other hand, *avoidant* conducts decrease significantly over 2 months of childcare, especially during the first month. Finally, *resistant* behaviors rapidly decrease during the first months and then continue to decrease slowly during the second month observed.

Even if *secure* behaviors of proximity seeking did not substantially increase over time, please note that this one has remained the conduct that children have shown most during stressful situations (47-52% of the total observed behaviors). Moreover, *Non Distressed* behaviors increase, and as shown in *Chapter 3*, these conducts in the PCAD mean that the child feels safe and secure in exploring in the environment where he/she stays, which means a good adaptation to childcare centre context.

Therefore, these results can be summed up by saying that during the first two months of childcare attendance children showed important changes in their attachment conduct towards the professional caregiver: children showed major changes especially during the first month of attendance, in which they feel more and more secure and comfortable in the new context of care, increasing explorative behaviors, whereas insecure conducts and reactions of anger rapidly decreased.

These results support the findings of Lee (2006) and Sekino and colleagues (2001) who identified that on average it takes around 6 to 8 weeks to show positive behaviors to the new supportive caregiver at childcare. Furthermore, the current study is in line with our previous study (Macagno & Molina, 2020; *Chapter 4*) in which we observed that after two months of childcare attendance infant-caregiver relationship is positively developing (*non distressed* behaviors increased over time whereas *avoidance* and *resistance* decreased). As Goossens and van IJzendoorn highlight, relationship development is a *process* in which the child and the caregiver need time and opportunities to know and adjust to each other (Goossens & van IJzendoorn, 1990; Raikes, 1993).

In contrast to some studies which stated that attachment security in childcare is relatively low (Ahnert et a., 2006; Ereky-Stevens et al., 2018; Howes and Smith, 1995b), the current study shows that secure attachment behaviors to professional caregivers are rather higher. Secure behaviors are the most observed, as if children enter childcare ready

to construct positive attachment relationship, as if they expect that professional caregivers will take care of them (Howes & Oldham, 2001). And in fact, after two months of attending the childcare, the proportion of specific *secure* behaviors was about 52%, whereas the proportion of *non distressed* behaviors was about 35%. If we consider both secure and exploratory behaviors as *positive attachment behaviors*, it can be concluded that these represent 87% of the behaviors observed in children 2 months after their entry into childcare, whereas only the remaining 13% refers to insecure behaviors such as *avoidant* and *resistant* ones. However, making comparisons with other results is difficult because, differently to others studies, our data are not based on AQS score, which is one single score that fails to differentiate between attachment conducts (van Ijzendoorn et al., 2004), but these were collected with the PCAD, with which it is possible to analyze each specific attachment behavioral trend.

With regards to children's gender and age of entry, results are in line with our hypothesis, that is, no significant differences in behavioral trends were found. However, we found significant differences in *secure* scores at T3 between boys and girls, where girls seem to show more secure behaviors. But, on the other hand, also *non distressed* scores are quite different at T3 (even though these were at the limit of statistical significance), where boys have higher scores than girls. Since *Security* and *Non Distressed* scores are alternate and complement each other (see *Chapter 3*), since are both considered *positive* attachment behaviors, it can be concluded that gender is not a predictor in the construction of the relationship between the child and the professional caregiver.

Regarding the influence of childcare attendance, children who attended more and those who attended less had not the same behavioral trends over time: on average, after 2 months, children who attended childcare more and regularly showed lower avoidant

behaviors. In addition, children with high-attendance decreased more rapidly their resistant behaviors comparing with children with childcare low-attendance. These findings are in line with literature which underscores the importance of stable care experience in forming positive relationships with professional caregivers; when children have discontinuous histories of child care it is more difficult forming secure attachments to their care providers (Ahnert et al., 2006; Barnas & Cummings, 1994; Howes& Hamilton, 1992b).

These conclusions are confirmed by multiple types of analyses, from the simplest Cohen's *d* and ANOVA to the more complex Repeated Measure-ANOVA and Growth Curve Analyses Models. Using different analyses is useful to better understand the data in their complexity: in fact, a lower p-value does not mean that there is a strong change between different observations, but it just means that is unlikely that the null hypothesis is true (< 5%); on the other hand, Cohen's *d* tells us *how much* the behavior changes over time, that is, the size of the effect, promoting a more scientific approach (Cohen, 1988). Therefore, integrating the results of multiple analyses gives a global view of what we have observed and a deeper interpretation of data.

This current study has been the first step of a longitudinal study that lasted more than one year, the results of which are reported in *Chapter 7*. Furthermore, the analysis of changes in specific situations and items of the diaries collected in the current study are the focus of the following *Chapter 6*.

CHAPTER 6

Familiarizing with the professional caregiver: How behaviors change over time

6.1. Introduction

In this fourth study, we investigated the relationship-building processes in childcare centre context, focusing on *how* specific behaviors develop and change in the early months of childcare.

The literature agrees in defining the professional caregiver as a "secondary" attachment figure: in childcare the child needs an available adult as a secure base from which to explore the new environment and build relationships with others (Bowlby R., 2007; Howes, Hamilton & Matheson, 1994; Howes, Phillips & Whitebook, 1992; Recchia, 2012).

Research on multiple attachments shows that the child-professional caregiver relationship is only partially associated with the relationship that the child builds with the mother; when the child enters childcare, he/she develops and experiences new situations and relationships that can modify his/her relational patterns, which offer the opportunity to create new attachment stories (Goosen & van IJzendoorn, 1990; Sabol & Pianta, 2012). Attachment bond with caregiver would not be influenced only by the maternal relationship, but would develop independently, based on the mutual exchanges in the specific relationship (Ahnert, Pinquart & Lamb, 2006; Goosen & van IJzendoorn, 1990; Howes and Hamilton, 1992a; Zimmerman and McDonald, 1995).

Contrary to what happens normally with the mother, whose bond is built from birth, the attachment relationship with alternative figures forms later; the relationship

would begin when the child's attachment building process is still in formation (6-8 months old) or is already formed (two years old) (Howes & Spieker, 2008). However, it seems that the process of forming attachment relationships in childcare is similar to the development of infant-mother attachment: as well as the child chases and searches for his mother when he is distressed, when he is at childcare he directs the same attachment behaviors towards the professional caregiver (Barnas & Cummings, 1994; Howes, 1999; Howes & Hamilton, 1992a; Howes & Smith, 1995a). At the beginning, the child views the caregiver as a stranger, but over time, the new figure will be the main caretaker in the new context, preferred play partner and then his/her secure base (Lee, 2006). As we have already seen before, little is known about the *process* of forming caregiver-child relationship in childcare, and research that explores relationship-building processes in the early months of childcare is scarce and mixed.

In order to provide new contributions to the literature on these topics, this study focuses on *how* attachment behaviors change during the building process of child-caregiver relationship.

Currently, the most used method to assess attachment relationship in non-maternal care is the Attachment Q-Sort (Waters e Deane, 1985), however, it has some limitations (see *Chapter 3*): first of all, the AQS outcome is just a single score, which ranges from -1.0 to +1.0 (where higher scores indicate more secure attachment), and it is continuous and without categories, so it fails to differentiate between secure, avoidant and resistant attachment behaviors (van Ijzendoorn et al., 2004).

On the other hand, a more suitable tool for our research purposes is the *Professional Caregiver Attachment Diary* 1.3 (PCAD), a structured diary that is filled daily by professional caregivers. With this method, it could be possible to follow the development of children's first attachment behaviors in the early months of childcare

centre attendance, and in specific everyday situations such as separation from parents at morning time, separation from the professional caregiver and distressing episodes that the child in settling-in phase experiences. PAD structure could solve some important methodological issues that concern most used tools for the measurement of attachment, making it a tool suitable for childcare settings, which could fill the gaps in that field of research.

Based on these considerations, the aims of this study were:

(1) Exploring *how* specific behaviors change depending on each situation observed with the PCAD (separation from parents, distress episode, separation from the professional caregiver);

(2) Investigating how PCAD's *items* change (increase/decrease) over time, in order to study how the child-caregiver relationship is built.

Based on our previous studies, we expected *Non Distressed* behaviors to increase over time, whereas *Avoidant* and *Resistant* behaviors decrease. In the PCAD, the *Security* category is divided into "Proximity seeking" and "Ability to be calmed", so we expected that children decrease their seeking behaviors towards the caregiver, as an indicator of good adaptation, and, on the other hand, they calm down more easily when they look for comfort.

6.2. Method

6.2.1. Overview of procedure

Data of this study refer to the data collection of the previous *Chapter 5*. Seven Italian childcare centres were involved and each professional caregiver observed and

filled the PCAD 1.3 for each child for one week at three time-points: the first week the child was left in the centre without the parent's presence (T1) and after 1 (T2) and 2 (T3) months.

6.2.2. Sample

The sample of this study was the same as the previous *Chapter 5*. A total of 55 professional caregivers filled the PCAD and 148 children were observed. Of these children, 85 were boys and 63 were girls, aged between 4 and 34 months (M = 17.8, SD = 7.2) when they started to attend the childcare centre.

Not every 148 children were observed at all the three time-points, therefore the number of observed children at each measurement occasion was: 143 in Time 1; 146 in Time 2; 119 in Time 3. Participants that completed all three observations were 112 (i.e., 76% of the sample).

6.2.3. Measure

Professional Caregiver Attachment Diary 1.3.

Children's behaviors toward their care providers were observed at T1, T2, and T3 using the *Professional Caregiver Attachment Diary* 1.3 (PCAD; see *Chapter 3*).

The PCAD is a structured diary filled in by professional caregivers, in which they keep daily records of children's behavior during three stressful situations which could elicit attachment behaviors: (1) *when parents leave* the childcare at morning time; (2) a *generic stressful situation* in which the child is upset or distressed (e.g. the child gets hurt, fights with another child for a toy, has difficulty eating, or sleeping during the nap, ...); (3) when there is *separation from the professional caregiver* during the day (leaving to go out, going to another room, dropping the child off, etc.).

Specifically, each situation is divided into two parts where is asked:

A) what did the child do to let know he/she was upset, or how did the child respond to the separation (e.g., turns to caregiver for help or not?);

B) after the caregiver responded, what did the child do next (e.g., is he easily soothed by the caregiver or not?) or how the child reacted when reuniting with the caregiver (e.g., is he happy to see caregiver again or not?).

For each situation, the caregiver chooses from a checklist the behaviors the child showed during the episode. Items (behaviors) that we find in the checklists are coded as: *Secure* (is divided into *Proximity* (PR), that means the child actively seeks caregiver's close proximity and contact when he/she need it, and *Calm* (CA), that means the child is easily soothed by the caregiver), *Avoidant* (AV), *Resistant* (RE), and *Non Distressed* (ND).

