

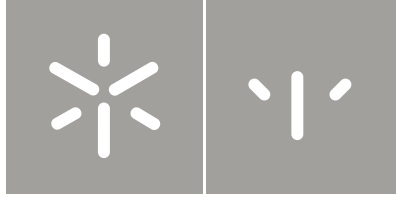


Universidade do Minho  
Escola de Psicologia

Joana Maria Ribeiro da Silva  
Attachment Disorganization and Attachment Disordered  
Behaviors in a Group of Portuguese Institutionalized Children

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Attachment Disordered Behaviors in a  
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Attachment Disordered Behaviors in a  
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Tese de Doutoramento  
Psicologia / Psicologia Clínica

Trabalho efectuado sob a orientação da  
Professora Doutora Isabel Maria da Costa Soares

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*To my son*





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# Resumo

A vinculação tem sido um dos tópicos mais estudados pela investigação realizada em crianças institucionalizadas pois, na maioria destes contextos, as crianças são privadas do estabelecimento de interações regulares e individualizadas com um número limitado e consistente de cuidadores. Em geral, os dados empíricos têm fundamentado um dos princípios básicos da teoria da vinculação, que se traduz na perspectiva de que a qualidade de prestação de cuidados institucional pode implicar graves riscos para o desenvolvimento da vinculação das crianças, podendo mesmo conduzir, em situações extremas, à impossibilidade da criança desenvolver uma relação de vinculação selectiva e organizada. Contudo, em Portugal não se tem assistido a um investimento da investigação em examinar não só a qualidade dos cuidados prestados pelos contextos institucionais, bem como as implicações desenvolvimentais desta vivência institucional, especialmente no que respeita à qualidade da vinculação em bebés.

Deste modo, o principal objectivo do presente estudo consistiu em descrever a frequência de desorganização e perturbação de vinculação num grupo de crianças portuguesas institucionalizadas e perceber se as diferenças individuais constatadas na vinculação se encontravam associadas a diferenças nas experiências das crianças relativamente ao risco familiar precoce e à qualidade da prestação de cuidados institucional.

Utilizando a psicopatologia do desenvolvimento como grelha conceptual, o presente estudo recorreu a uma abordagem multi-método e multi-nível para analisar a vinculação de 85 crianças, entre os 12 e os 30 meses de idade, institucionalizadas em Centros de Acolhimento Temporário do norte de Portugal. Em geral, os resultados mostraram-se consistentes com os princípios da teoria da vinculação e com a investigação empírica em crianças institucionalizadas, revelando uma frequência preocupante de desorganização e perturbação de vinculação neste grupo de crianças. A maioria destes comportamentos atípicos/perturbados de vinculação estavam associados a diferenças individuais na qualidade dos cuidados relacionais experienciados pelas crianças no contexto institucional. Por outro lado, as experiências de risco familiar contribuíram, de forma significativa, para a desorganização da vinculação, enquanto o funcionamento psicológico individual contribuiu

para a explicação dos comportamentos perturbados de vinculação das crianças, em particular para os sub-tipos indiscriminado e inibido e a idade da criança estava associada aos comportamentos de distorção de base segura.

# Abstract

Attachment has been one of the most recurrent research topics with institutional reared children. In these settings the children are often generally deprived of regular and individualized interactions with a limited and consistent number of caregivers. In general, the present empirical data support the main tenets of the attachment theory, i.e. the quality of institutional care can pose serious risk for children's attachment development and, in extreme situations, may even impede the child of developing a selective and organized attachment relationship. However, in Portugal, there still is lack of research to examine the quality of care provided by the institutional settings and the developmental implications of this rearing experience, namely the attachment quality of small children.

Thus, the main goal of the present study was to describe the frequency of attachment disorganization and disordered behaviors in a group of Portuguese institutionalized children and to examine whether these individual differences in attachment outcomes were associated with differences in children's experience of early family risk and quality of institutional caregiving.

Using developmental psychopathology as a framework, the current study has used a multi-method and multi-level approach to analyze the attachment outcomes of 85 children, aged between 12 and 30 months, living in institutional settings in the north of Portugal.

Overall, results were consistent with the theoretical assumptions of the attachment theory and with the empirical data from institutional reared children. The present findings revealed concerning frequencies of disorganization and disordered attachment behaviors in this group of children. Furthermore, most of these atypical/disordered forms of attachment seem to be associated with individual differences in the quality of institutional relational care experienced by the children. Family risk experiences contributed for children's attachment disorganization while individual psychological functioning accounted for children's attachment disorders, inhibited and indiscriminate sub-type. Children's age emerged as the variable more closely associated with secure base distortions behaviors.





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# Introduction

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*You Are My Sunshine*

*My only sunshine.*

*You make me happy*

*When skies are grey.*

*You'll never know, dear,*

*How much I love you.*

*Please don't take my sunshine away*

(Jimmie Davis & Charles Mitchell, 1940)

In the last few decades there has been considerable support to the contemplation of institutional rearing as a multidimensional deprivation experience due to the limited physical conditions, unfavorable caregiver/child ratios, and global poor quality of care provided.

Some early studies, clinical oriented, have identified and described a set of disturbed and/or atypical behaviors, frequently found in children exposed to early deprivation experiences (Bowlby, 1944; Goldfarb, 1945; Provence & Lipton, 1962; Spitz, 1946; Tizard & Rees, 1975). Regardless of the several different terms used to label these patterns of behavior, these classic studies have described the absence of discriminated attachment behavior, among these children presented either by an indiscriminate social approach and lack of wariness of strangers, or by an extreme social withdraw and lack of emotional reciprocity.

These classic studies had a determinant role in demonstrating the negative and pervasive effects of caregiving deprivation on children's social and emotional behavior.

Thus, some theoretical movements have followed these findings in an attempt to understand the specific impact of maternal deprivation and parental disruption on children's subsequent psychological development. Attachment theory (e.g. Bowlby, 1969/1982) emerged from this scientific movement and set the ground for the currently existent body of evidence accounting for the developmental importance of children's formation of a selective attachment relationship.

Meanwhile, attachment research has been dedicating to the development of empirical validated measures of attachment across the lifespan thus allowing for a deep understanding of the caregiving precursors and developmental correlates of attachment in infancy, childhood and adulthood. Accordingly, individual differences in caregiving experiences have been associated with individual differences in attachment quality (Ainsworth, Blehar, Waters, & Wall, 1978) and attachment quality, for its turn, has been seen as a protective or risk factor in terms of later developmental outcomes (e.g. Sroufe, Weinfield, Egeland, & Carlson, 2005a).

Recently, research has renovated its interest in the study of children exposed to extremely adverse environmental conditions. The fall of the communist regime in eastern European countries has revealed an extremely high number of children exposed to global and severe conditions of deprivation. This situation presented an important "experiment in nature" (Broffebrenner, 1979) that has been closely examined by developmental researchers. Attachment has been one of the most studied developmental domains and research has been pointing to a disturbing scenario. Institutionalized children have systematically revealed significantly higher rates of atypical attachment classifications (according to attachment theory based measures) and disordered attachment behaviors (according to early clinical studies based measures) as compared with foster children, adoptive children or children living with their biological families (Smyke, Dumitrescu, & Zeanah, 2002; Smyke, Zeanah, Fox, Nelson, & Guthrie, 2010; Vorria et al., 2003; Zeanah, Smyke, Koga, & Carlson, 2005).

However, it is important to acknowledge that although the attachment outcomes of institutionalized children have been thoroughly explored by international scientific community, there is a generalized lack of studies addressing this question in Portugal. The relevance of studying this question in a Portuguese sample is underlined by the significant number of children reared in institutional settings within the country. In the year of 2009, there were 9 563 institutionalized children in Portugal (Instituto de Segurança Social [ISS], 2010), of which 850 were under three years of age. Consequently, the current study aims to

answer this social and political need while assessing the attachment outcomes of a group of Portuguese institutionalized children. In particular, this study will focus on the associations between disorganization and disordered attachment behaviors and a set of variables related with children's early family risk factors, psychological functioning and institutional quality of care.

In the Part I of this study a theoretical and empirical review will be presented, first focusing on the broad developmental impact of early experiences and care concepts of attachment theory and then focusing on the specific issues regarding institutional rearing and attachment.

In the Part II, an empirical study about attachment disorganization and attachment disordered behaviors in Portuguese institutionalized children will be presented and discussed.



# **Part I**

## ***Theoretical and Empirical Review***





# Chapter 1



## *Developmental Impact of Early Experiences and Attachment*

### **1. DEVELOPMENTAL IMPACT OF EARLY ADVERSE EXPERIENCES: AN OVERVIEW**

At the end of the Second World War, scientific research like the one of René Spitz (1945, 1946), William Goldfarb (1945), Anna Freud and Dorothy Burlingham (1944) and John Bowlby (1944, 1951, 1953), focusing on the consequences of extreme deprivation on infants development, started to proliferate. The studies of Spitz and Goldfarb have especially called attention to the deleterious effects of institutionalization on children's cognitive and social behavior, that were first assumed by the two researchers as permanent or at least long-lasting and difficult to revert, even in the face of more favorable and stimulating environmental and caregiving circumstances.

Although all of these studies have called attention to the developmental risk of growing in adverse environments and away from parental figures, John Bowlby's work was particularly centered in the implications of parental disruption and maternal deprivation on children's personality development. The author started to empirically demonstrate the significance of maternal care when studying "*juvenile thieves*" at the London Child Guidance Clinic (Bowlby, 1944). In the sequence of this work, Bowlby found that a lot of these institutionalized teenagers displayed clinical relevant levels of "affectionless" behavior. Furthermore, a significant part of these "young thieves" had been separated from their mothers for prolonged periods of time, leading the author to hypothesize that these early experiences might be associated with their salient manifestations of "affectionless" behavior. Bowlby's growing interest in the subject of maternal deprivation led him to answer a request from the World Health Organization (WHO) to write a monograph, "*Maternal Care and Mental Health*" (1951), describing the importance of the quality of parental care for children's subsequent development. This publication was the window for a significant amount of empirical and theoretical movements that later gave rise to attachment theory, thoroughly described in the next section.