6.2.4. Data Analysis

Caregivers started the first observation when the child was left in the centre without the parent's presence (T1; M= 13.5 days from child entry, SD=6.4), and again after 1 month (T2; M= 32.2 days from T1, SD=6.2) and 2 months (T3; M= 35.4 days from T2, SD=8.3, and M= 67.5 days from T1, SD=10.2). At each time-point, each observation lasts one week (5 days), and a minimum of 3 days of PCAD compilation was required.

In this study, the focus was on how *proximity, calm, avoidant, resistant* and *non-distressed* behaviors change in the three specific episodes of PCAD (that is, in the six situations, considering that each episode is divided into part A and B).

In the previous studies, *Proximity* and *Calm* were calculated together to form a single *Security* score, but in the current study, they were divided to distinguish the specificity of (1) when child actively seeks caregiver's close proximity and contact (ex: "wanted to be picked up or held") (PR) and (2) when the child is easily calmed by the caregiver (ex: "was soon calmed or soothed") (CA).

With the PCAD, in any given day, children can show 0-6 *proximity* behaviors, 0-3 *calm*[7] behaviors, 0-6 *avoidant* behaviors, 0-6 *resistant* behaviors and 0-3 *non-distressed*[8] behaviors. Then, a weekly score of *proximity, calm, avoidant, resistant* and *non-distressed* of each part (A and B for each episode) are calculated proportionately, depending on how many observation days are available for each child during the week. The behavioral scores for each behavior range from 0.0 to +1.0.

First, in order to study how attachment behaviors change depending on each situation observed, means scores of *proximity, calm, avoidant, resistant* and *non-distressed* obtained during the three time-point were compared using the *Friedman Test*.

Then, we explored how the items of PAD changed over time, and specifically how they changed in each situation, and also in this case the *Friedman Test* was performed.

The Friedman test is a nonparametric alternative for a parametric Repeated-Measures ANOVA. When one has 3 or more measurement occasions from the same population, the first option is an RM ANOVA, but it requires some assumptions, like normally distributed variables and sphericity. If such assumptions aren't met, as in the case of our data, then the second option is the Friedman test. Missing data were removed by listwise deletion.

[7] because one can find *Calm* behaviors just on part B of each episode
[8] because one can find *Non Distressed* behaviors just in episode 1 and 3 (separation from parents and from the caregiver)

6.3. Results

Not all the 6 situations can be filled out every day: it is possible, for example, that the child did not feel distressed during the day, or the caregiver did not leave the child-room, or the child did not need the intervention of the caregiver because he/she enters smiling at childcare, or the caregiver cannot respond to the child (and the part B was not completed), so each situation has a different number of completed observations. Moreover, listwise deletion removed missing data, so the number of observations considered was: 112 in situation 1 - part A; 46 in situation 1 - part B; 98 in situation 2 - part A; 94 in situation 2 - part B; 97 in situation 3 - part A; 95 in situation 3 - part B.

6.3.1. Behavioral changes depending on the specific situation

When we specifically analyzed the single episodes observed, we found different behavioral changes in each situation (see *Table 6.1*).

Concerning the first situation, when parents leave the childcare at morning time (part A) children showed a significant increase of *Proximity* behaviors ($\chi2(2) = 9.18$, p= .010) and a decrease of *Avoidant* ($\chi2(2) = 8.59$, p= .014) and *Resistant* ones ($\chi2(2) = 16.70$, p< .001), whereas *Non Distressed* scores increase was not statistically significant ($\chi2(2) = 4.39$, p= NS). After the caregiver responded (part B) children showed a significant decrease in *Proximity* behaviors ($\chi2(2) = 7.65$, p= .022) but, on the other hand, this is compensated by the significant increase of *Calm* behaviors ($\chi2(2) = 6.71$, p= .035). Also, results showed a decrease in *Resistant* scores ($\chi2(2) = 19.06$, p< .001), whereas *Avoidant* conducts did not change significantly.

With regards to the second situation, and specifically the reaction when children felt upset or distressed (part A), results showed that *Resistant* scores decreased significantly over time ($\chi2(2) = 5.97$, $p= .050$), whereas differences in other behaviors were not statistically significant. However, in part B (after caregiver's responded) children showed again a significant increase of *Calm* behaviors ($\chi2(2) = 17.20$, $p< .001$) and the decrease of *Resistant* ones ($\chi2(2) = 13.09$, $p = .001$), whereas seeking *Proximity* and *Avoidant* conducts did not change over time.

Finally, in the third situation, when children were separated from their professional caregiver (part A) results showed a significant increase of *Non Distressed* behaviors ($\chi2(2) = 14.24$, $p=.001$) and the decrease of both *Avoidant* ($\chi2(2) = 6.42$, $p= .045$) and *Resistant* conducts ($\chi2(2) = 7.03$, $p= .030$), whereas *Proximity* scores did not change significantly. When children were reuniting with their caregivers (part B) results showed a significant increase of *Non Distressed* behaviors ($\chi2(2) = 8.91$, $p=.012$), whereas *Calm* ($\chi2(2) = 9.16$, $p=.010$) and *Resistant* conducts ($\chi2(2) = 16.86$, $p<.001$) significantly decreased, and differences in *Proximity* and *Avoidant* means were not statistically significant.

Table 6.1. Behavioral changes depending on the specific situation. *Friedman test* (df = 2).

	T1 M (SD)	**T2** M (SD)	**T3** M (SD)	χ^2	***sig.***
Situation 1: SEPARATION FROM PARENTS AT MORNING TIME					
PART A – Child reaction to separation (n=112)					
Proximity	.51 (.36)	.56 (.39)	.65 (.38)	9.18	.010
Avoidance	.11 (.21)	.08 (18)	.05 (.17)	8.59	.014
Resistance	.09 (.20)	.05 (.16)	.04 (.14)	16.70	<.001
Non-Distressed	.18 (.28)	.25 (.35)	.21 (.32)	4.39	.112
PART B - What did the child do after the caregiver responded (n=46)					
Proximity	.14 (.25)	.07 (24)	.11 (.28)	7.65	.022
Calm	.54 (.41)	.64 (.43)	.75 (.35)	6.71	.035
Avoidance	.09 (.24)	.17 (34)	.10 (.27)	3.93	.140
Resistance	.39 (.38)	.20 (34)	.14 (.25)	19.06	<.001
Situation 2: DISTRESS EPISODE					
PART A – Child reaction (n=98)					
Proximity	.59 (.37)	.56 (.40)	.63 (.40)	4.05	.132
Avoidance	.07 (.14)	.07 (.18)	.09 (.21)	0.27	.875
Resistance	.21 (.27)	.23 (.31)	.18 (.31)	5.97	.050
PART B - What did the child do after the caregiver responded (n=94)					
Proximity	.09 (.19)	.09 (.21)	.09 (.23)	3.11	.211
Calm	.62 (.37)	.75 (.33)	.83 (.28)	17.20	<.001
Avoidance	.05 (.16)	.05 (.16)	.05 (18)	0.51	.774
Resistance	.37 (.38)	.23 (.30)	.18 (.28)	13.09	.001
Situation 3: SEPARATION FROM THE PROFESSIONAL CAREGIVER					
PART A – Child reaction to separation (n=97)					
Proximity	.37 (.38)	.37 (.38)	.35 (.39)	0.84	.658
Avoidance	.05 (.15)	.02 (.06)	.01 (.06)	6.42	.040
Resistance	.02 (.06)	.01 (.06)	.01 (.05)	7.03	.030
Non-Distressed	.44 (.42)	.56 (.39)	.60 (.41)	14.24	.001
PART B - Child reaction when reuniting (n=95)					
Proximity	.49 (.40)	.44 (.40)	.43 (.44)	1.16	.559
Calm	.06 (.16)	.04 (.13)	.02 (.07)	9.16	.010
Avoidance	.11 (.22)	.10 (.20)	.07 (.21)	2.96	.228
Resistance	.06 (.13)	.04 (.14)	.01 (.08)	16.86	<.001
Non-Distressed	.35 (.39)	.43 (.39)	.50 (43)	8.91	.012

6.3.2. How items change over time

Each item (behaviors) that we find in the checklists is coded as *proximity* (PR), *calm* (CA), *avoidant* (AV), *resistant* (RE) or *non-distressed* (ND) (see *Table 6.2*).

Concerning the first situation, when parents leave childcare at morning time (part A) the first important change to note is the significant decrease in children's crying (A_01) ($\chi2(2) = 41.06$, $p<.001$). In addition, item A_07 ("came after parents") also decreased ($\chi2(2) = 18.41$, $p<.001$), indicating more serene entries to childcare as the months passed. Items A_10 (RE) ($p<.001$) and A_11 (AV) ($p=.018$) also decrease over time. Some items of *proximity* seeking decreased (A_04 and A_08) ($p=.001$ and $p=.002$, respectively), but were compensated by the increase of A_13 ($\chi2(2) = 30.8$, $p<.001$), another item of *proximity* but with a different meaning: it seems that the demand for comfort decreased whereas serene children's entries increased.

After caregiver's responded (part B) children calmed down more easily (item B_01 (CA) increased) ($\chi2(2) = 10.91$, $p=.004$) and little by little they needed less physical contact (item B_12 (PR#) decreased) ($\chi2(2) = 10.91$, $p=.004$). Generally, *avoidant* items decreased significantly (items B_04, B_06 and B_10).

With regards to the second situation, and specifically the reaction when children felt upset or distressed (part A), the first change to note is the significant decrease in children's crying (C_09) ($\chi2(2) = 21.88$, $p<.001$). Then, C_05 (PR) increased ($\chi2(2) = 14.20$, $p=.001$) whereas C_08 (PR) decreased over time ($\chi2(2) = 9.82$, $p=.007$), maybe indicating that children need less physical contact than in the first month, but they still need caregiver's comfort during some distress episodes. Furthermore, the *resistant* item C_11 also decreased over time ($\chi2(2) = 7.32$, $p=.026$).

Moreover, in part B (after caregiver's responded) children showed again a significant increase of *calm* behaviors (item D_01) ($\chi 2(2) = 18.23$, $p < .001$) and the decrease of *resistant* ones (items D_10 and D_13) ($p = .003$ and $p = .005$, respectively).

Finally, in the third situation, when children were separated from the professional caregiver (part A) one can notice a significant decrease in children's crying (E_01) ($\chi 2(2) = 45.13$, $p<.001$). Generally, most of *proximity* items decreased over time (E_03, E_04 and E_08) but they were compensated by the increase of item E_13 (PR: "greeted smiling and continued quietly to play"), another item of *proximity* but with a different meaning: it seems that children are more quiet and serene over time when the caregiver leaves the child room, and so they suffer less the separation. In support of this hypothesis, *non distressed* behaviors (E_09) also increased significantly ($\chi 2(2) = 13.41$, $p=.001$). Moreover, angry reactions significantly decreased (item E_10, RE) ($\chi 2(2) = 8.71$, $p=.013$).

When children reuniting with their caregivers (part B) results showed a significant decrease of *proximity* (F_03, F_07, F_11), *resistant* (F_05, F_12, F_18) and *avoidant* items, indicating a general decrease of insecure behavior and less demanding of physical contact with the caregiver.

Table 6.2. Changes of PCAD'S items over time. Friedman test (df = 2).

(Code= Item code; AB=Attachment Behavior; χ2= Chi-Square, more correctly referred to as Friedman's Q; sig.= *p-value*)

Code	AB	Item Description	T1	T2	T3	χ^2	*sig.*
Situation 1: SEPARATION FROM PARENTS AT MORNING TIME							
PART A – Child's reaction to separation (n=112)							
A_01	-	cried, screamed, or yelled	45.15	20.21	20.13	41.06	<.001
A_02	AV°	acted as if nothing happened	0.35	0	0	2.00	.368
A_02	ND°	acted as if nothing happened	13.46	16.10	12.24	0.85	.654
A_03	PR	called after me	1.29	1.03	1.09	1.09	.581
A_04	PR	wanted to be picked up or held	35.8	24.5	24.06	14.56	.001
A_05	RE	hit, kicked, or pushed me	1.01	0.79	0.20	1.00	.607
A_06	AV	went off by him/herself	2.34	2.28	1.30	1.50	.472
A_07	-	came after parents	6.12	1.34	1.67	18.41	<.001
A_08	PR	held on to me, wouldn't let go	3.14	1.30	1.46	12.26	.002
A_09	AV°	went with other children	0.17	0	0	2.00	.368
A_09	ND°	went with other children	5.66	11.85	10.18	3.84	.147
A_10	RE	acted angry or frustrated (ex. stomped feet, kicked legs)	9.07	3.80	3.78	18.11	<.001
A_11	AV	was upset but did not indicate that he/she wanted or needed anyone	1.81	0.65	0.76	8.00	.018
A_12	AV	whimpered or cried briefly and kept going. did not look at me	4.57	3.40	2.77	2.76	.251
A_13	PR	greeted smiling and went quietly to play	14.13	30.92	39.5	30.80	<.001

Code	AB	Item Description	T1	T2	T3	χ^2	*sig.*
PART B - What did the child do after the caregiver responded (n=46)							
B_01	CA	was soon calmed or soothed	45.31	62.07	68.08	10.91	.004
B_02	RE	pushed me away angrily or in frustration	1.79	1.30	0.61	3.25	.197
B_03	AV	continued to play, did not notice me	2.89	5.25	1.21	1.08	.584
B_04	RE	stomped and/or kicked feet	0.40	2.48	0.68	9.29	.010
B_05	RE	hit or kicked at me	0	0	0	-	-
B_06	RE	remained upset, was difficult to soothe	16.42	4.57	8.64	9.60	.008
B_07	RE	turned from me angrily or in frustration	1.02	0	0.30	1.00	.607
B_08	AV	did not indicate he/she needed my help	6.41	4.26	3.28	0.70	.704
B_09	AV	ignored me	2.44	4.17	3.38	2.10	.350
B_10	RE	became quiet and then fussy again	18.73	7.66	4.29	13.13	.001
B_11	AV	turned away when picked up or made contact	0.73	1.09	0	2.00	.368
B_12	PR#	sunk into me or held on to me until calmed down	11.69	4.87	7.6	6.79	.034
B_13	RE	did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)	1.50	0.36	0.30	2.00	.368
B_14	PR	held on to me or went after me if I tried to put him/her down or go away	6.91	1.30	2.83	3.16	.206
B_15	AV	turned, walked, or crawled away from me as if nothing was wrong	1.69	3.10	0.76	2.00	.368

Code	AB	Item Description	T1	T2	T3	χ^2	*sig.*
Situation 2: DISTRESS EPISODE							
PART A – Child's reaction (n=98)							
C_01	PR	looked at me for assurance	26.09	32.45	34.42	3.49	.175
C_02	AV	went off by him/herself	2.37	1.58	0.60	4.85	.088
C_03	AV	acted as if nothing was wrong	0.34	1.11	1.04	0.86	.651
C_04	RE	acted angry/frustrated (ex. stomped feet, kicked legs)	15.3	12.4	11.38	5.46	.065
C_05	PR	called for me	2.50	3.68	8.27	14.20	.001
C_06	AV	looked at me briefly then looked away and went on	3.14	1.27	4.8	4.44	.109
C_07	PR	came to me	10.28	7.79	10.44	0.40	.820
C_08	PR	signalled to be picked up or held, reached for me	29.89	21.99	20.55	9.82	.007
C_09	-	cried	64.10	53.92	40.47	21.88	<.001
C_10	AV	did not indicate he/she wanted or needed me	2.10	3.66	3.55	2.11	.348
C_11	RE	cried and remained where he/she was, did not signal for me	7.65	12.38	7.19	7.32	.026
C_12	PR	moved closer to me (but actual contact did not occur)	1.70	1.57	0.23	1.00	.607
PART B - What did the child do after the caregiver responded (n=94)							
D_01	CA	was soon calmed or soothed	56.77	69.28	74.71	18.23	<.001
D_02	RE	pushed me away angrily or in frustration	3.05	0.95	0.95	4.21	.122
D_03	AV	continued to play, did not notice me	1.64	1.4	1.52	0.75	.687
D_04	RE	stomped and/or kicked feet	1.16	1.24	0.79	0.10	.953
D_05	RE	hit or kicked at me	0	0.15	0	-	-
D_06	RE	remained upset, was difficult to soothe	12.98	8.08	8.67	5.74	.057
D_07	RE	turned from me angrily or in frustration	0.05	0.70	0	4.00	.135
D_08	AV	did not indicate he/she needed my help	1.63	2.31	2.13	1.72	.423
D_09	AV	ignored me	1.03	0.34	0.56	4.00	.819
D_10	RE	became quiet and then fussy again	18.37	10.15	8.9	11.72	.003
D_11	AV	turned away when picked up or made contact	0.25	0.56	0.32	2.00	.368
D_12	PR#	sunk into me or held on to me until calmed down	6.44	7.67	7.44	1.66	.437
D_13	RE	did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)	1.49	0.52	0.24	10.75	.005

D_14	PR	held on to me or went after me if I tried to put him/her down or go away	3.12	1.01	0.51	4.75	.093
D_15	AV	turned, walked, or crawled away from me as if nothing was wrong	2.18	1.04	0.43	1.04	.593

Code	**AB**	**Item Description**	**T1**	**T2**	**T3**	χ^2	***sig.***
Situation 3: SEPARATION FROM THE PROFESSIONAL CAREGIVER							
PART A – Child's reaction to separation (n=97)							
E_01	-	cried, screamed, or yelled	25.64	12.35	11.59	45.13	<.001
E_02	AV°	acted as if nothing happened	0	0	0	2.00	.368
E_02	ND°	acted as if nothing happened	32.19	33.1	30.59	.16	.923
E_03	PR	called after me	7.57	4.14	3.53	7.84	.020
E_04	PR	wanted to be picked up or held	4.42	1.41	0.36	16.59	<.001
E_05	RE	hit, kicked, or pushed me	0	0	0	2.00	.368
E_06	AV	went off by him/herself	0.52	0.15	0.48	1.00	.607
E_07	PR	came after me	15.74	15.46	13.66	5.27	.072
E_08	PR	held on to me, wouldn't let go	2.19	0.77	1.50	9.22	.010
E_09	AV°	was happy to keep doing what he/she was doing	0	0	0	2.00	.368
E_09	ND°	was happy to keep doing what he/she was doing	15.58	25.77	27.40	13.41	.001
E_10	RE	acted angry or frustrated (ex. stomped feet. kicked legs)	1.90	0.91	0.45	8.71	.013
E_11	AV	was upset but did not indicate that he/she wanted or needed anyone	1.00	0	0.23	5.20	.074
E_12	AV	whimpered or cried briefly and kept going, did not look at me	2.04	0.91	1.07	3.62	.164
E_13	PR	greeted smiling and continued quietly to play	7.89	14.90	19.46	14.31	.001

Code	AB	Item Description	T1	T2	T3	χ^2	*sig.*
PART B - Child' reaction when reuniting (n=95)							
F_01	PR	greeted me (ex: smiled, said my name, said hello)	21.02	25.53	32.65	2.60	.273
F_02	RE	stomped and/or kicked feet	0.15	0.37	0	2.00	.368
F_03	PR	signalled to be held and/or picked up	13.97	7.30	8	14.80	.001
F_04	RE	hit, kicked me	0	0	0	2.00	.368
F_05	RE	cried and remained where he/she was	2.00	0.85	0	7.14	.028
F_06	RE	cried, screamed	1.67	0.77	0.68	4.08	.130
F_07	PR	came to me	22.58	7.17	12.14	25.21	<.001
F_08	PR	brought me a toy or other object	2.20	4.16	4.11	1.63	.443
F_09	AV	turned away as I picked up or made contact	0	0	0	-	-
F_10	CA	if upset, was easily soothed and calmed by me	3.55	1.7	0.94	5.85	.054
F_11	PR#	sunk into me or held on to me until calmed down	3.12	0.93	0.41	7.74	.021
F_12	RE	did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)	0.61	0	0	6.00	.050
F_13	AV	whimpered quietly to him/herself (may have looked at me briefly)	1.26	0.99	0.36	3.90	.143
F_14	RE	wanted to be held, fussed and wanted to get down. then wanted to be picked right back up again	0.19	1.35	0.18	0.80	.670
F_15	ND	continued quietly doing what he/she was doing before	34.67	45.48	46.47	2.00	.368
F_16	AV	looked at me briefly then looked away, did not smile or greet me	3.88	2.74	0.41	8.29	.016
F_17	AV	started to approach me then turned and wondered somewhere else	1.15	0.40	1.09	3.50	.174
F_18	RE	if upset, was NOT easily soothed and/or calmed by me	2.18	0.59	0	8.86	.012
F_19	AV	continued doing what he/she was doing before, ignoring me (as if he/she didn't notice me)	7.76	6.89	4.64	1.49	.475

AV°/ND° = these items are duplicated because they have different coding and meaning according to the specific situation observed. The item is coded as *Non Distress* when it is the only signed behavior and when it refers to the quiet conduct of the children; if more items are signed, for example, other avoidant ones ("went off by him/herself"), this item is coded as *Avoidant*.

PR# = these items are coded as both proximity and calm.

6.4. Discussion

A more in-depth analysis of *how* attachment behaviors and items changed in each specific situation is an important contribution to the literature, as it helps to get a better idea of how the child relationship with a new caregiver is formed.

Observed situations with the PAD were: (1) *when parents leave* the childcare at morning time; (2) a *generic stressful situation* in which the child is upset or distressed; (3) when there is *separation from the professional caregiver* during the day. On average, as expected, positive items (coded as *proximity*, *calm* and *non-distressed*) increased over time, whereas insecure behaviors (*avoidant* and *resistant*) decreased.