One of the most relevant studies of the impact of maternal separation/deprivation on children's personality and emotional development was conducted by Bowlby and one of his researchers, Jimmy Robertson (Bowlby, 1953, Robertson & Bowlby, 1952). Mainly, this study consisted on the systematic observation and documentation of children separated from their families through different periods of time, and placed in residential hospitals or nurseries. Based on this knowledge, Bowlby (1969/1982) described three main phases regarding children's reaction to the separation of a maternal figure:

- a) *protest*, during which children express their distress and use all of their emotional and behavioral repertoire in order to attempt the mother figure's return, most times rejecting the alternative or surrogate caregivers;
- b) *despair*, in which children can still show some signs of missing their mother but reduce their efforts and behavioral manifestations of search, usually looking more quiet and less active;
- c) *detachment*, frequently seen as a more optimal phase since children seem more compliant and responsive to their alternative caregivers, giving the idea of full

recovery from maternal separation. However, Bowlby described that children in detachment phase eventually ceased to respond to institutional caregivers' absence or to the biological mother's presence, looking "easy", "cheerful", "unafraid of anyone", appearing "no longer to care for anyone" (p. 28).

These findings, and in particular Robertson's film "*A Two-Year-Old Goes to Hospital*" (1953) which revealed a toddler's distress after a few days of hospitalization without parental care, were effective in producing changes in the way pediatric hospitals and nurseries were organized, paying thereon more attention to caregiving practices and stimulating parental attendance during children's internment in health care services.

Keeping up with these findings, the developmental impact of early adverse experiences has been one of the most studied topics in child psychopathology. Several conceptual models have been used to guide theoretical and empirical work in this area. In the following, two of the most widely used paradigms will be described:

- a) *Sensitive or critical periods models*, assume the need for specific environmental conditions in specific developmental moments in order for normative development of any given domain to occur (O'Connor, 2006). There is a phylogenetic principle underneath this model since it is especially concerned with major forms of contextual deprivation and their impact in the survival of the species, giving less attention to minor contextual variations and the way they give rise to individual differences. This model has been especially used in animal research, showing that extreme conditions of early environmental deprivation, during critical ontogenic periods may permanently compromise development, given that intervention efforts out of that sensitive period will produce little or no change (see O'Connor, 2006). Among animal research, one of the most well known examples of a species' typical behavior with a sensitive period of development is birds' *imprinting*. Lorenz (1982) has clearly shown that after imprinting during the sensitive period, goose were not able to reverse the process and imprint on another subject later on, even if the first object of imprinting was a human and the potential substitute was a member of the same species. Although this model has not been widely used in human research the importance to test its assumptions is becoming more prominent with the growing body of research about the effects of early global

deprivation experienced by institutionalized children (O'Connor, 2006). In particular, some studies suggest that language acquisition may be especially susceptible to a sensitive period. One case study has described innumerable language development limitations of a girl that due to extreme circumstances of abuse was deprived of any contact with her mother language until adolescence (Curtiss, 1977). Inclusively, empirical data suggests that a subject's proficiency in language acquisition severely declines with age (especially regarding the formal aspects of language), starting from four years old onward (Newport, 1990).

- b) *Life Course or Cumulative Effects models* present a true developmental perspective of the impact of early experiences on psychological development. This model views human development as being determined every step of the way through the life cycle, by the conjunction of risk and protective factors experienced by the individual. Research oriented by this model is focused on understanding the impact of different adverse experiences and risk factors for individual later functioning and adaptation. However, in Cumulative Effects models the relationship between risk and maladaptation is not taken linearly. The moderator effect of risk and protective factors arising through the lifespan is considered when it comes to explain each individual developmental pathway. In fact, two main principles are suggested within these models: i) *multifinality principle*, suggesting that several individuals exposed to the same risk factors may reveal different developmental outcomes; and ii) *equifinality principle*, suggesting that individuals with different patterns of early experiences and thus exposed to different kinds of risk and protective factors may reveal similar developmental outcomes. These dynamic or transactional models consider that psychological processes are key variables in the mediation of early adversity and later developmental outcomes and are the ones more widely used among developmental theories and research studies.

These models provide different but equally important perspectives for the study of the effects of early deprivation in child development. Sensitive period models call attention to the difficulties children may face when attempting to develop in extremely hostile environments. The timing of deprivation and subsequent intervention efforts are particularly underlined by these models. It is assumed that change, in terms of more

adaptive development, may be difficult and even impossible if children are not given the opportunity to experience more favorable contexts within the sensitive period of a given developmental outcome. On the other hand, life course models provide the view of development as *transformational* in its nature, being the early experiences just the beginning of a whole set of interactions that will come together to shape a specific developmental pathway. In the words of Sroufe and Colleagues (2005a):

*Development is not linear; it is characterized by both continuity and change. What happens early on does not lead in a direct way to a similar-looking outcome later. There is always a complex, ongoing transaction between the person, as developed to that point, and a changing array of challenges and opportunities, stresses and supports.* (p. 11)

In this sense, early experiences are not deterministic in any way but somehow set the framework for later development. Change is possible at any moment, although it might be constrained by the total history of the individual until that point in time (Sroufe et al., 2005a). This dynamic interplay of continuity and change in human development may be illustrated by data from developmental attachment research. Some findings point to the existence of continuity of attachment representations from infancy to childhood (Sroufe, Carlson, & Shulman, 1993) and to adulthood (Hamilton, 2000; Main, Hesse, & Kaplan, 2005; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Sroufe et al., 2005a) but there is also evidence of discontinuity, especially in the case of significant environmental changes or increasing in the child's exposure to risk factors (Grossmann, Grossmann, & Kindler, 2005; Main et al., 2005; Weinfield, Sroufe, & Egeland, 2000).

On the other hand, this understanding of adaptive and non adaptive functioning across the lifespan can be framed into a developmental psychopathology perspective. Developmental psychopathology has been described as "*the study of the origins and course of individual patterns of behavioral maladaptation, whatever the age of onset, whatever the causes, whatever the transformations in behavioral manifestation, and however complex the course of the developmental pattern may be*" (Sroufe & Rutter, 1984, p. 18). Thus, it implies the use of multiple empirical and theoretical approaches in order to analyze the multiple domains and processes that come to constitute an individual (e.g. psychological, social, cultural, biological) and that through their

interaction the individual's adaptive pathways might be influenced (Cicchetti & Dawson, 2002). So far, it has been shown, for instance, that early social and relational experiences may influence brain development, in terms of its structure and functioning as well as genetic expression and these changes will for their turn influence individuals' behavior (see Cicchetti, 2006).

In discussing this myriad of influences to human behavior it should not be forgotten that the individual has a preponderant and active role in changing these environmental influences as well. This complexity, inherent to human development, is not easy to study. In particular, research on the effects of early environmental risk for developmental outcomes is hard to delineate, especially when working with human samples. This is probably why most studies focusing on sensitive periods of development are conducted with animals, where environmental and individual variables manipulation is easily accomplished. The same does not happen in human research where it is not possible to purposefully submit individuals to extreme adverse life experiences, in order to study the impact of this early adversity in their subsequent development. Therefore, researchers usually study these implications through real life situations that can work as "*experiments in nature*" (Broffebrenner, 1979), i.e., situations involving children or adults that for some reason are exposed to unfavorable environmental characteristics like natural disasters, war situations or institutional rearing (O'Connor, 2006).

Several risk factors have been associated with children's developmental outcomes but prenatal factors and the quality of early caregiving environment are some of the most studied variables (O'Connor, 2006). For instance, maternal anxiety in pre-natal period has been associated with prematurity (Hedegaard, Henriksen, Sabroe, & Secher, 1993), cognitive and language difficulties in infancy (Laplante et al., 2004) and social and emotional problems when children arrive at pre-school and school age (O'Connor, Heron, Golding, Beveridge, & Glover, 2002; Rodriguez & Bohlin, 2005). On the other hand, less optimal forms of caregiving have been associated with behavior problems at 36 months (Shaw & Vondra, 1995), with internalizing and externalizing symptoms in childhood (Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989) and with anti-social behavior in adolescence (Aguilar, Sroufe, Egeland, & Carlson, 2000).

However, the task of analyzing the developmental impact of early risk factors is usually not a simple one since the vast majority of risk factors are not limited in time and isolated in nature (O'Connor, 2006). For instance, low socioeconomic status has been pointed as one of the most significant risk factors for children's development since it is frequently associated with other kinds of risk factors such as infant prematurity, adolescent parenthood, single parenthood, and parental psychiatric disorder (Lyons-Ruth, Connell, & Grunebaum, 1990). Given this scenario, and according with the life course models, it usually can not be attributed to a given risk factor, limited in time, the responsibility for a specific outcome of psychological development. On the other hand, if a developmental perspective is assumed, disturbance would be the product of a cumulative history of risk and protective factors and all of these interactions would have to be taken into account when trying to understand it. Additionally, risk factors may have a differential impact in different individuals and may be more susceptible of negatively affecting development when combined with other risk factors. As Cicchetti (2006) states "*within individuals, single risk processes may not have sufficient power to eventuate in a mental disorder on their own. However, their impact might become more potent as they are combined with additional sources of risk*" (p. 9). Then again, protective factors have to be considered in this equation, in the sense that they may attenuate the negative impact of risk factors (Luthar, Cicchetti, & Becker, 2000) and the *exponential* effect of its combination. Furthermore, the influence of these risk and protective factors must be understood in a broader picture, in which the mutual influences of individual variables as well as the multiple contextual systems in an individual's life are taken into account (see Bronfenbrenner, 1979). This approach is especially important given the recognition that some individuals display adaptive development and functioning even after experiencing severe or prolonged adversity or traumatic circumstances, which has been described as resiliency (Luthar et al., 2000). Since these individuals seem to be working considerably well, contrary to what might be expected considering the negative circumstances they have been exposed to early on, it is crucial to go further and look more broadly for the multi-level processes or mechanisms that may be positively influencing this individual's developmental pathway.

In sum, as development is a lifespan process, psychopathology may arise at every moment and individuals can fluctuate between adaptive and maladaptive patterns of

functioning across life (Cicchetti, 2006). However, there is a recognition that developmental timing is crucial. First, because adverse circumstances can have a different impact in the individual, depending on the specific developmental phase he is living (Rutter, 1988), seconding, because the transitional moments in development can become especially important opportunities for turning into a more adaptive pathway in the face of specific supportive factors (Quinton & Rutter, 1988) or therapeutic intervention (Toth & Cicchetti, 1999).