Concerning the first situation observed, when the child enters the childcare centre, the first important thing to notice is the decrease in crying, a change that occurred mainly during the first month. At the same time, child behavior to follow his/her parents who are leaving also decreased. Over the first two months, secure behaviors (*proximity*) increased, but taking different meanings and distinguish between a real request of comfort in case of need and seeking caregivers' proximity just to say "hello": in fact, the need to be comforted decreased over time (e.g. items as "wanted to be picked up or held", "held on to me, wouldn't let go") but, on the other hand, situations in which the child enters and happily greets the caregiver increased (item "greeted smiling and went quietly to play"). Therefore, it seems that after two months children felt less distressed when entering childcare. At the same time, avoidant behaviors and anger reactions decreased already during the first month. When the caregiver responded to children's distress, children generally were more easily consoled, whereas reactions of anger and frustration decreased. Consequently, one can say that parent-child separation changes considerably during the first months of attending childcare, getting better over time, especially during the first month.

The second situation analyzed was the child's reaction when he/she is distressed, that is when attachment behaviors would be most activated. Children tended to cry much less over time, and instead of crying alone and reacting with anger, they called more often their caregivers for help. Here too, children were generally more easily consoled when the caregivers responded and their resistance behaviors decreased.

Finally, when the caregiver left the room (a situation that at the beginning of the settling-in phase is very stressful for many children) it has been seen that crying and anger reactions decrease considerably over time. At the same time, calling or holding the caregiver decreased, because over time children are more serene when separated. In fact, the most common child behavior after two months was to continue playing quietly when the caregiver left and then returned to the child-room, a sign that the separation with the caregiver is less problematic and children feel comfortable and safe in the new environment.

To sum up, during the first two months in the new context of care, children generally clearly change their attitudes towards professional caregivers. As reported by many studies (Barnas & Cummings, 1994; Howes, 1999; Howes & Hamilton, 1992a; Howes & Smith, 1995a), it is evident that over time children direct positive attachment behaviors towards the new caregiver: the professional caregiver becomes the reference person in moments of distress, the child looks for her for assurance and is comforted by her, whereas reactions of anger and frustration decrease. Moreover, children gradually adapt positively to the new context of care, showing their serenity and explorative behaviors during their entrance at childcare and during the day.

Especially when children are separated from parents and caregivers, changes in items of *proximity* and *non distressed* could be considered as indicators of “good adaptation” of the child within the childcare centre. These positive changes reflected a

quiet attitude of the child who was not distressed when parents or the caregiver leave, but continues to explore and play; in the attachment theory, the *secure base* is a dynamic equilibrium between attachment and exploration systems, so when the child feels safe, attachment behaviors are deactivated and explorative ones are activated (Ainsworth, 1967). So, the child who explores and plays quietly, even when his/her main caregivers leave for a while, means that he/she feels safe and secure in that environment, which is further confirmation that means a good adaptation to the new childcare context.

This study made it possible to see for the first time how children's very specific behaviors change over time, in the delicate settling-in phase at childcare centres. The PCAD is a useful observation tool for this purpose because using it and analyzing its items in specific situations is like using a magnifying glass to zoom on child behaviors and on how the child gradually builds his/her relationship with a new caregiver. This is an important contribution to development research that with other tools, such as AQS, would not have been possible. The child's behaviors are the reflection of his inner world, the mirror of how the child is in a relationship with the adults who take care of him.

CHAPTER 7

“Give me time, please”: Observing child-caregiver relationships one year later

7.1. Introduction

This current brief study is the last part of the doctoral PCAD project: the main study described in *Chapter 5* was the first step of a longitudinal study that lasted more than one year. The aim of the current fifth study was to examine whether children's attachment behaviors with professional caregivers change or remain stable one year later, that is, about one year before children entered childcare centres. So, if in previous studies we focused on the very early developments of child-professional caregivers relationship (Study 1-2-3-4), now the goal is to observe whether the relationship changes in the course of a year.

As already reported in the previous chapters, few studies have focused on child attachment behaviors towards the professional caregiver at childcare, and literature is mixed. The literature identifies that relationship building is a process that needs time, and time is not standard but varies from child to child. In general, at the beginning, the child views the professional caregiver as a stranger, but over time, the new figure will be the main caretaker in the new context and the child will direct his attachment behaviors towards her (Barnas & Cummings, 1994; Goossens and van IJzendoorn, 1990; Lee, 2006).

Raikes (1993) conducted an interesting longitudinal study in which investigated the role of time in the construction of the attachment relationship: child-professional

caregiver relationship was measured with the AQS (Waters & Deane, 1985) in different time-points, identified as *low* (5-8 months), *medium* (9-12 months) and *high* (over 1 year) levels of time. Results reported that 91% of children who attended childcare for over 1 year (high level) with the same caregiver developed a secure attachment, compared with 67% of the middle level of time and 50% of the low level of time. This shows that not all children build a secure relationship with the professional caregiver in 5 or 9 months, someone needs more time, but after a year almost all children have found a "secure base" in the new caregiver.

Howes and Hamilton (1992b) also conducted a longitudinal study over 18 months on child-professional caregiver relationship, and found that when the caregiver remains the same over time children have a stable relationship with her, whereas there is evidence that caregiver changes could be disturbing for children.

Literature underscores the importance of stable care experiences during the time for children to build attachments with their care providers; indeed, time is positively associated with secure attachment to professional caregivers (Ahnert, 2006). In sum, children who spend more time with their caregiver have a more likely secure relationship with this person, and caregiver stability is a relevant variable for the quality of the relationship.

Based on these considerations, in the current *Study 5*, the stability of child-professional caregivers relationship over 1 year was investigated.

7.2. Method

7.2.1. Overview of procedure

Data from the current study refer in part to the data collection of the previous *Study 3* (*Chapter 5*): in our previous study, caregivers observed their children with the PCAD when they were left in the centre without the parent's presence (T1), and again after 1 month (T2) and 2 months (T3). In the current study (*Study 5*), 46 children were observed also 1 year after the last observation (T4).

Therefore, in order to investigate the stability of child-professional caregivers relationship over 1 year, data from the current study refer to observations at two time-points:

- T3: 2 months after children's entry into childcare, by referring to scores that these 46 children had at T3 in *Study 3* reported in *Chapter 5*;
- T4: around 1 year after T3 (M = 13.2, SD = 1.2), that is, 16 months after children enrolment into childcare (M = 16.1, SD = 1.2).

The observations at T4 were intentionally done 1 year after T3 (i.e. after 2 months of childcare attendance) and not after 1 year from child entry into childcare, because in this latter case the observation would have been done in September-October, and so, in a critical period for children who just came back from summer holidays. Therefore, the last observations of this longitudinal study (T4) were done between November 2018 and January 2019, when supposedly children were in a quiet period and well settled to the childcare context, in order to monitor the stability of the child-caregiver relationship over time.

Observations at T4 were done by the same professional caregiver who observed the child at T3 the year before. It is important to point out that, when possible, children

were observed by the professional caregivers who were their *reference person* (*key-person*) (Goldschmid & Jackson, 1994) during their settling-in phase (6 centres of 7 use this practice).

7.2.2. Sample

Of the 148 children observed in the previous *Study 3* (*Chapter 5*), 46 of them were also observed 1 year after the last observation, i.e., at 16 months after children enroll in childcare. Therefore, this study includes 27 professional caregivers who continued observing with the PCAD 46 children from the previous study.

From the initial sample of 148 children in *Study 3*, 98 children stopped attending the childcare centre (mostly because they have grown up and started attending kindergarten) and 4 children were not observed at T3, and so it was not possible to make comparisons with the observation at T4.

Then, the final sample for the current *Study 5* was composed of 46 children, 23 boys and 23 girls, aged between 14 and 22 months (M = 17.7, SD = 1.3) when they were observed in this latter data collection.

7.2.3. Measure

Professional Caregiver Attachment Diary

In the current study, children's relationships with professional caregivers were observed at T4 using the PCAD 1.3 (Molina & Macagno, 2019) in continuity with our previous study in order to compare the results.

7.2.4. Data Analysis

The study design was longitudinal since professional caregivers observed children at three time-points (T1-2-3) throughout their early month in childcare and then 1 year later (T4). The current analysis focuses on the comparisons between observations at T3 (2 months after children's enrollment into childcare, by referring to data collection of Study 3) and T4 (1 year later).

With the PCAD, a daily score of *security*, *avoidance*, *resistance* and *non-distressed* are calculated proportionately, depending on how many situations are filled each day. Means for each time-point (T3 and T4) are computed on daily scores based on how many observations are available for each child during the week.

In order to study whether each attachment behavior changes over time, means scores of *security*, *avoidance*, *resistance* and *non-distressed* at T3 and T4 were compared using the paired-samples T-test (confidence interval: 95%). However, statistical significance, when found, means only that it is unlikely that the null hypothesis is true. Therefore, also Cohen's *d* was performed, to determine the sizes of differences between group means. The following established ranges were used to interpret standardized mean difference magnitude: from 0.0 to 0.19 = no effect; from 0.20 to 0.49 = small; from 0.50 to 0.79 = medium; from 0.80 = large (Cohen, 1988). Furthermore, Pearson's correlation coefficient was calculated to observe the relationship between the different attachment behaviors.

7.3. Results

As reported in *Table 7.1*, children showed a significant decrease of *Secure* behaviors ($t(45) = 2.99$, $p=.004$, $d=.49$) whereas *Non Distressed* scores significantly increased ($t(45) = -4.07$, $p< .001$, $d=.67$). Both changes had medium effects (*d* range from

.49 to .67). On the other hand, results showed that both *Avoidant* and *Resistant* behaviors did not significantly decrease over the last year, and also the sizes of effects were null (both *d* were <.20).

Table 7.1. Comparison between means scores at T3 (2 months after children's entry into childcare) and T4 (1 year later). Paired-samples T-test (C.I.: 95%) and Cohen's *d*. Sample: 46 children.

Behaviors	**Mean (SD)**		***t***	***p* (sig.)**	**Cohen's *d***	**% at T4**
	T3	**T4**				
Secure	.583 (.30)	.437 (.30)	2.99	.004	.487	38.5
Avoidant	.056 (.10)	.039 (.10)	0.89	.379	.174	3.4
Resistant	.070 (.09)	.066 (.08)	0.22	.835	.044	5.8
Non Distressed	.390 (.33)	.593 (.27)	-4.07	<.001	.672	52.3

Examining how the behavioral categories are distributed at T4 (%), *Table 7.1* shows that the prevalent behaviors are *non distressed* ones (52.3%), followed by *secure* behaviors (38.5%) and then by *resistant* (5.8%) and *avoidant* conducts (3.4%).

Finally, in order to observe the relationship between the different attachment behaviors, Pearson correlation analysis at T4 (*Table 7.2*) shows that *Secure* conducts have low negative correlations with both *Avoidant* (r = -.21, p=NS) and *Resistant* ones (r = -.12, p=NS). Furthermore, *Secure* scores correlate significantly negatively with *Non Distressed* behaviors (r = -.82, p<.01) as expected. Moreover, *Non Distressed* scores correlate significantly negatively with *Resistant* scores too (r = -.31, p<.05). Finally, *Avoidant* behaviors correlate significantly positively with *Resistant* ones (r = -.38, p<.01).