On the other hand, from a developmental point of view, psychopathology is not seen as a being present or absent in absolute ways, as usually occurs in psychiatric diagnostic manuals but instead it is viewed as dimensional and necessarily dependent of the lens through which it is being looked at (Cicchetti, 2006).

In the following, the main theoretical concepts of the attachment theory will be briefly reviewed, in the light of the developmental psychopathology paradigm. In this sense, normative development of attachment will be addressed, then a few questions about the assessment of attachment in infancy will be reviewed and then atypical forms of attachment development like disorganization and attachment disorder behaviors will be discussed.

According to a developmental psychopathology framework, disturbance is situated somewhere along the continuum between adaptive psychological functioning and psychopathology and the variation along this continuum “*may represent individuals who are currently not divergent enough to be considered disordered but who may progress to further extremes as development continues*” (Cicchetti, 2006, p. 11). In this perspective, it is crucial to have a clear image of normative and ‘abnormal’ attachment behavior in order to more easily identify the deviations towards the negative extremes of this continuum. At the end of this exposition a few attachment-based intervention strategies, aiming to turn these individual pathways and prevent maladaptive outcomes, will be discussed.



## 2. ATTACHMENT

### 2.1. Attachment Theory: Main Theoretical Concepts

Attachment theory derived from Bowlby's interest in early relational experiences and his conviction that these affective experiences might influence children's future personality development and psychological adaptation. Bowlby was particularly interested in the study of the attachment bond between a child and an attachment figure and the way in which the disruption of this bond could affect the child's subsequent development. By this time ethology researchers had been presenting striking results considering the effects of maternal deprivation in animal behavior. Harlow's studies with rhesus monkeys assumed a particular relevance in demonstrating that baby rhesus monkeys preferred a "warm", "non feeding" mother over a "cold", "feeding" mother (Harlow, 1958; Suomi & Harlow, 1978). This kind of empirical data has helped to invalidate the secondary drive hypotheses, assuming that the main explanation for the development of the bond between infants and their mothers (or mother figures) was their provision of food to the babies, that were still too immature to assume that provision on their own (see Bowlby, 1969/1982).

Bowlby (1969/1982) started to develop the idea that nearly all children developed an attachment bond with the mother or a mother figure, and that this bond was not dependent upon the maternal feeding function. Instead, the author hypothesized that it was an affective bond (i.e. persistent, with a specific person, within an emotionally significant relationship, involuntary separations from the other result in distress; Ainsworth, 1989) that had the particularity of functioning as a source of comfort and security for the child. So, although an attachment is relationship specific, and the only way to understand it is to analyze the specific dyadic context in which it occurs, it is important to underline that the attachment bond is an individual bond that a child establishes with a significant adult, more competent for providing him/her with care and comfort (Zeanah, Mammen, & Lieberman, 1993).

In this sense, and breaking up with some indisputable notions of psychoanalytic theory at the time, Bowlby started to develop attachment theory as "*an ethological approach to personality development*" (Ainsworth and Bowlby, 1991, p. 333) and currently, it is not possible to talk about attachment theory without mentioning Mary

Ainsworth (1963, 1967, 1982) and John Bowlby's work and his trilogy: Attachment (1969/1982), Separation (1973) and Loss (1980).

This ethological influence to attachment theory accounts for its integration of evolutionary biology and systems theory concepts, starting with the conceptualization of attachment behavior as the product of a behavioral system.

Although infants act differently towards the mother figure nearly since birth (e.g. smiling, following her movements through vision), according to Bowlby (1969/1982), attachment behavior only arises when infants not only discriminate between the mother and other adult figures but also actively seek proximity to her, which usually occurs during the second half of the first year of life. Thus, it was hypothesized that infants would instinctively develop a set of behavioral systems (e.g. attachment, exploration, fear) organized in order to help them cope with stressful or threatening situations. In this way, when infants felt threatened by internal or external cues attachment behavior would be activated, usually leading infants to approach the caregivers in search of protection (Bowlby, 1969/1982). From an evolutionary perspective, the bottom assumption was that increasing proximity with an adult caregiver, more capable of facing threatening and even dangerous situations, would raise infants' chances of survival. Thus, attachment was conceptualized as a control system that allowed the child to monitor the availability of the attachment figure.

For an infant, one of the most threatening situations would be the separation from the attachment figure. This is the reason why children are usually observed to display attachment behavior when the mother is out of their sight or following her when a separation is expected (Bowlby, 1973). Fearful behavior would also be expected when infants face unfamiliar people or unfamiliar places. In this case, children would be simultaneously motivated to flee or withdrawn from this potentially threatening situations (through the activation of the fear/wariness system) and to approach the attachment figure for protection and comfort (through the activation of the attachment system). Furthermore, the higher the perceived threat or obstacle, the higher would be the level of activation of the attachment system (Bowlby, 1969/1982).

Hopefully, the proximity and/or contact with the caregiver would allow the child to “feel secure” again, lowering or terminating the activation of the attachment behavior and triggering the exploration system, leaving the child available to explore the world.

In sum, it could be assumed that the attachment and fear systems work in a synchronized way, since the activation of the fear system through natural or cultural “clues to danger”, usually triggers the activation of attachment behavior. On the other hand, the attachment and the exploratory systems work in an antagonistic way since the activation of the attachment behavioral system usually inhibits or at least diminishes explorative behavior.

Hence, the infants’ adequate balance between attachment and exploration systems would be crucial for them to use the caregiver as a *secure haven* in times of threat and *secure base* from which to explore (Ainsworth, 1978). This implies that the “*attachment system must remain continually responsive; hence the infant will at some level continually ‘track’ the physical and psychological accessibility of the primary attachment figure(s), whether or not attachment behavior is explicitly displayed at any given time*” (Main et al., 2005, p. 254).

These behavioral systems would build up as a result of children’s interaction with the environment and particularly with the mother figure since the caregiving behavioral system was considered to be reciprocal to children’s attachment behavior. Therefore, from an evolutionary point of view, there was be an optimal phylogenetic environment for the development of attachment behavior, which could be conceptualized as the existence of a consistent, responsive and available maternal figure to whom a child would be able to develop an attachment bond (Ainsworth et al., 1978). When an infant is reared in an environment that is not minimally adapted to the development of attachment behavioral systems, giving the child no opportunity to consistently interact with a caregiver, as it is frequently the case of institutionalized children, this will probably have consequences in terms of their social and emotional development and “*anomalies may occur*” (Ainsworth et al., 1978, p. 9). These anomalies can correspond to a profound disturbance in the child’s ability to manage the dynamic process between attachment and exploration or can assume more radical configurations such as the child’s failure to form a selective attachment to a caregiver. These correspond to atypical or disordered forms of attachment, a topic that will be described later.

Despite the importance of the quality of caregiving to infants' organization of attachment behavior, it is important to underline the highly active role of the child within the process. Using a vast behavioral repertoire of signaling or approach behavior (e.g. cooing, crying, smiling, reaching) the child has a preponderant role in the initiation of the interactions that will minimize the dyadic distance and mold the development of attachment behavioral systems (Bowlby, 1969/1982). These behavioral systems mediating attachment behavior will increasingly become more complex and *goal-corrected* throughout the four phases described by Bowlby (1969/1982), in the development of an attachment relationship:

- a) *Phase I - Orientation and signals with limited discrimination of figure (birth to 8/12 weeks):* Using the available skills (e.g. smiling, reaching) the infant orients him/herself towards human stimulation. Through this behavior the baby is able to increase proximity and interaction with his/her caregivers.
- b) *Phase II - Orientation and signals directed towards one (or more) discriminated figure(s) (12 weeks to 6 months):* The infant exhibits the behavioral repertoire described in phase I but these behaviors are differentially expressed towards the mother figure and the rest of adults available.
- c) *Phase III - Maintenance of proximity to a discriminated figure by means of locomotion as well as signals (6/7 months to 2/3 years of life):* Infant's attachment to the mother is completely developed and he/her can show it by following her when she leaves, greeting her on reunion and using her as a base for exploration. The baby also starts to show some wariness regarding strangers and behaves differently to different adults according to his/her relationship with them.
- d) *Formation of a Goal-corrected partnership (from 2/3 years onwards):* This phase is mainly a result of infant's growing cognitive skills, allowing him/her to infer about the mother's own thoughts and feelings and adapt his/her behavior according to that reading. This phase results in a much more complex and sophisticated relationship, what Bowlby denominated a "*true partnership*".

The last phases in the development of an attachment relationship demand an equivalent development of children's cognitive skills allowing them to build up expectations about the continuous interactions with the caregiver and progressively construe inner representations of the attachment figure, self and the environment, which

Bowlby (1973) called *internal working models* of attachment. These internal expectations about the caregivers' availability and responsiveness to the infants' signals would generalize into representations about the others' availability and responsiveness, and about the worth of the self, thus influencing the future social and affective relationships (Bowlby, 1973). In this sense, children whose attachment figures consistently and sensitively responded to their attachment signals would develop internal working models of a secure self, responsive parents and positive world, facing it with more confidence and turning to others for help in case of need. On the other hand, children with inconsistent and insensitive attachment figures would develop working models of an insecure self, unreliable parents and threatening world.

Overall, these models would not only allow individuals to anticipate the future but particularly would help them to decide about "*which specific attachment behavior(s) to use in a specific situation with a specific person*" (Cassidy, 2008, p. 7). However, this does not mean that "internal working models" developed based on infancy caregiving experiences would determine an individual's pattern of social interactions and emotional functioning. These internal representations would be constantly influenced by subsequent experiences, being especially impacted by significant changes in caregiving and contextual circumstances (Bowlby, 1973). According to Bowlby's pathway model of development, change would be always possible although limited by previous experiences.

## **2.2. Assessment of Attachment in Infancy**

The assessment of attachment in infancy has its origins in Ainsworth and colleagues' work (1963, 1967, 1978), relying on extended naturalistic observations of child and caregiver interactions, first in a group from Uganda and then in an US sample from Baltimore.

Later in her study with the Baltimore sample, Ainsworth and her students developed a standard protocol called Strange Situation Procedure (SSP, Ainsworth, Blehar, Waters, & Wall, 1978) that is currently the most widely used measure to assess the quality of attachment in infancy. The SSP (Ainsworth et al., 1978) consists of eight episodes, usually conducted in a laboratory setting. In episode 1 the experimenter introduces the mother and the child to the unfamiliar room where they remain by

themselves for three minutes (episode 2). Then, an unfamiliar adult enters the room (episode 3), and after a silent period initiates interaction with the caregiver and then with the child. This episode also lasts for three minutes and then the caregiver leaves the room and the child stays with the stranger for three minutes (episode 4). The caregiver returns to the room, giving rise to the first reunion episode (episode 5), and the stranger leaves. The child and the caregiver stay alone for another three minute period and then the caregiver leaves again, leaving the child alone (episode 6). After three minutes, the stranger enters and interacts with the child, remaining at the room for three more minutes (episode 7). Finally, the caregiver returns to the room, and the stranger leaves originating the second reunion situation that lasts for three minutes until the end of the procedure. As it can be seen from this description, children are exposed to the presence of an unfamiliar adult, two separations from the caregiver, and a period of being left alone, all in an unfamiliar setting. The intent of this procedure design is to create natural clues to danger, allowing the observation of children's balance of attachment and exploratory behavior, and thus allowing the assessment of children's quality of attachment regarding the caregiver.

Ainsworth and colleagues (1978) found that children displayed different behavioral patterns along the procedure and that these differences could be captured through the scoring (on a seven point scale) of the child's interactive behavior regarding *proximity seeking, contact maintaining, resistance and avoidance*. Based on the assessment of the child's affective and behavioral pattern according to these criteria, three patterns emerged to qualify children's attachment to the mother figure: secure, insecure or anxious-resistant/ambivalent and insecure or anxious-avoidant. The focus for determining these patterns of attachment was on infants' behavior throughout the procedure with special emphasis on the moments of reunion with the mother.

According to attachment theory, a brief separation from the attachment figure in a strange environment would predictably activate children's attachment behavior. Thus, children would be expected to make some effort to interact, achieve proximity and/or contact with the mother as soon as she came back into the room. Accordingly, this positive interaction, proximity and/or contact with the mother would reassure the child, restore her feelings of security and terminate attachment behavior, giving place to exploration. This behavioral sequence was found among most part of the infants (with small intra-group differences) and these children were classified as being securely attached to their

mothers (B pattern). These children's response to separation greatly varied as they could be very distressed, searching and following the mother as she leaves, or they could display little distress and no crying on both separations. However, on reunion they immediately acknowledged their mothers' presence, initiating interaction with her, sharing positive affect and globally using her as a source of comfort and secure base from which to explore.

On the other hand, some children also manifested distress on separation and actively looked for proximity with their mothers on reunion but these children did not seem to be truly comforted by this proximity/contact. Instead, displayed ambivalent feelings and behaviors regarding the need for contact and revealed unable to terminate attachment behavior and return to exploration. These children were preoccupied with the caregiver's whereabouts during the whole procedure with visible implications for the quality of exploration. The children in this group were classified as insecure-resistant/ ambivalent (C pattern).

The third group, of insecure-avoidant children (A pattern), showed little or no distress on separations but what distinguished them from securely attached children was the lack of recognition for the mother's return. These children did not make a move to achieve proximity and/or contact and some did not even smile or greeted the mother on reunion moments, ignoring her completely. However, this does not mean that these children were not distressed by the mothers' absence. In fact, a closer examination revealed that the quality of avoidant children's exploration was clearly poor during separation and reunion moments. Subsequent studies assessing these children's heart rate proved that they were actually aroused (Sroufe & Waters, 1977). What seemed to be happening was that since avoidant children were not able to use the relationship with mother to help them managing the distress, they did not seek proximity but also did not get to feel really comforted and secure to explore the world which was reflected in their poor quality of exploration. Nevertheless, they still kept focusing on the toys which, according to Main (1981), may be a strategy to "shift their attention" and thus inhibit attachment behavior.

These three behavioral patterns through SSP were assumed to reflect the differences in children's expectations about how the parents would respond to their distress. In this sense, if the children were confident in the parent's availability and

responsiveness to their distress signals they would probably be more emotionally open in asking for contact and would be quickly reassured by the parents' presence and/or proximity. If, on the other hand, the children expected rejection, they would redirect their attention to the toys and avoid approaching the caregiver. In the same sense, the anticipation of inconsistent responsiveness from the parent figure would take the children to amplify their signals of distress.

Following this thought, Ainsworth and colleagues (1978) examined the associations between children's behavioral patterns in SSP and the quality of caregiving they experienced at home. A significant correspondence was found between these children and their parent's patterns of behavior. In particular, security of attachment was associated with higher responsiveness and sensitivity from the mother to the infants' cues and communications. In contrast, children with avoidant attachments usually experienced caregiving characterized by rejection of their distress signals and children with resistant attachment frequently had mothers with inconsistent patterns of caregiving and not rarely ambivalent in their feelings towards the child, with some revealing masked feelings of anger.

Although these patterns of attachment may be associated with qualitatively different forms of emotional regulation and later adaptation (see section 2.4., this chapter), they reflect organized behavioral patterns of attachment, that is "*coherent patterns that can be described in terms of expectable behaviors and functions*" (Sroufe et al., 2005a, p. 98-99).

In this sense, it is expected that, in stressful situations children will organize their attachment behavior according to their expectations of the caregivers' response or "internal working models of attachment". Thus, the maximization of attachment behaviors will allow children to keep inconsistent caregivers close and attentive while the minimization will avoid further rejection and increase proximity with caregivers that usually reject the child's cues of distress (Main & Solomon, 1990).

Attachment research has been supporting the validity of the patterns of attachment defined by Ainsworth and colleagues (1978), showing that the high majority of children from low risk samples can be reliably classified into one of these categories. However, the affective and behavioral patterns manifested by some children at SSP (Ainsworth et



al., 1978) do not seem to fit this classification system. In some cases, the criteria do not seem to be comprehensive enough to capture the wide myriad of behaviors exhibited or, on the other hand, are not met consistently, preventing the classification of the behaviors displayed into a single category (Barnett & Vondra, 1999).

Furthermore, according to Barnett and Vondra (1999), these signs of atypical attachment can be manifested at different levels, namely:

- a) *Level of behavioral systems*, as initially described by Bowlby (1969/1982), there are four main behavioral systems responsible for regulating infants behavior (attachment, affiliation, fear wariness and exploration), and although their relative balance is differentially manifested through children classified in A, B and C patterns, they are always manifested in coherent ways. On the contrary, in atypical attachment configurations sometimes these systems are not even activated (e.g. the child does not display attachment or exploration behavior) or are manifested in counter intuitive and unexpected ways (e.g. child displays fear and attachment behavior towards the caregiver) through SSP;
- b) *Level of social and emotional interactive behavioral patterns*, as described by Ainsworth and colleagues (1978), children exhibit different but coherent combinations of more or less intense manifestations of proximity seeking, contact maintaining, resistant and avoidant behavior throughout SSP which allows for a classification into an A, B or C pattern. In atypical attachment configurations, these four types of affective and behavioral manifestations are combined in unusual and unexpected ways (e.g. simultaneous display of high resistance and avoidance). Moreover, atypical attachment may also be manifested through other affective and behavioral indicators that violate the coherence implicit in A, B and C patterns such as the absence of positive affect in conjunction with lack of avoidance and resistance (i.e. infant is not suitable for classification on A or C categories but the absence of positive affect also excludes a B classification), or the display of intense distress on separation moments followed by high avoidance on reunion;
- c) *Level of specific behavioral indices* has been pointed by some of the main conceptualizations as sufficient for the classification of atypical attachment. Although the traditional attachment classification system does not contemplate

discrete behavioral manifestations as indicators of distinct patterns of attachment, it has been considered that children's intense display of fear, depression, or stress towards the caregiver at SSP, are sufficient probes to classify children's attachment as atypical, as long as that behavioral episode is attributable to that dyadic relationship and not to children's neurological impairment or other kind of developmental disorder (Crittenden, 1985; Main & Solomon, 1990).

In the light of the consideration that traditional attachment classification system (Ainsworth et al., 1978) was manifestly insufficient in accounting for all affective and behavioral manifestations at SSP, especially when high risk samples were considered, a few alternative conceptualizations have been suggested.

Crittenden (1988) has proposed an Avoidant/Ambivalent Pattern (A/C), characterized by children's display of relatively high levels of avoidance and resistance, as well as proximity seeking and contact maintaining behaviors during SSP. Children may also exhibit atypical repetitive movements, such as rocking. Crittenden (1999) considers this pattern as a child's organized strategy to cope with the unpredictability of caregiver's behavior, meaning that the children would constantly adapt their behavior according to their perception of the caregiver's reaction. Lyons-Ruth and colleagues (1987) have proposed an Unstable/Avoidant (U-A) pattern of attachment, that would be manifested through the display of a severe decrease in avoidance behavioral ratings (Ainsworth et al., 1978), from the first to the second reunion of SSP. Thus, the child would not be able to maintain the strategy of avoidance on the second reunion, when the stress of the procedure is supposed to increase. However, the use of this additional category of attachment classification across research has been pretty restricted. On other hand, some limitations have been pointed to this category like the lack of continuity over time and the fact that it has been identified in a very low percentage of children, even in risk samples (Vondra, Hommerding, & Shaw, 1999).

Of all the alternative criteria, designed to assess attachment manifestations during SSP, the Disorganized/Disoriented (D) pattern seems to be the most comprehensive and widely used to assess atypical attachment in infancy, and will be described in detail.

The D category was developed in 1990 by Main and Solomon when they found that a significant number of children exhibited bizarre or apparently inexplicable behaviors during the SSP (Ainsworth et al., 1978), like asymmetries in movement and facial expressions, expression of apprehension or fear towards the attachment figure, freezing, stereotypies and anomalous movements, etc.

Furthermore, after a careful revision of these cases they understood that all of these children showed a common characteristic: lacking an organized and coherent strategy for dealing with the stress induced by the experimental procedure (Main & Solomon, 1990). Therefore, unlike A/C category, conceptualized by Crittenden (1999), as an organized strategy to cope with stress developed in the face of major caregiving instability, the D category was viewed by Main and Solomon (1990) as the absence of an organized strategy or a breakdown in the child's strategy to cope with stress. This made it difficult to classify these children according to traditional and organized categories defined by Mary Ainsworth and colleagues (1978; Insecure Avoidant - A; Secure - B; Insecure Ambivalent/Resistant - C).