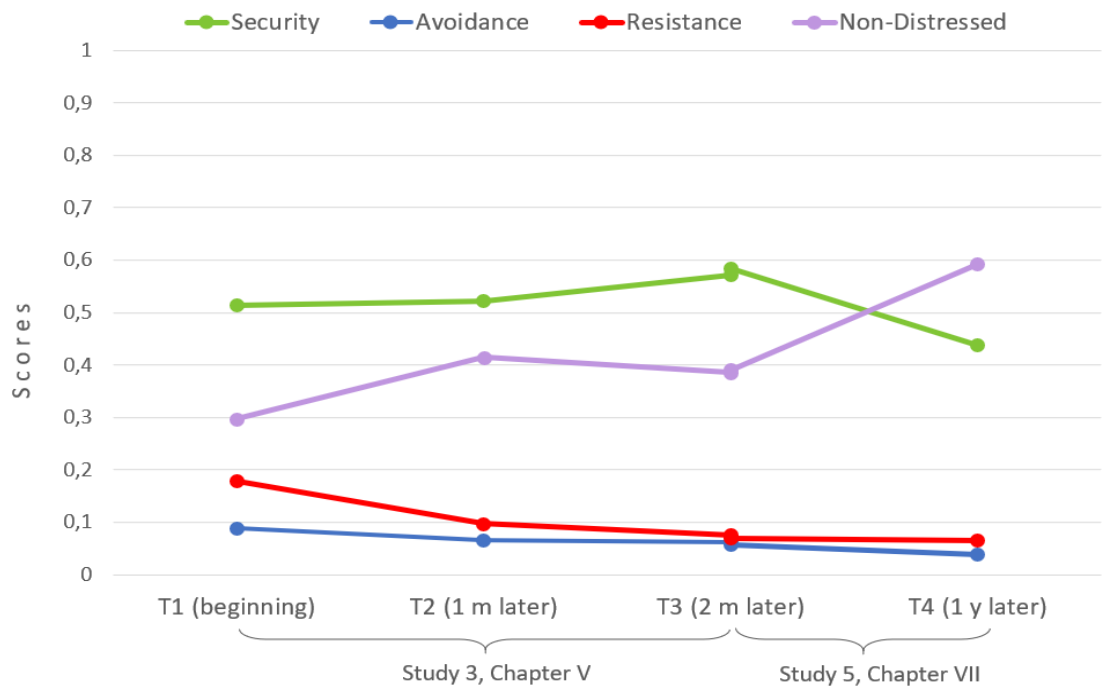
Table 7.2. Pearson correlation between attachment behaviors (N=46).

	Secure	Avoidant	Resistant	Non Distressed
Secure	1			
Avoidant	-.21	1		
Resistant	-.12	.38	1	
Non Distressed	-.82	-.23	-.31	1

7.4. Discussion

The aim of this study was to investigate the stability of child-professional caregivers relationship over 1 year. In continuity with previous studies, relationship building was observed one year after children entry into childcare to explore whether and how the relationship changes over time. We found that, on average, *secure* attachment behaviors decrease over time, but on the contrary, *non distressed* conducts increased. On the other hand, insecure behaviors as *avoidant* and *resistant* ones did not change and remain stable over time (see *Figure 7.1*).

Figure 7.1. Summary chart of attachment behavioral trends over time from T1 to T4.



These results are in line with our previous studies: in *Study 2* (*Chapter 4*), where changes in attachment behaviors were observed at 2 and then at 4 months after children enrollment into childcare, we found that after 4 months children showed a decrease in *secure* behaviors, whereas *non distressed* conduct increased. As explained previously, *Secure* and *Non Distressed* categories are alternated filling the PCAD, and the latter one is considered as an index of good adaptation of the child within the childcare centre, because these types of behaviors (ex. the child "was happy to keep doing what he/she was doing" and "continued quietly doing what he/she was doing before") reflected a quiet attitude of the child who was not distressed when the caregivers leave (both parents and professional caregiver), exploring and playing quietly.

Therefore, *secure* and *non distressed* scores (that is, *attachment* and *explorative* behaviors) are in a dynamic equilibrium (Pierrehumbert, 2009): this hypothesis was further reinforced by correlations analysis of this current study, which shows that *Non Distressed* and *Secure* scores are negatively correlated ($r = -.82$), that means these behaviors are alternated when filling the PCAD. Moreover, *Secure* and *Non Distressed* scores are negatively correlated with both *Resistant* and *Avoidant* conducts as expected.

In contrast to some studies which stated that attachment security in childcare is relatively low (Ahnert et a., 2006; Ereky-Stevens et al., 2018; Howes and Smith, 1995b), in the current study as well we found that positive and secure attachment behaviors to professional caregivers are rather higher, in line with Raikes' longitudinal study (1993) which reported that 91% of children who attended childcare for over 1 year with the same caregiver developed a secure attachment. In the current study we found that, after more than one year attending childcare, the proportion of specific *secure* behaviors was about 39%, whereas the proportion of *non distressed* behaviors was about 52%. If we consider

both secure and exploratory behaviors as *positive attachment behaviors*, it can be concluded that these represent 91% of the behaviors observed in children one year after their entry into childcare, whereas only the remaining 9% refers to insecure behaviors as avoidant and resistant ones.

To summarize and integrate the results of our studies, it seems that children tend mainly to seek caregiver's proximity during the earlier months, but then this behavior decreases over time and it is gradually replaced by exploratory conducts (see *Figure 7.1*). Therefore, after one year, the prevalent children conduct is the *non distressed* one, which indicates a good adaptation of the child to childcare centre as a consequence of a positive relationship with the professional caregiver who takes care of him/her (Anderson, 1981).

CONCLUSIONS AND GENERAL DISCUSSION

Child relationships with parents during the early years of life can greatly influence his/her attitude, social behaviors and mental health, and have an important role in child development (Ainsworth et al. 1973, 1978; Bowlby, 1969/99, 1973).

However, in today society, children are exposed to many different caregivers. With over 350.000 children attending more than 13.000 early childhood services in Italy (ISTAT, 2019), researchers and families have become interested in center-based care. Evidence suggests that the relationship between child and professional caregiver promotes social competence with peers, cognitive development, relational skills and emotional regulation competence (Howes, 2016; Howes & Smith, 1995a; Molina, 2012). Definitely, early childhood is a sensitive period for social and emotional competence, therefore the role of relationships both in and out-of-home context is critical for future healthy development.

The literature on childcare centres has mainly focused on aspects such as the interference of extra-family care with the maternal relationship, the risks of childcare attendance, the quality of care, the structural quality of the environment, and the importance of the child-caregiver relationship (Ahnert et al., 2006; Anderson et al. 1981; Belsky, 1988; Howes, 1999; Howes & Spieker, 2008; Pierrehumbert, 2009). However, few studies have focused on the most delicate moment, that is the moment of *transition* from the family context to the new care setting (the settling-in phase). This moment is extremely delicate because it is the first contact that the child has with the new context and who will take care of him/her. This transaction is not easy for anyone, for the child, for parents, and not even for professional caregivers, so this period needs particular attention and awareness.

In childcare, toddlers open their eyes to new settings, new people and new routines, so they need a "secure base" from which can be able to explore and play. Feeling protected and safe is an essential need for the child and is a fundamental condition for his/her development. The secure base is built progressively, and the relationship with the professional caregiver is significant to bridge mother-child separations during this process (Anderson, 1980). However, to our knowledge, few studies have focused on this period of transition and the construction of child-professional caregiver relationship, and there are no specific tools and methods with the aim of support the settling-in phase.

Based on these considerations, this P.h.D. project was born from the need to fill the gaps in research and educational practice on this topic, and it aimed to create a new tool, the *Professional Caregiver Attachment Diary* (PCAD), in order to follow the early attachment developments in the new context of care. The current project had two main objectives: the first one was oriented to contribute to theoretical research on the subject, and wanted to study the formation of children's relationships with professional caregivers; the second objective focused on practical and educational aspects and was to offer to professional caregivers an observational method and a tool to support the settling-in phase, as in-service training.

In conclusion, this research adds to our knowledge of child-professional caregiver relationship building in childcare centre. It claims that children showed important changes in their attachment conduct towards the new caregiver over time: the professional caregiver becomes the reference person in moments of distress, the child looks for her for assurance and is comforted by her, whereas reactions of anger and frustration decrease. Children showed major changes especially during the first month of attendance, in which they required the proximity of caregivers more, and then gradually felt more and more secure and comfortable in the new context of care. It seems that at the beginning children

tend mainly to seek caregiver's proximity during stressful situations, but then this conduct decreases, and it is gradually replaced by explorative behaviors (*non distressed*). These results are in line with Lee's hypothesis, which splits the construction of the relationship with a new caregiver into four stages: first encounter, adjusting to each other, strengthening the relationship, and stabilizing the relationship (Lee, 2006).

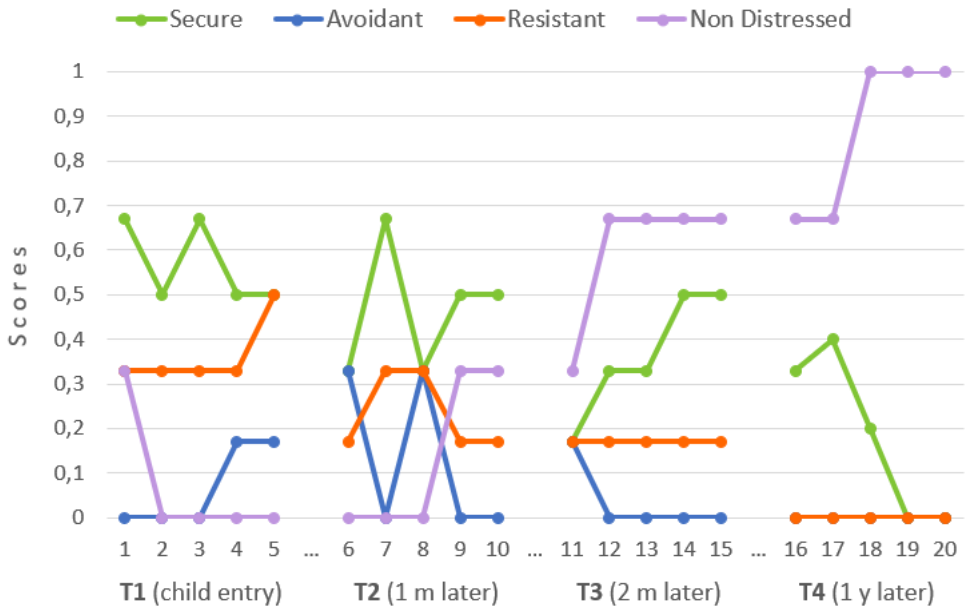
Our studies also traced in detail for the first time exploratory behaviors in childcare settings and highlighted their importance and specificity. In line with the attachment theory, once developed the main motor skills and can move autonomously, the child tends to explore the environment using the caregiver as a secure base, so when he/she fell distressed exploratory behavior is inhibited and the attachment behavior is reactivated, seeking the caregiver (Ainsworth, 1987). Our results report that exploratory behavior over time becomes the child's predominant conduct. This can be explained by considering that actually childcare context would promote exploratory and independence behaviors: it seems that mothers provide their children with more individualized attention, whereas professional caretakers provide with more opportunities for independent exploration and interaction with the environment (Bornstein, Mai & Tal, 1997; Cassibba et al., 2000). The number of children cared for by one single caregiver, the less individualized attention and the presence of peers as social partners allow children in childcare centres to be more independent, seeking the caregiver only when they need her (Howes and Smith,1995b). These behaviors become more common over time, as the child spends more time at childcare building a closer relationship with the caregivers and familiarizing with the new environment. As reported in the literature, using the caregiver as a secure base for exploring the environment is a tendency observed in securely attached children (Anderson, 1981). This means that explorative behavior is

a consequence of a positive relationship with the professional caregiver who takes care of him/her and reflected the strengthening of a secure relationship.