Consequently, Main and Solomon (1990) delineated seven different categories for classifying children's atypical behaviors at SSP:

1. *Sequential Display of Contradictory Behavioral Patterns* (e.g. child exhibits extreme attachment or angry behavior followed by avoidant or freezing behavior);
2. *Simultaneous Display of Contradictory Behavioral Patterns* (e.g. child exhibits avoidant behavior simultaneously with proximity seeking);
3. *Undirected, Incomplete and Interrupted Movements and Expressions* (e.g. child displays strong distress and moves away rather than to parent);
4. *Stereotypies, Asymmetrical Movements, Mistimed Movements and Anomalous Postures* (e.g. child displays prolonged rocking or other repeated movements without visible function);
5. *Freezing, Stilling and Slowed Movements or Expressions* (e.g. child presents identified movements or expressions suggesting lack of orientation);
6. *Direct Indices of Apprehension Regarding the Parent* (e.g. child gets clearly hypervigilant in the presence of the parent);

7. *Direct Indices of Disorganization or Disorientation* (e.g. child raises hands to mouth on the moment of reunion with wary expression).

Thus, beyond attachment security or insecurity, this coding scheme allowed the assessment of children's disorganized or disoriented attachment behaviors in SSP, according to a nine point scale. It is important to acknowledge that:

*“Bouts of disorganization sufficient for assignment to the D category can be brief, sometimes lasting just 10-30 seconds. Since these bouts are understood as evidencing a ‘temporary collapse of behavioral and/or attentional strategy’ under stress, a best-fitting alternative secondary placement (e.g., ‘disorganized/avoidant’) is always assigned as well”.* (Main et al. 2005, p. 282)

Main and Hesse (1990) further proposed that this breakdown in attentional and behavioral strategies occurred because the caregiver, who was expected to be the haven of safety, offering the child comfort in stressful situations, was also a source of threat. Therefore, the child experienced two incompatible behavioral tendencies i. e. to approach and to move away from the caregiver. This irresolvable paradox prevents the child from using the parent to cope with fear through an organized behavioral strategy, leading instead to a set of bizarre and disorganized behaviors. This collapse in the infants' behavioral strategy severely compromises the attachment relationship and its phylogenetic function of assuring infants' protection and survival (Sroufe, Egeland, Carlson, Collins, 2005b). Furthermore, it has been associated with infants' experience of increased stress and dysregulation, as shown by accelerated heart rates and higher salivary cortisol responses in SSP (Hertsgaard, Gunnar, Erickson, & Nachmias, 1995; Spangler & Grossmann, 1993).

Disorganized attachment classifications have been extensively reported in samples of maltreated children (see Cyr, Euser, Bakermans-Kranenburg, van IJzendoorn, 2010). For instance, Cicchetti, Rogosch and Toth (2006) have found that 90% of their sample of maltreated children was classified as disorganized in SSP, a very high rate compared to the control group of low-income children where 43% had the same classification. However, what appears to be crucial for the development of a disorganized attachment is not the experience of abuse in itself, but the repeated experience of a frightening/frightened behavior by the caregiver (Main & Hesse, 1992; Schuengel,

Bakermans-Kranenburg, & van IJzendoorn, 1999). The reasons for the caregiver to exhibit this kind of threatening behavior can be diverse but are probably associated with their own past, early attachment experiences and unresolved fears (Main & Hesse, 1990). In support of this hypothesis, meta-analytic results (Madigan et al., 2006; van IJzendoorn, 1995) have shown that parents with an unresolved state of mind on the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996) were more likely to have children classified as disorganized at the SSP (Ainsworth et al., 1978). Adults with an unresolved/disorganized (U) classification usually display some disorientation or disorganization when the subject of losses or potential traumatic events is approached in the interview. Parental unresolved or unintegrated experiences of trauma and loss may be frightening and sometimes overwhelming for these adults, hindering their effective response to children's attachment cues (Hesse & Main, 2006). Even though these parents did not necessarily abuse their children, thoughts or emotions associated with their own unresolved loss or trauma might arise in the context of the interactions with their children, leading to frightening/frightened behaviors (Lyons-Ruth & Jacobvitz, 1999; Main & Hesse, 1992). Main and Hesse (1992) have described several subtypes of frightening/frightened behavior that could be observed in these parents' interactions with their children like threatening postures, dissociative states or trance-like postures, timid or differential behavior, spousal or romantic behavior, etc. Currently, there is a significant amount of research supporting the association between these forms of parental frightening/frightened behavior, infants' disorganized attachment and parents' unresolved states of mind (Schuengel et al., 1999). Nevertheless, the association between parental unresolved states of mind and infants attachment disorganization seems to be only partially explained by parental anomalous behaviors, suggesting that research is needed in order to identify other variables (more associated with the infant, parents or caregiving environment) that can account for that association (Madigan et al, 2006).

On the other hand, research started to acknowledge that some dysfunctional caregiving behaviors, manifested by the mothers of disorganized infants at SSP or in naturalistic observations, were not being captured by Main and Hesse (1990) "frightening/frightened" coding scheme. These mothers' behavior was not actively frightening or frightened but was characterized instead by inactivity, passivity and withdrawn. Accordingly, Lyons-Ruth, Bronfman and Parsons (1999) have proposed that

besides the exhibition of frightening or frightened behavior, caregivers' "*failure to repair*" (i.e. parents that are consistently unresponsive to the children's cues regardless of their attachment "strategy"), or chronic display of "*competing strategies*" of caregiving could also be associated with children's difficulty in the development of an organized attachment behavior. The rationalis that this kind of behavior would also place serious obstacles to the caregiver's ability to communicate and answer effectively to children's attachment leads. This pattern of disturbed parental behavior is close to the one described by George and Solomon, in their hypotheses about the caregiving processes that can account for the development of disorganization in school age children (Lyons-Ruth et al., 1999). George and Solomon (1999) have argued that disorganization may be associated with a breakdown in the caregiving system, that is, the attachment figure feels "helpless" or threatened in the face of child's attachment behaviors and, when sensing that it is about to lose control, withdraws from the caregiver role. This parental behavior frightens the child, not only because it is unpredictable, but also because it prevents the child to use the caregiver as a source of protection and comfort, reducing the anxiety and regaining confidence to go back to exploration (George & Solomon, 1999).

In this sequence, Lyons Ruth and her team (1999) have developed the AMBIANCE (Atypical Maternal Behavior Instrument for Assessment and Classification) and proposed that the category of frightening/frightened parental behavior proposed by Main and Hesse (1990), could be broaden in order to include other *disruptions in affective communication* (e.g. negative-intrusive, role-confused, withdrawing, disoriented and contradictory behaviors in response to infants cues), that may equally constitute risk factors for infants' attachment disorganization.

Several studies have shown significant associations between some forms of these atypical or "disrupted" maternal behaviors, and both children's disorganized attachment and maternal unresolved status at the AAI (Goldberg, Benoit, Blokland, & Madigan, 2003; Lyons-Ruth et al., 1999; Lyons-Ruth, Bureau, Riley, & Atlas-Corbett, 2009; Madigan et al., 2006). Examples of these behaviors include the absence of response to infants' affective cues or responding in inadequate or ambivalent ways (Lyons-Ruth et al., 1999).

Furthermore, some research data suggests that different patterns of disturbed caregiving can be linked to different sub-types of infants' disorganization (Lyons-Ruth et al., 1999; Main & Hesse, 1992). In this sense, while the mothers of disorganized children with a secondary classification of insecurity would reveal higher levels of atypical and frightening/frightened, behaviors with especial incidence of role-confusion and negative-intrusiveness (Lyons-Ruth et al., 1999), mothers of disorganized children with a secondary classification of security would show heightened levels of withdrawal (Lyons-Ruth et al., 1999), or fearfulness (Main & Hesse, 1992) in the interaction with their children. In the sequence of this work with high-risk samples, Lyons-Ruth and her team realized that disorganization in infancy was frequently more associated with maternal experiences of abuse or neglect than with maternal unresolved loss and the impact of these early adverse experiences on the mother's attachment representations was not being captured by the traditional AAI classification scheme. Accordingly, an additional AAI scale of "hostility/helplessness" was developed aiming to capture the parents' difficulties in integrating maltreatment, abuse or other early adverse experiences that might negatively influence their attachment representations and caregiving systems, with potential impact in children's attachment quality, namely regarding disorganization. The hostile-helpless category is assigned when there is extensive *contradiction and devaluation* of attachment relationships throughout the interview (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). The association between parental hostile-helpless state of mind and infants' attachment disorganization has been suggested through preliminary empirical data (Lyons-Ruth et al., 2005). Lyons-Ruth and Jacobvitz (2008) used the data from this and other studies on hostile-helpless state of mind to mention that "*not only experiences of unintegrated loss or trauma, but also pervasively unbalanced relationship patterns may contribute to the intergenerational transmission of disorganization*" (p. 674-675).

Other maternal characteristics found to be related to infant disorganized attachment are maternal affective inconsistency, hostility (Lyons-Ruth, Repacholi, MacLeod, & Silva, 1991; Vondra et al. 1999), and lack of sensitivity and appropriate structuring (Easterbrooks et al., 2000). Interestingly, lack of sensitivity and appropriate structuring were predicted by maternal depression (Easterbrooks, Biesecker, & Lyons-Ruth, 2000) although maternal depression by itself does not seem to be a risk factor for attachment disorganization (van IJzendoorn, Schuengel, & Bakermans-Kranenburg,

1999). According to Lyons-Ruth and Jacobvitz (2008), it seems like more chronic and severe maternal depression, resulting in significant clinical impairment is necessary, before associations with infant disorganization become apparent.

Although several questions remain regarding disorganized attachment etiology, research evidence suggests that it is closely associated with the quality of caregiving. Furthermore, in contrast with organized patterns of attachment, disorganization does not seem to be related with individual differences in parental sensitivity (van IJzendoorn et al., 1999) but instead with more extreme atypical patterns of caregiving as seen by its association with parental disruptive or frightening/frightened behaviors.

This association between atypical caregiving and disorganization is supported and partially explained by the significant amount of recent research data showing that dysfunctional parenting behaviors like intrusiveness or extreme insensitivity are associated with children's neurobiological regulation of stress (Gunnar, Broderson, Nachmias, Buss, & Rigatuso, 1996; Spangler, Schieche, Ilg, Maier, & Ackerman, 1994). The presence of a responsive and sensitive caregiver seems to lower children's glucocorticoid activity and thus impact children's reaction to stressful situations. Hence, it is not surprising that attachment disorganization in infancy has been associated with differential biological responses to the emotional stress introduced by SSP. Adrenocortical activation has been assessed in disorganized children throughout SSP, revealing the over-reactivity of this biological system in these children when compared to organized and especially with secure children. Some studies have revealed higher cortisol levels (Hertsgaard et al., 1995) while others have found adrenocortical activation associated with children's expression of negative emotionality (Spangler & Schieche, 1998) in disorganized children but not in securely attached children revealing significant differences in these children's capacity of dyadic emotional regulation in stressful situations.

In addition, some studies have shown that disorganized children display higher cardiac rates on separation and reunion episodes when compared to organized children (Spangler & Grossmann, 1993), suggesting that separations are highly alarming moments for these children but the presence of the caregiver is also potentially faced as threatening since both of these moments trigger heart rate acceleration. Furthermore, this disproportional cardiac response in disorganized children mirrors their increased



difficulty in emotional regulation and particularly in coping with the attachment cues to danger introduced in SSP (Spangler, 2011).

Although attachment based research has been suggesting that disorganization is a relationship based disturbance (Sroufe et al., 2005a), more recent empirical data has accentuated the role of child's individual characteristics in disorganized attachment conceptualization. Some research results have even suggested that a few specific genetic alleles, like DRD4 7-repeat allele, might be implicated in the development of attachment disorganization (Gervai et al., 2005; Lakatos et al., 2000, 2002). These studies showed that disorganized children were more frequently found to have these dopaminergic system genetic markers, which would be conceptually meaningful given that these markers are involved with stress reactivity, negative emotionality as well as with attentional and motivational brain systems (Diamond, 2001). Furthermore, the mesocorticolimbic pathway has been associated with the experience of reward in social interactions, and particularly with mother-infant attachment (Muller, Brunelli, Moore, Myers, & Shair, 2005). However, subsequent studies tried to replicate these results but have found no evidence for this association (Bakermans-Kranenburg & van IJzendoorn, 2004, 2007). Some research studies have also raised the question of whether the presence of DRD4 7-repeat allele could raise the child's vulnerability to environmental variables. The study of van IJzendoorn and Bakermans-Kranenburg (2006) supported the hypothesis that children with a 7-repeat polymorphism on the DRD4 gene were more vulnerable to parental variables previously associated with disorganization, like parental unresolved loss or trauma, but not to dysfunctional caregiving behaviors like frightening/frightened behavior. In contrast, another study has concluded that atypical caregiving behavior predicted attachment disorganization in children who did not carry the 7-repeat DRD4 allele (Gervai et al., 2007). Although both studies point the important moderating role of this genetic marker in attachment disorganization, they also point to different susceptibility effects, emphasizing the need for further research on the impact of genetic factors for attachment disorganization.

Some recent studies have analyzed the role of serotonin transporter gene, 5HTT-LPR (SERT), that also seems to be involved in emotional response and regulation (Caspi et al., 2003). This genetic marker seems to mediate the association between the quality of parental caregiving and infants' attachment, both for insecure (Barry,

Kochanska, & Philibert, 2008) and disorganized children (Spangler, Johann, Ronai, & Zimmermann, 2009).

A significant number of studies have been confirming the relevance and validity of this additional category for the classification of attachment. Even though disorganization has been found among middle class, low risk samples (see van IJzendoorn et al., 1999) a much higher prevalence of disorganized classifications has been reported not only in maltreatment (e.g. Carlson, 1998; Barnett, Ganiban, & Cicchetti, 1999), but also in other risk samples (cf. Lyons-Ruth et al., 1991).

Longitudinal studies like the one of Main and Cassidy (1988) have revealed that disorganization in infancy tends to evolve to a disorganized controlling or role-reversal strategy at school age, either in a form of controlling-punitive (the child attempts to control the parent through bossy, hostile demands) or controlling-caregiving pattern (the child assumes the role of caregiver towards the parent). It has been suggested that the inconsistency that characterized disorganized children's caregiving in infancy may lead them to assume control of the relationship, that although developmentally inappropriate, gives them some predictability and thus "*some element of security during the preschool period*" (Barnett & Vondra, 1999, p. 20). Furthermore, there seems to be an association between infants' disorganization at SSP (Ainsworth et al., 1978) in infants and unresolved or "cannot classify" status at the AAI (George et al., 1996) when these infants grow up into adulthood (Main et al., 2005; Sroufe et al., 2005a).

In conclusion, it can be assumed that although children seem to be instinctively motivated to become attached, individual differences in the quality of attachment seem to be more related to the quality of caregiving they experience in an early phase of their lives. Moreover, while the organized patterns of attachment and usually associated patterns of caregiving are generally well supported by several years of developmental research, the question of atypical attachment manifestations still raises some discussion, not only regarding its conceptualization but also regarding the variables implicated in its etiology.

### **2.3. Attachment Precursors**

Although some of the risk factors for disorganized attachment have already been discussed in the previous section, it seems important to make a brief review of the research on the precedent factors of attachment development.

Maternal sensitivity, defined as adequate and contingent response to children's signals, was especially emphasized by Ainsworth and colleagues (1978) as a predictor of children's attachment security. Recent research studies (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Pederson, Gleason, Moran, & Bento, 1998; Posada et al., 1999) have provided further evidence for this association between sensitive caregiving and attachment security.

Meanwhile, empirical studies have been showing the association between other specific aspects of caregiving and children's attachment quality.

For instance, dyadic emotional availability, that considers the way in which children and parents express emotions and respond to each other's affective cues, has also been associated with children's secure attachment (Easterbrooks et al., 2000; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000). Longitudinal data, from the Bielefeld and Regensburg studies, reveal the importance of not only sensitive responsiveness from parents to children's attachment cues, but also the significance of parental sensitive support and scaffolding during children's exploration (see Grossmann et al., 2005 for a review). These dyadic interchanges in infancy and childhood seem to influence children's psychological security throughout their development and particularly the way they emotionally behave in close and intimate relationships in adulthood.

On the other hand, it has been suggested that parents' representations of their own attachment experiences may influence their patterns of caregiving, leading to the intergenerational transmission of attachment (Main, Kaplan, & Cassidy, 1985). Some studies showed that infants' quality of attachment could be predicted before they were even born, based on their parents' state of mind regarding attachment (Steele, Steele, & Fonagy, 1996). Results from meta-analyses (van IJzendoorn, 1995) or from empirical research (Aviezer et al., 1999; Oyen, Landy, & Hilburn-Cobb, 2000) not only support this association but also suggest that parents' state of mind regarding attachment may influence their sensitivity or emotional availability in dyadic interactions which, in turn,

may affect children's attachment quality. The fact that this association has been found among foster children and their foster parents (Dozier, Manni, & Lindhiem, 2005) adds evidence to the idea that this intergenerational transmission of attachment is not mainly justified by genetic heritage.

Nevertheless, it seems like the impact of parental representations of attachment and sensitivity in dyadic interactions on their children's quality of attachment may be moderated by the specific patterns of caregiving experienced by the children. A study with Kibbutz Israeli children showed that intergenerational transmission of attachment was more common among children who usually slept with the family than among children who were usually cared by the Kibbutz caregivers during the night (Sagi, van IJzendoorn, Scharf, Koren-Karie, & Aviezer, 1997). Accordingly, another study conducted at an Israeli Kibbutz showed that differences in maternal sensitivity were only reflected in children's attachment quality in the group of children who spent the nights in the family home (Aviezer, Sagi, Joels, & Ziv, 1999).

A study by Klein Velderman, Bakermans-Kranenburg, Juffer and van IJzendoorn (2006) also called attention to the moderating role of infants' temperamental features in the association between parental characteristics and infants' quality of attachment. This study revealed that intervention focused on maternal sensitivity or attachment representations equally resulted in more sensitive maternal responses to the child's signals, but did not have a correspondent increase in children's attachment security (although children with more changes towards secure attachment were the ones whose mothers gained more in sensitivity). Interestingly, this study has partially found support for Belsky's (1997) theory of children's differential susceptibility to caregiving experiences, showing that children's temperamental characteristics (more or less reactive) may influence their response to changes in the caregiving context. In this way, this intervention had stronger impact in higher reactive children and their mothers.

In fact, several studies have analyzed the association between children's temperament and their attachment classification at SSP. Although children's early temperamental features do not seem to predict children's security or insecurity at 12 months' SSP (Belsky & Rovine, 1987; Sroufe et al., 2005a), they do seem to predict the amount of distress children displayed at the procedure, especially during separations (Belsky & Rovine, 1987). Actually, it has been suggested that temperamental features

like fearful behavior (that has been associated with children's genetic heritage) can influence the degree of children's *behavioral inhibition* during SSP (Ainsworth et al., 1978) and thus impact children's manifestation of attachment behavior this specific assessment procedure (see Stevenson-Hinde, 2005). However, this hypothesis still lacks empirical support.

Furthermore, it seems like the pattern of fluctuation of children's positive and negative emotionality across the first year of life can be effective in predicting security or insecurity of attachment at 12 months (Belsky, Fish, & Isabella, 1991). Belsky and colleagues study (1991) specifically showed that most insecure children were rated with high negativity or low positivity over time or displayed significant changes in the sense of increased negativity or decreased positivity. Other studies revealed that when children's temperamental difficultness was combined with other maternal or contextual risk factors the probability of children's developing an insecure attachment increased (Crockenberg, 1981; Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990).

In sum, these results prove that although attachment quality and temperament are in some way connected, this relationship does not seem to be linear and further research is needed in order to understand its complexity.

Moreover, and following an ecological perspective, some studies have shown that parent-infant attachment relationships are multiply determined and that "*are most likely to be adversely affected when multiple vulnerabilities exist (e.g. difficult temperament plus conflicted marriage) that accumulate and undermine the effectiveness of other sources of influence in promoting parental functioning*" (Belsky, 2005, p. 81). In this sense, when child's individual variables, parental personality features, marital quality factors and social support indices are taken together, their predictive value for the quality of infants attachment is clearly more powerful. Additionally, more adaptive constellations of these factors have been linked with security of attachment in infancy (Belsky, 1996; Belsky & Isabella, 1988).