But data and charts are just an extreme synthesis of the individual stories that are needed to really understand the complexity of the settling-in transition. So now, let's see some examples of children's individual development.

*Figure 8.1** shows the behavioral trends of a child observed during the first two months in the childcare centre and one year later. The line chart shows that during the first month (T1-T2) the child needed and seeked caregiver's proximity when distressed (*secure* behaviors), and also showed some avoidant and resistant behaviors. However, after two months (T3) insecure behaviors decreased, whereas exploratory one (*non distressed*) gradually increased until it became the main conduct one year after the settling-in phase (T4).

Figure 8.1. Example of a child's individual chart to explore behavioral trends of each attachment behavior over time.



* The chart represents the attachment behavior scores of a child who was observed daily for one week at T1 (days 1-5), T2 (days 6-10), T3 (days 11-15) and T4 (days 16-20). The x-axis (horizontal) refers to observations over time; the y-axis (vertical) refers to attachment behavior scores.

Figure 8.1 actually reflects the general results of our studies. However, when we look at more children, we do not always find the same trend. For example, our study (*Chapter 5*) reports that childcare attendance is a significant predictor in the secure base development: children who attended more and regularly showed lower avoidant behaviors and decreased more rapidly their resistant behaviors comparing with children with low childcare attendance. We can clearly find this difference also comparing two children, one with high and the other with low childcare attendance. *Figure 8.2* reports behavioral trends of a little boy, enrolled in childcare when he was 7 months-old, who attended it for 97% of the possible days. On the other hand, *Figure 8.3* shows the chart of a girl, enrolled when she was 15 months-old, who attended childcare for 67%. One can see that the boy with high attendance (*Fig. 8.2*) has medium to high resistance and avoidance scores at the beginning, but then these gradually drop to zero after two months. On the other hand, the girl who attended less (*Fig. 8.3*) shows frequent insecure behaviors even after two months. In line with previous researches (Ahnert et al., 2006; Barnas & Cummings, 1994; Howes& Hamilton, 1992b), these findings highlight the importance of stable care, since discontinuous care experience could make more difficult the formation of secure attachments to the new caregiver.

Figure 8.2. Example of an individual chart of a child with high childcare attendance (97%).

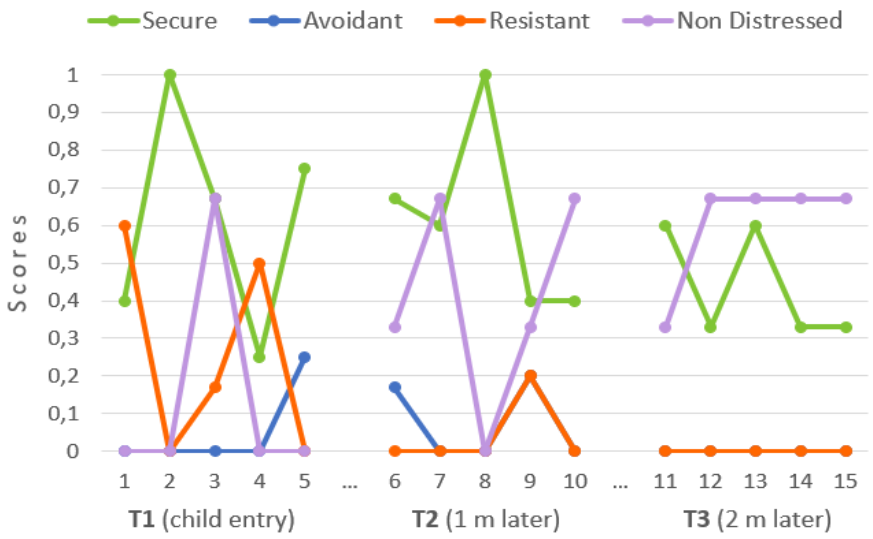
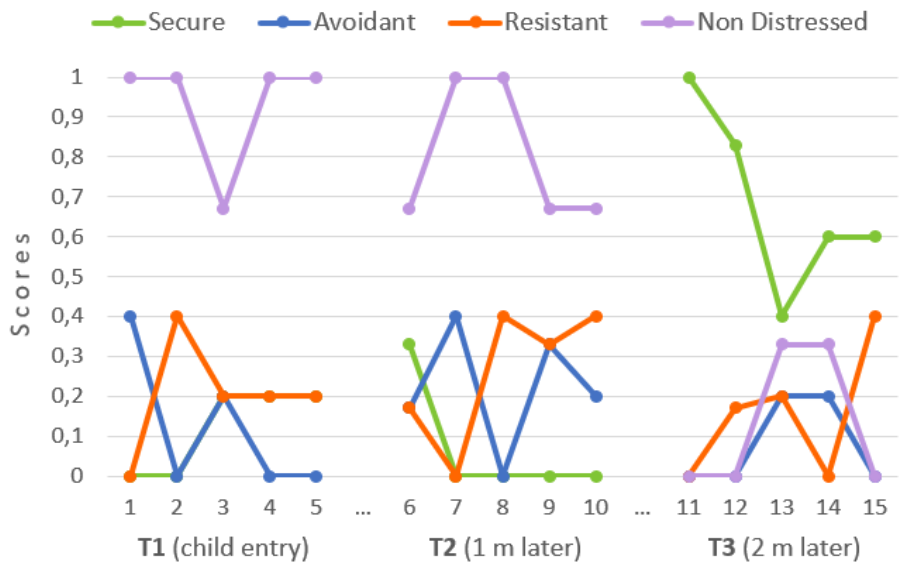
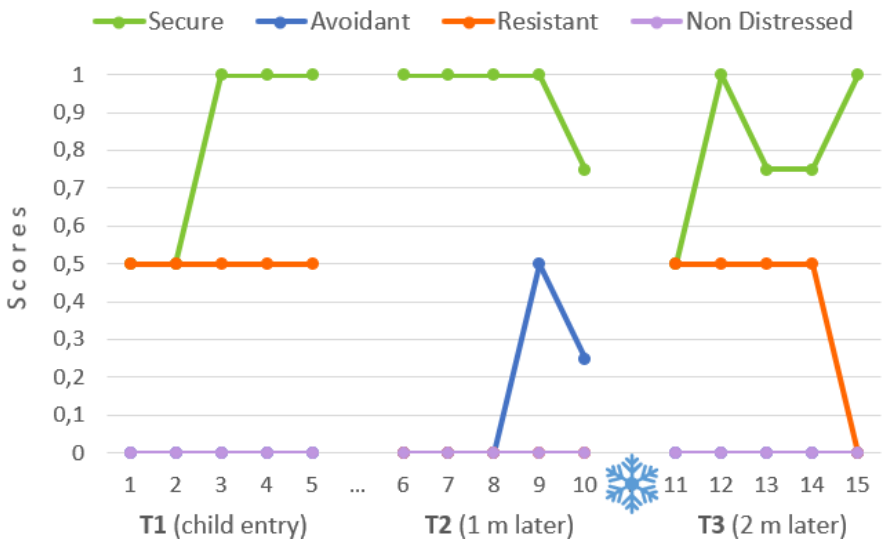


Figure 8.3. Example of an individual chart of a child with low childcare attendance (67%).



And then, curiously, exploring other individual differences, we also found that the period in which the professional caregiver observed the child also affects the collected behaviors: we found that some children showed a regression to insecure behaviors (avoidant and/or resistant) after the Christmas holidays. Indeed, in Italy for the Christmas holidays children do not go to childcare centre for at least two weeks, and when they return may initially show some critical days. We can clearly see it in *Figure 8.4*: observations at T3 corresponds to the days from 8th to 12th of January 2018, so right after returning from holidays. And in fact, in this chart, we can see that the child at T3 returns to show resistant behaviors that he no longer had at T2. This observation could support our previous results that discontinuous care experience makes it harder to establish a positive relationship, especially during the first few months when the relationship is still developing.

Figure 8.4. Example of an individual chart of a child that was observed right after Christmas holidays (❄)



As shown in the charts above, the strength of the PCAD is to be able to observe and keep track of children's *daily behaviors* from a process-oriented perspective. As evidenced by both individual charts and the Observational Form filled in by caregivers, the PCAD can well capture child attachment behaviors because every single day he/she has scores of secure, avoidant, resistant and non distressed behaviors that reflect his/her conduct. Differently from most studies on attachment to professional caregiver, the advantage in using the PCAD is the possibility of observing not just the direction in which the relationship develops (e.g. whether children are more or less secure) but also *how* the single child is behaving over time, that is, exploring the *process* of forming child-caregiver relationship in childcare. Moreover, the PCAD does not classify children as secure, avoidant or resistant, but just reflect different attachment behaviors that the child can show in one day.

Actually, this method has been designed specifically for educational purposes: one of the aims of this type of observation is to support caregivers in monitoring and reflecting on their relationship with children during and after the transition from family

to childcare. The PCAD is a tool that teaches the caregivers an observational method that can help them during the most delicate moments of the settling-in phase, monitoring how the child's familiarization is going. Through the observation, writing in the diary and filling in the observational form, the professional caregiver has the opportunity to reflect on child attachment behaviors (does he/she look for me when he/she needs it?) and on the impact of her educational responses (is the child easily soothed by me? or does he/she complain when I try to calm him/her?). The difficult work of caring for a group of infants makes it harder to observe certain behaviors that might not be noticed. We believe that professional caregivers involved in our studies began to find their jobs more rewarding because they had the opportunity to reflect on the importance of their role: they could be more aware of children's behaviors towards them and so reflect on the importance of child-caretaker relationship. As a consequence, most of them reported that they felt more competent in responding to children's needs, and this is extremely important, because that quality of care greatly influences children feelings of trust and security, and support their healthy exploration, competence and feelings of confidence (Anderson, 1981; Booth et al., 2003). Therefore, our educational purpose response to the needs that have also emerged in the literature: research underlines the importance to improve childcare programs focused on child-caregiver relationship, in order to ensure a positive climate within the childcare context, where children can trust the caregivers and have a favorable development (Howes, 2016; Biringen et al., 2012).

In summary, this doctoral project has verified the possibility of assessing child good adaptation to childcare centre using a new tool that refers to attachment theory: the PCAD seems to be useful to observe and monitor children's familiarization within the new context of care. However, the findings of this research project must be interpreted with regard to its limits. First, the sample was limited, and the studies conducted involved

overall only seven Italian childcare centres, all belonging to the same social cooperative, where educational practices are common in all centres. Therefore it would be useful to study in future research how effectively this method can improve caregiver's practices: the effectiveness of the tool on caregiver's observational skills and responsive care were assessed retrospectively with self-assessment questionnaires, information that should be integrated by objective observation and evaluation of caregivers practices.

Anyway, we consider that the promising results of this doctoral project could be useful to fill research and educational gaps in this field of research and could be an important first step in activating an evidence-based intervention to support the settling-in phase. Collectively, our findings evidence the importance of transactional processes in the nonparental caregiver–child relationship. When the child enters childcare, he/she is ready to construct a positive attachment relationship, as if he/she hopes and expects that someone will take care of him/her (Howes & Oldham, 2001). This is because a child needs a secure base, no matter how risky it may be, for him/her that is the only important thing (Goleman et al., 2011).

These results are particularly important when we consider that childcare context could help children to experience a different enriched network of relationships, being a corrective emotional experience that may lead to a positive developmental trajectory (Howes & Spieker, 2008). So - to conclude - this doctoral project can support the development of interventions for childcare services, improving educational practices, and it could indirectly contribute, over time, to making children more competent on a socio-emotional level; and then, these children will be future citizens and consequently part of our society: Therefore, doing research means contributing to the social development and well-being of people, having a role in building the society we want to live in.

With this project, we have tried to give our contribution and play our part.

APPENDICES

APPENDIX 1

Parent Attachment Diary

Date:_____

Age of Child:_____

Parent Code:_____

Child Code: _____

Directions: for each question, try to answer as honestly as possible. There are no "right" or "wrong" answers. Please remember that neither your name nor your child's name should be any where on this form. This form will be identified by a code number and will only be seen by research staff. This diary works best when filled out each night. If, for some reason, you are not able to fill it out one night, you may fill it out first thing in the morning. Please do not fill it out any later.

I filled this diary out: □ at the end of the day

□ first thing the next morning

For questions 1-3 try to think of a SPECIFIC INCIDENT THAT OCCURRED TODAY.

Do not use the same incident for more than one question.

Infant Caregiver Project
University of Delaware
Mary Dozier, PhD.
Revised 7/05

1. Think of one time today when your child got physically hurt and answer the following: (this includes anything like falling down, scraping a knee, bumping into something, etc.)

Describe this situation in 2-3 sentences (and be sure to include how you responded to your child):

_____
_____
_____
_____

A. What did your child do to let you know he/she was hurt? NUMBER YOUR CHILD'S REACTIONS, IN ORDER. ONLY PUT A NUMBER IF THE BEHAVIOR OCCURED.

___ looked at me for assurance
___ went off by him/herself
___ acted as if nothing was wrong
___ acted angry/frustrated (ex. Stomped feet, kicked legs)
___ called for me
___ looked at me briefly then looked away and went on
___ came to me
___ signaled to be picked up or held, reached for me
___ cried
___ did not indicate he/she wanted or needed me
___ cried and remained where he/she was, did not signal for me
___ moved closer to me (but actual contact did not occur)
___ other(s) _____

B. After you responded to your child, what did your child do next? NUMBER YOUR CHILD'S REACTIONS, IN ORDER. ONLY PUT A NUMBER IF THE BEHAVIOR OCCURED.

___ was soon calmed or soothed
___ pushed me away angrily or in frustration
___ continued to play, did not notice me
___ stomped and/or kicked feet
___ hit or kicked at me
___ remained upset, was difficult to soothe
___ turned from me angrily or in frustration
___ did not indicate he/she needed my help
___ ignored me
___ became quiet and then fussy again
___ turned away when picked up or made contact
___ sunk into me or held on to me until calmed down
___ did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)
___ held on to me or went after me if I tried to put him/her down or go away
___ turned, walked, or crawled away from me as if nothing was wrong
___ other(s) _____

2. Think of one time today when your child was frightened or afraid of something. (this should not include dropping child off, leaving child, or any other separations)

Describe this situation in 2-3 sentences (and be sure to include how you responded to your child):

_____
_____
_____
_____

A. What did your child do to let you know he/she was hurt? NUMBER YOUR CHILD'S REACTIONS, IN ORDER. ONLY PUT A NUMBER IF THE BEHAVIOR OCCURED.

___ looked at me for assurance
___ went off by him/herself
___ acted as if nothing was wrong
___ acted angry/frustrated (ex. Stomped feet, kicked legs)
___ called for me
___ looked at me briefly then looked away and went on
___ came to me
___ signaled to be picked up or held, reached for me
___ cried
___ did not indicate he/she wanted or needed me
___ cried and remained where he/she was, did not signal for me
___ moved closer to me (but actual contact did not occur)
___ other(s) _____

B. After you responded to your child, what did your child do next? NUMBER YOUR CHILD'S REACTIONS, IN ORDER. ONLY PUT A NUMBER IF THE BEHAVIOR OCCURED.

___ was soon calmed or soothed
___ pushed me away angrily or in frustration
___ continued to play, did not notice me
___ stomped and/or kicked feet
___ hit or kicked at me
___ remained upset, was difficult to soothe
___ turned from me angrily or in frustration
___ did not indicate he/she needed my help
___ ignored me
___ became quiet and then fussy again
___ turned away when picked up or made contact
___ sunk into me or held on to me until calmed down
___ did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)
___ held on to me or went after me if I tried to put him/her down or go away
___ turned, walked, or crawled away from me as if nothing was wrong
___ other(s) _____

3. Think of a time today when you and your child were separated—preferably where your child became upset or distressed. (This can include leaving to go out, going to another room, dropping the child off, etc. <u>This does not include putting the child to bed</u>.)

Describe this situation in 2-3 sentences (and be sure to include how you responded to your child):
_____
_____
_____
_____

A. How did your child respond to the separation? NUMBER YOUR CHILD'S REACTIONS, IN ORDER. ONLY PUT A NUMBER IF THE BEHAVIOR OCCURED.

___ cried, screamed, or yelled
___ acted as if nothing happened
___ called after me
___ wanted to be picked up or held
___ hit, kicked, or pushed me
___ went off by him/herself
___ came after me
___ held on to me, wouldn't let go
___ was happy to keep doing what he/she was doing
___ acted angry or frustrated (ex. stomped feet, kicked legs)
___ was upset but did not indicate that he/she wanted or needed anyone
___ whimpered or cried briefly and kept going, did not look at me
___ other(s) _____

B. What was your child's immediate reaction when he/she saw you again? NUMBER YOUR CHILD'S REACTIONS, IN ORDER. ONLY PUT A NUMBER IF THE BEHAVIOR OCCURED.

___ greeted me (ex: smiled, said my name, said hello)
___ stomped and/or kicked feet
___ signaled to be held and/or picked up
___ hit, kicked me
___ cried and remained where he/she was
___ cried, screamed
___ came to me
___ brought me a toy or other object
___ turned away as I picked up or made contact
___ if upset, was easily soothed and calmed by me
___ sunk into me or held on to me until calmed down
___ did not easily let me hold him/her but remained upset (ex. arched back, put arm in between us)
___ whimpered quietly to him/herself (may have looked at me briefly)
___ wanted to be held, fussed and wanted to get down, then wanted to be picked right back up again
___ continued doing what he/she was doing before (didn't notice me)
___ looked at me briefly then looked away, did not smile or greet me
___ started to approach me then turned and wondered somewhere else
___ if upset, was NOT easily soothed and/or calmed by me
___ other(s) _____

APPENDIX 2

DAE: Diario dell'Attaccamento all'Educatrice/Educatore

Data di compilazione: ---------- Codice del bambino: ----------

Istruzioni:
Cerchi di rispondere il più onestamente possibile a tutte le domande. Non ci sono risposte "giuste" o "sbagliate".
Stia tranquilla/o che né il suo nome né quello del bambino compariranno in alcuna parte di questo formulario. Il formulario sarà identificato con un codice numerico e sarà utilizzato solo dai membri del gruppo di ricerca.

Il diario funziona meglio se compilato ogni giorno, al termine del turno di servizio o appena rientrata/o a casa. Se, per qualunque ragione, non riuscisse a compilarlo immediatamente, lo può compilare la sera dello stesso giorno. Per favore, non lo compili mai più tardi.

Ho compilato questo diario:

- ☐ Durante il momento della nanna dei bambini
- ☐ A fine turno
- ☐ Al rientro a casa
- ☐ La sera

oppure

- ☐ Bambino Assente
- ☐ Educatrice Assente

Per le domande 1-3 cerchi di pensare a *uno specifico evento successo oggi*.
Non usi lo stesso evento per rispondere a più di una domanda.

1. **Quale è stata oggi la reazione del bambino all'allontanamento del genitore?**

* Descrivere la reazione del bambino nei confronti dell'EDUCATRICE (e non i comportamenti verso il genitore);

* La risposta "Ha pianto" dovrebbe essere accompagnata da un'altra risposta, che descriva meglio il comportamento del bambino nei confronti dell'educatrice.