Consequently, while most of the initial studies on attachment focused on normative samples, gradually theorists and researchers turned their attention to different kinds of risk samples in order to understand the impact of environmental and individual

risk factors on children's attachment and the way in which these attachment patterns evolved and related to other kinds of developmental outcomes.

### **2.3.1. Individual and family risk variables and attachment**

There are relatively few studies focused on the influence of children's individual risk factors on the quality of attachment they develop with caregivers.

Some clinical reports illustrate the way in which chronic medical illness, hospitalization and experiencing of repeated painful medical procedures can lead to the development of attachment disordered behaviors or even prevent the formation of an attachment relationship (Minde, 1999). This assumption is supported by the study of Peterson, Drotar, Olness, Guay, & Kiziri-Mayengo (2001) showing that children with HIV infection were less securely attached to their caregivers than the control group of children who were not infected. In contrast, empirical data suggests that the quality of care experienced by the children may be more important in determining the quality of their attachment relationships than their medical condition of being or not HIV positive (Dobrova-Krol, Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2010).

Also, as it has been mentioned, Belsky's (1997) theory of children's differential susceptibility to caregiving experiences calls attention to the influence of children's temperamental characteristics in their response to changes in the caregiving context, suggesting that highly reactive children may be more susceptible to environmental features, either positive or negative, than less reactive infants. The study of Klein Velderman and colleagues (2006) partially supports this hypothesis, showing that their intervention to increase maternal sensitivity had a stronger impact in higher reactive children and their mothers.

Despite the irrefutable importance of child's individual characteristics, results of studies with risk samples suggest that maternal characteristics exert a more profound influence in the quality of children's attachment relationship than children's individual features, especially in their first years of life (Bakermans-Kranenburg & van IJzendoorn, 2004; van IJzendoorn, Goldberg, Kronenberg, & Frenkel, 1992).

Empirical investigation has pointed to several family variables as potential risk factors for children's development of attachment difficulties.

Clinical reports and empirical investigations have shown the association between children's exposure to family violence and attachment disorders (Zeanah et al., 1993) and attachment disorganization (Zeanah et al., 1999). The study of Zeanah and colleagues (1999) has assessed 15 month old children exposed to partner violence and found that 37.5% of the children were secure and 56.9% were disorganized, revealing the negative impact of this kind of family risk in children's attachment quality.

The experience of loss within the family may also have impact in children's quality of attachment. Heller and Zeanah (1999) have found that mother's who experienced perinatal loss were more likely to have disorganized attachment children than mothers of comparable samples, that have not gone through such an experience. This fact may be related with the influence of unresolved experiences of loss or trauma on parental caregiving behavior and infants' attachment that have been previously described.

It has also been suggested that parental substance abuse and psychopathology may be risk factors for children's development of attachment disorders due to these parents extreme unavailability to attend to children's needs and attachment signals (Minnis, Marwick, Arthur, & McLaughlin, 2006).

Swanson, Beckwitt and Howard (2000) empirically supported the notion that children exposed to drugs in prenatal period are at increased risk for developing a disorganized attachment to their caregivers. Curiously, the authors found that intrusiveness was the only caregiving variable that distinguished among organized and disorganized groups (when compared to sensitivity or hostility). Other studies confirmed the association between maternal drug-addiction and infants' disorganized attachment (Melnick, Finger, Hans, Patrick, & Lyons-Ruth, 2008).

Regarding parental psychopathology and its effects on infants' attachment quality, depression has been the most studied pattern of parental disturbance, although the results have not been consistent. Some studies suggest that maternal depression is associated with higher rates of insecure or disorganized attachment (Martins & Gaffan, 2000), especially when mothers display a clinical level of disfunction (Atkinson et al., 2000) whereas others have failed to find such an association (Zeanah et al., 1999). Furthermore, some variables seem to moderate this relationship like parental state of

mind (McMahon, Barnett, Kowalenko, & Tenant, 2006) or infants' physical status (Poehlmann & Fiese, 2001) and so study results may be distinct in the face of whether or not these variables are contemplated in the analysis.

Besides depression, empirical data suggests that maternal borderline personality disorder could also constitute a risk factor for infants' attachment disorganization (Hobson, Patrick, Crandell, García-Pérez, & Lee, 2005).

Although the presence of multiple family risk factors seems to increase children's likelihood of developing a disorganized attachment (van IJzendoorn et al., 1999), the experience of maltreatment seems to be a very powerful risk factor by itself. Meta-analytic results suggest that maltreated children are at major risk to develop insecure and in particular disorganized attachments, even if compared with children exposed to several kinds of socioeconomic risk factors (Cyr et al., 2010). The strong link between maltreatment and attachment disorganization has been discussed previously, as well as the explanations that have been proposed for this association.

In the next section, the developmental outcomes associated with individual differences in attachment in infancy will be examined.

#### **2.4. Attachment Developmental Outcomes**

Empirical data suggests that there are distinct developmental outcomes associated with security and insecurity of attachment. In particular, secure attachment seems to act as a protective factor and insecure attachment as a risk factor regarding children's developmental pathways (Sroufe, 1988).

Both kinds of organized insecure attachments in infancy have been linked with depression in subsequent developmental periods (Duggal, Carlson, Sroufe, & Egeland, 2001) and with poorer outcomes regarding peer relationships (Grossmann & Grossmann, 1991; Sroufe et al. 2005b). In particular, insecure attachment in infancy seems to be related to an increased display of behavior problems at age 3 (Belsky & Fearon, 2002a, 2002b; Shaw & Vondra, 1995). Furthermore, while insecure resistant attachment in infancy has been associated with anxiety disturbances (Warren, Huston, Egeland, & Sroufe, 1997), insecure avoidant attachment has been associated with higher



pathology levels (Sroufe et al., 2005a) and with behavioral problems (Aguilar et al., 2000) at adolescence.

Nevertheless, disorganized attachment has been associated with poorer developmental outcomes, when compared to insecure organized forms of attachment, being further suggested that disorganization poses a significant risk factor for children's subsequent development of psychopathology (van IJzendoorn et al., 1999).

Research has associated disorganized attachment with a wide array of maladaptive outcomes in middle childhood, adolescence and even in adulthood. Attachment disorganization in infancy has been related to behavior or disruptive disorders at preschool age (Lyons-Ruth, Alpern, & Repacholi, 1993; Shaw, Owens, Vondra, & Keenan, 1996) and with higher levels of externalizing symptoms at school age (Lyons-Ruth, Easterbrooks, & Cibelli, 1997; Munson, McMahon, & Spieker, 2001). Sroufe and colleagues (2005a) showed that early disorganization was also associated with self-mutilating behavior in early adulthood and Carlson (1998) revealed that disorganization in infancy was the main early predictor of global psychopathology at adolescence. In consonance with Liotti's (1992) previous suggestion, Carlson's study (1998) also found that one of the most frequent psychopathological outcomes associated with disorganization were dissociative symptoms.

In sum, although there is not a consensual explanation to account for the impact of attachment on later development (for a review see Weinfield, Sroufe, Egeland, & Carlson, 2008), developmental research has consistently demonstrated associations between secure attachment and positive outcomes regarding children's social and emotional development (Grossmann & Grossmann, 1991). Nevertheless, it is important to underline that research also suggests that the subsequent implications of attachment quality are dependent on the quality of care experienced by the children (e.g. Belsky & Fearon, 2002a) as well as on the characteristics of the broader environmental context in which children are inserted throughout their development (e.g. Belsky & Fearon, 2002b). In this sense, the effect of attachment insecurity in the development of psychopathology may be increased in the presence of caregiving and/or contextual risk (Kobak, Cassidy, Lyons-Ruth, & Ziv, 2006). In particular, atypical forms of attachment can be viewed as more extreme forms of attachment quality suitable to "*produce*

*reliable main effects for psychopathology*”, especially since they usually occur in conjunction with atypical forms of caregiving (Kobak et al., 2006, p. 357).

In conclusion, given the complexity associated with human development, research will have to assume a broader framework in order to understand the precursors and outcomes associated with different patterns of attachment. Developmental psychopathology offers a valuable perspective, while advocating for a multi-method and multi-level assessment of individual pathways that lead to psychopathology. According to Kobak and colleagues (2006), three main levels of analysis can be drawn when considering the risk of psychopathology using an attachment and developmental pathways’ perspective: 1) *individual (attachment organization)*, 2) *relationship (caregiving quality)* and 3) *contextual (caregiving context)*.

Attachment and developmental theory and research have already been reviewed in terms of these three levels of risk. The next chapter will focus on the more extreme forms of these individual, relationship and contextual risk factors.

## Chapter 2

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### *Attachment and Institutional Rearing*

#### **1. INSTITUTIONAL REARING**

Institutionalization has been regarded by developmental researchers as one of the most important “experiments in nature”. As we have mentioned in Chapter 1, human research is highly conditioned by ethical considerations, preventing researchers to experimentally manipulate risk factor variables in order to study their impact on individuals’ development. In this sense, early adverse experiences like institutional rearing have been the focus of many studies conducted for clinicians and researchers, interested in understanding how extreme environmental and caregiving circumstances affected children’s development and contribute to more or less deviant developmental pathways.

At the present time, there is enough research data to assume that children reared at institutions are at greater risk for atypical or disturbed development.

Institutionalization has been seen as a multilevel deprivation condition, involving several deficits, not only in cognitive and motor stimulation, medical and nutritional care but also in the opportunities for social interaction and individualized caregiving.

In their pioneer study, Provence and Lipton (1962, p. 18) associated institutional rearing deprivation with three main aspects:

- a) *“the absence of a specific maternal figure”*, inconsistency and multiplicity of caregivers;
- b) *“the shortness of time spent in the care of the infants”*;
- c) *“the lack of personalized care”*, regarding both the low emotional investment of the professional caregivers on the children and the rigorous institutional routines, more oriented by defined schedules than by children’s individual needs.

Thus, extensive research has attempted to understand the impact of this deprivation experience in children’s physical, motor, cognitive, social-emotional and neurobiological development and some of the main results from these studies will be reviewed next.