Descriva la situazione in 2-3 frasi, includendo il modo in cui lei ha risposto al bambino:

_____

_____

_____

_____

A/ Come ha risposto il bambino alla separazione? *Numeri soltanto le condotte che il bambino ha manifestato, nell'ordine in cui si sono verificate.*

---	Ha pianto, urlato o gridato
Evitamento**	Ha fatto come se niente fosse
Sicurezza	Mi ha chiamato
Sicurezza	Ha voluto essere preso o tenuto in braccio
Resistenza	Mi ha colpito, tirato un calcio o mi ha spinto via
Evitamento	Se ne è andato per conto suo
---	Ha cercato di seguirlo/a
Sicurezza	Si è aggrappato a me, non voleva lasciarmi andare
Evitamento**	Ha raggiunto gli altri bimbi
Resistenza	Ha manifestato frustrazione, rabbia (es. ha scalciato, ha fatto resistenza per venire in braccio…)
Evitamento	Era agitato, ma non ha dato segno di aver bisogno di qualcuno
Evitamento	Ha piagnucolato o pianto brevemente e poi si è messo a giocare, non mi ha guardato
Sicurezza	Mi ha salutato sorridendo ed è andata tranquillo a giocare

B/ Dopo che lei ha risposto al bambino, cosa ha fatto il piccolo? *Numeri soltanto le condotte che il bambino ha manifestato, nell'ordine in cui si sono verificate.*

Sicurezza	Si è subito calmato e tranquillizzato
Resistenza	Mi ha spinto via con rabbia o frustrazione
Evitamento	Ha continuato a giocare, come se non si fosse accorto di me
Resistenza	Ha battuto i piedi o scalciato
Resistenza	Mi ha colpito o tirato un calcio
Resistenza	E' rimasto agitato, era difficile da consolare
Resistenza	Si è allontanato da me con rabbia o frustrazione
Evitamento	Non ha mostrato in nessun modo di aver bisogno del mio aiuto
Evitamento	Mi ha ignorato
Resistenza	Si è tranquillizzato ma poi è stata di nuovo piagnucoloso
Evitamento	Si è girato dall'altra parte quando l'ho preso in braccio o l'ho toccato
Sicurezza	Si è rannicchiato contro di me o si è aggrappato a me fino a quando non si è calmato
Resistenza	Non mi ha permesso di tenerlo in braccio facilmente, ma è rimasto agitato (ha inarcato la schiena, mi ha allontanato con le braccia)
Sicurezza	Si aggrappava a me o mi seguiva se provavo a metterlo giù o ad allontanarmi
Evitamento	Si è voltato e si è allontanato camminando o gattonando, come se non ci fosse niente che non andava

2. **Per rispondere a questa domanda pensi a una volta in cui, oggi, il bambino ha provato disagio**: si è fatto male (può essere una cosa qualsiasi, come cadere, sbucciarsi un ginocchio, urtare contro qualcosa, …) oppure si è spaventato o impaurito per qualcosa, o ancora ha avuto un conflitto con un altro bambino, o difficoltà nel mangiare, nell'addormentarsi, ecc. (escluda però ogni genere di separazione, come metterlo giù, allontanarsi, …)

   * La risposta "Ha pianto" dovrebbe essere accompagnata da un'altra risposta, che descriva meglio il comportamento del bambino nei confronti dell'educatrice.

Descriva la situazione in 2-3 frasi, <u>includendo il modo in cui lei ha risposto al bambino</u>:

_____
_____
_____
_____

A/ Come il bambino le ha fatto capire che era a disagio? *Numeri soltanto le condotte che il bambino ha manifestato, nell'ordine in cui si sono verificate.*

Sicurezza	Ha guardato verso di me per essere rassicurato
Evitamento	Se ne è andato per conto suo
Evitamento	Ha fatto come se niente fosse
Resistenza	Ha manifestato frustrazione, rabbia (per es., ha battuto i piedi, ha scalciato, …)
Sicurezza	Mi ha chiamato
Evitamento	Ha guardato brevemente verso di me, poi ha distolto lo sguardo e ha continuato a fare ciò che stava facendo
Sicurezza	E' venuto da me
Sicurezza	Ha voluto essere preso o tenuto in braccio, si è proteso verso di me
---	Ha pianto
Evitamento	Non ha dato segno di aver bisogno di me o di volermi
Resistenza	Ha pianto rimanendo dov'era, non mi ha chiesto niente
Sicurezza	Si è avvicinato a me ma senza toccarmi

B/ Dopo che lei ha risposto al bambino, cosa ha fatto il piccolo? *Numeri soltanto le condotte che il bambino ha manifestato, nell'ordine in cui si sono verificate.*

Sicurezza	Si è subito calmato e tranquillizzato
Resistenza	Mi ha spinto via con rabbia o frustrazione
Evitamento	Ha continuato a giocare, come se non si fosse accorto di me
Resistenza	Ha battuto i piedi o scalciato
Resistenza	Mi ha colpito o tirato un calcio
Resistenza	E' rimasto agitato, era difficile da consolare
Resistenza	Si è allontanato da me con rabbia o frustrazione
Evitamento	Non ha mostrato in nessun modo di aver bisogno del mio aiuto
Evitamento	Mi ha ignorato
Resistenza	Si è tranquillizzato ma poi è stata di nuovo piagnucolosa
Evitamento	Si è girato dall'altra parte quando l'ho preso in braccio o l'ho toccato
Sicurezza	Si è rannicchiato contro di me o si è aggrappato a me fino a quando non si è calmato
Resistenza	Non mi ha permesso di tenerlo in braccio facilmente, ma è rimasto agitato (ha inarcato la schiena, mi ha allontanato con le braccia)
Sicurezza	Si aggrappava a me o mi seguiva se provavo a metterlo giù o ad allontanarmi
Evitamento	Si è voltato e si è allontanato camminando o gattonando, come se non ci fosse niente che non andava

3. **Pensi ad una volta in cui, oggi, si è allontanata/o dal bambino** (è uscita/o a fine turno, è andata/o in bagno o in un'altra stanza, l'ha messa giù, ecc., *però non consideri come separazione il metterlo a dormire*)

Descriva la situazione in 2-3 frasi, includendo il modo in cui lei ha risposto al bambino:

_____

_____

_____

A/ Come ha risposto il bambino alla separazione? *Numeri soltanto le condotte che il bambino ha manifestato, nell'ordine in cui si sono verificate.*

** La risposta "Ha pianto" dovrebbe essere accompagnata da un'altra risposta, che descriva meglio il comportamento del bambino nei confronti dell'educatrice.*

---	Ha pianto, urlato o gridato
Evitamento**	Ha fatto come se niente fosse
Sicurezza	Mi ha chiamato
Sicurezza	Ha voluto essere preso o tenuta in braccio
Resistenza	Mi ha colpito, tirato un calcio o mi ha spinto via
Evitamento	Se ne è andato per conto suo
Sicurezza	Mi ha seguito
Sicurezza	Si è aggrappato a me, non voleva lasciarmi andare
Evitamento**	E' stata contento di continuare a fare quello che stava facendo
Resistenza	Ha manifestato frustrazione, rabbia (per es., ha battuto i piedi, ha scalciato, …)
Evitamento	Era agitato, ma non ha dato segno di aver bisogno di qualcuno
Evitamento	Ha piagnucolato o pianto brevemente e ha continuato a fare quello che stava facendo, non mi ha guardato
Sicurezza	Mi ha salutato sorridendo e ha continuato tranquillo a giocare

B/ E qual è stata la reazione immediata del bambino quando l'ha rivista (risponda solo se il ricongiungimento è avvenuto nella stessa giornata)? *Numeri soltanto le condotte che il bambino ha manifestato, nell'ordine in cui si sono verificate.*

Sicurezza	Mi ha salutato (per es., mi ha sorriso, mi ha chiamato per nome, mi ha detto "ciao")
Resistenza	Ha battuto i piedi o scalciato
Sicurezza	Ha fatto segno di voler essere tenuto o preso in braccio
Resistenza	Mi ha colpito, tirato un calcio
Resistenza	Ha pianto ed è rimasta dov'era
Resistenza	Ha pianto, urlato
Sicurezza	E' venuto da me
Sicurezza	Mi ha portato un giocattolo o un altro oggetto
Evitamento	Si è girato dall'altra parte quando l'ho preso in braccio o l'ho toccato
Sicurezza	Era agitato, ma sono riuscito a calmarlo facilmente
Sicurezza	Si è rannicchiato contro di me o si è aggrappato a me fino a quando non si è calmato
Resistenza	Non mi ha permesso di tenerla in braccio facilmente, ma è rimasta agitato (ha inarcato la schiena, mi ha allontanato con le braccia)
Evitamento	Piagnucolava per conto suo (potrebbe avermi guardato brevemente)
Resistenza	Voleva essere tenuto in braccio, piagnucolava e voleva essere messo giù, poi voleva di nuovo essere preso in braccio
Evitamento**	Ha continuato a fare quello che stava facendo, tranquillamente
Evitamento	Mi ha guardato rapidamente, poi ha distolto lo sguardo, non ha sorriso o salutato
Evitamento	Ha cominciato ad avvicinarsi a me, poi si è voltato e se ne è andata da un'altra parte
Resistenza	Era agitato, ma NON sono riuscito a calmarlo e/o a consolarlo facilmente
Evitamento	Ha continuato a fare quello che stava facendo, ignorandomi (facendo come se non si fosse accorta di me)

Legenda

---	NESSUNA CODIFICA (Es.: Ha pianto, urlato o gridato). Dovrebbe essere accompagnata da un'altra risposta, che descriva meglio il comportamento del bambino nei confronti dell'educatrice.
Sicurezza	COMPORTAMENTO DI SICUREZZA, di richiesta di prossimità (Es.: Ha voluto essere presa o tenuta in braccio) o capacità di essere calmata facilmente (Es.: Si è subito calmata e tranquillizzata).
Evitamento	COMPORTAMENTO DI EVITAMENTO (Es.: Era agitata, ma non ha dato segno di aver bisogno di qualcuno) il bambino è a disagio e ignora l'educatrice o si allontana quando invece ne avrebbe bisogno.
Evitamento**	NO DISTRESS: il bambino è tranquillo, non manifesta disagio. Il comportamento viene codificato come No Distress SOLO SE E' L'UNICA CONDOTTA OSSERVATA E SEGNATA; se vengono segnati più comportamenti, il No Distress viene automaticamente codificato come Evitamento. Esempio: Se nella Parte A della prima situazione viene segnato solo l'item "Ha fatto come se niente fosse", questo verrà codificato come No Distress. Se invece viene segnato più di un item, per esempio: come "Ha fatto come se niente fosse" e "Se ne è andato per conto suo", entrambi gli item vengono considerati di Evitamento. Il **No Distress si differenzia dall'Evitamento** in quanto il bambino evitante è a disagio ma non richiede l'aiuto dell'educatrice quando ne avrebbe bisogno, mentre il comportamento No Distress riflette il buon adattamento del bambino al nido, il bimbo non richiede l'intervento dell'educatrice perché è tranquillo e non ne ha bisogno.
Resistenza	COMPORTAMENTO DI RESISTENZA (Es.: Mi ha colpito, tirato un calcio o mi ha spinto via) manifestazione di frustrazione, reazioni di rabbia e difficoltà ad essere consolato.

APPENDIX 3

Le chiediamo di ripensare al percorso formativo:

Diario dell'Attaccamento all'Educatrice (DAE)

	NO, per niente	Più NO che sì	Più SI che no	SI, assolutamente
1) Le ha fornito conoscenze nuove sullo sviluppo?	□	□	□	□
Può fare un esempio?				
_____				
_____				
_____				
2) Le ha dato modo di osservare più attentamente i bambini?	□	□	□	□
Può fare un esempio?				
_____				
_____				
_____				
3) Ha riflettuto su problemi che prima non si era posta?	□	□	□	□
Può fare un esempio?				
_____				
_____				
_____				
4) Si sente più capace di rispondere ai bisogni dei bambini?	□	□	□	□
Può fare un esempio?				
_____				
_____				
_____				

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