### **1.1. Developmental Impact of Institutional Rearing**

Currently there is not much doubt regarding the association between institutional rearing and significant delays in children’s physical and cognitive development, social-emotional difficulties and higher levels of psychopathology (e.g. Bos, Fox, Zeanah & Nelson, 2009; Fisher, Ames, Chisholm, & Savoie, 1997; O’Connor, Bredenkamp, & Rutter, 1999; O’Connor, Marvin, Rutter, Olrick, & Britner, 2003; Smyke et al., 2007; Zeanah et al., 2009).

The foundation for the current body of knowledge regarding the deleterious effects of early institutional rearing, dates from classic studies that, despite the use of more clinical approaches and less rigorous methodological constraints, provided some of the most significant reports of the behavior and development of institutionalized children.

The study of Sally Provenance and Rose Lipton (1962), for instance, is worth mentioning as they assessed longitudinally 75 institutionalized infants and compared them to a similar group of family reared children, providing one of the most complete and thorough descriptions of the caregiving conditions and children's development in an institutional setting to date.

The institution described in this study was characterized by very low caregiver-child ratios (1 caregiver to 10 to 20 children), and general poor quality of individualized caregiving. The infants spent most of their days in their cots, with very few opportunities for interacting with adults or experiencing stimulating activities.

Institutionalized children's development was retarded in every domain assessed, when compared to the control group. Nevertheless, regarding motor development, the authors refer that children's developmental delay was less significant than what was found in all other developmental areas like language, play or emotional competence. In fact, language was found to be very delayed in these children, not only concerning comprehension but also, and mostly, regarding expression. In the first months of life most children were not capable of communicating through the use of vocalizations or speech, even when stimulated, and after turning one year old, most of them could not say a significant word.

The emotional development also seemed to be particularly compromised, and the way in which institutionalized children reacted to other people was one of the most emphasized topics in this study. The range of their emotional expression was very reduced, and most of these children acted pretty much the same in the presence of the researcher and the caregivers, or even towards the presentation of a mask versus a human face. There was also little evidence of the existence of an emotional connection between the children and the caregivers, and these children did not seem to be attached to any one of the adult people who took care of them. In most occasions the infants did not address or approach the caregivers in order to interact with them or even in search for comfort and, most intriguing, they did not show wariness or fear of unfamiliar people.

The follow-up of a group of these children when they were placed in foster care showed that despite the improvement of these developmental delays, some areas like the

language and emotional development continued to be significantly compromised, but this issue will be addressed later on in this Chapter.

Wayne Dennis study (1973) focused on the assessment of Lebanese institutionalized children cognitive development and showed that at one year of age these children had a mean IQ of 50, with no significant differences between boys and girls. The assessment of an older group of institutionalized adolescents in the same country showed that they were still cognitively delayed, with girls showing a mean score around 50 and boys a mean score around 80. The author suggested that this cognitive impairment was due to the deprivation experienced by these children since the follow-up of a group adopted before the age of 2 years revealed total catch-up after one year, with children scoring a mean of 100 in the same IQ tests. These institutions were characterized by global and severe deprivation.

Barbara Tizard and Judith Rees (1975) also have conducted a very important longitudinal study with 65 institutionalized children. They followed these children over time and reassessed them when they were about 54 months old. Of the initial group, 26 children had continued to live in an institutional setting, 24 had been adopted and 15 had returned to their biological family. Therefore, children who had been living in an institution for most of their lives were compared with two groups of previously institutionalized children, and with a group of London family reared children that worked as a control group.

Probably the most interesting detail about this study is that these institutions were not characterized by multilevel deprivation as it is usually the case. Instead, they were described as having high caregiver-child ratios (at least 1-3), diversity of play and learning materials and good-enough opportunities for children's exploration and social stimulation. Thus, apparently these children had their basic needs met and had all of the necessary conditions to a healthy development available. The exception to this fact relied on the significant inconsistency of the caregivers throughout the time, and the lack of investment from the caregivers in the development of a close and affective relationship with the child. In fact, this was not only a priority as it was even purposefully avoided for some caregivers. Therefore, this study offered the unique opportunity to assess the specific effect of the lack of individualized and consistent caregiving in child's development.

Results showed that based on mothers' and caregivers' reports, institutional reared children presented more problems with peers, temper tantrums and clinging behavior than did the comparison groups (Tizard & Rees, 1975). When these and other "problem" behavior ratings were summed into a total score, the institutionalized group also scored higher and this variable did not seem to be associated with their experienced changes in caregivers or institutional settings. Interestingly, this total "problem" score was associated with the pattern of visits that children at the institutions received from the parents or significant relatives, being that children with disrupted or irregular visits scored higher than children who had regular visits or who have never have been visited at all. This result is consonant with Bowlby's suggestion of the negative impact of the separations from the attachment figures to children's psychological and emotional well-being (Bowlby, 1973). Not surprisingly, Tizard and Rees (1975) study also found some differences between the four groups of children regarding attachment, that will be addressed in more detail later on in this Chapter.

After these major research studies with institutionalized children it was not until 1989, following the fall of Ceaucescu's regime in Romania, that scientific community seemed to restore its interest in the study of the impact of institutionalization on child development. By this time, the orphanages that had been rearing thousands of children taken out of their families by Ceaucescu's regime were open and the international community awaked for the severe and global deprivation experienced by these children through their early years.

Since a lot of children were less than 5 years old at the time, several organizations started a massive process of mobilization for international adoption, and in a couple of years the amount of orphanage Romanian children adopted into Western Europe and North America was astounding. This political and social phenomenon presented as a fertile naturalistic setting for a lot of researchers, who developed major studies in order to assess these children while they were still at the institution or after their international adoption.

The Bucharest Early Intervention Project (BEIP) has gathered some of the most significant data regarding the deleterious effects of the severe deprivation experienced by institutionalized children in Romania. Some of the most well-known researchers in child development are part of this major study and some of them include Charles

Zeanah (Tulane University), Nathan Fox (University of Maryland), and Charles A. Nelson (Harvard Medical School). The main goal of this project was to examine the effects of institutionalization on the development of young children and see if positive developmental outcomes resulted from the transition of these children to foster care (Zeanah et al., 2003). One of the intents of the study was to change the Romanian welfare system and implement foster care as an alternative to institutional care.

One of the greatest innovations of the follow-up assessments of the BEIP study was that they were able to conduct a randomized controlled trial of foster care, in which a group of children was randomly selected to placement in foster care while the other group of children remained in institutional care. In this study there was also a group of Romanian family reared children to work as a comparison group.

Since 2002 until the present time, several BEIP papers have been published, documenting that institutionalized children showed significant delays across all developmental areas.

Physical growth seems to be one of the most severely affected areas, with institutionalized children showing delays in height, weight and measures of occipital-frontal circumference (Johnson et al., 2010).

The authors hypothesize that malnutrition (associated with low caregiving quality) and disturbances in the growth hormone/IGF-1 might be responsible for the physical growth delays found among these children (Johnson et al., 2010). The association between deprivation in institutional caregiving and these developmental delays is proven by the fact that children randomly assigned to foster care showed a more rapid growth in weight and height than children who continued to be cared in the institutional settings (Johnson et al., 2010). Children's developmental catch-up seemed to be predicted by the age of placement to foster care, with better results found among children who were placed before 12 months of age (Johnson et al., 2010).

Similar results have been presented for children's cognitive development, since children who remained institutionalized showed a significantly poorer functioning in this domain as compared with previously institutionalized children placed in foster care or with children who always lived with their families (Nelson et al., 2007). Once again,



early placed foster children showed a more significant cognitive improvement than later placed children.

BEIP results increasingly suggest that institutional rearing can place children at greater risk for psychiatric disorders (Zeanah et al., 2009). The authors found that 54% of the children with a history of institutionalization presented psychiatric symptoms at the age of 54 months, a much higher rate than what was found among never institutionalized children (22%). In addition, among the group of institutional reared children, the ones who were placed in foster care were less likely to develop internalizing disorders than the ones who remained in institutional care.

Social and emotional development of institutionalized children has also been analyzed by the BEIP group. At 30 and 42 months, institutionalized children showed lower levels of attention and positive affect than previously institutionalized children placed in foster care or community children (Ghera et al., 2008). Furthermore, institutionalized children displayed higher levels of maladaptive behaviors and atypical problems than the comparison group of community children (Smyke et al., 2007). One of the most interesting results of this study was the association between higher quality of caregiving received by each child at the institutional setting and better developmental outcomes.

BEIP has additionally showed the association between institutional rearing and poorer performance in memory and executive functioning tests (Bos et al., 2009) as well as higher frequency in manifestation of stereotypical behaviors (Bos, Zeanah, Smyke, Fox, & Nelson, 2010).

Also, the BEIP group has presented considerable amount of data regarding the effects of institutional rearing in children's attachment development. Some studies show that children in a standard care institutional unit had significantly more reported disordered attachment behaviors than children in a pilot unit with higher consistency of care or children living with their families (Smyke et al., 2002; Zeanah, Smyke, & Dumitrescu, 2002). Recently, the results of Smyke and colleagues (2010) reveal that children who were randomly send to foster care had significantly higher rates of secure attachments and less atypical insecure attachments than children who continued to be

cared in the institutional setting. These attachment results will be discussed in more detail later on in this Chapter.

While the BEIP Group has presented a lot of data concerning the assessment of children while they were still at the institutions, other researchers have only focused on the assessment of post-institutionalized children from Romania, after their international adoption into North America or European countries.

As an example, a Canadian longitudinal study assessed children adopted from Romanian institutions into Canadian families and compared their development with children who were born in Canada and always lived with their families (Ames, 1997; Chisholm, 1998; Fisher et al., 1997; Morison, Ames, & Chisholm, 1995).

Based on parental retrospective reports of children's developmental conditions at adoption, Morison and colleagues (1995) have showed that the majority of the children were severely delayed in most areas of development (e.g. language, social and motor development) when they left Romanian institutions. The extension of these delays was associated with the amount of time children spent at the institution and, in some cases, delays in IQ and language comprehension were still visible after several years after children's adoption, as shown by follow-up studies (Le Mare, Vaughn, Warford, & Fernyhough, (2001).; Morison & Elwood, 2000).

Results from this study of Romanian orphanage children adopted by Canadian families also point to a higher prevalence of stereotypical behaviors among the group of later adopted children compared to early adopted children and a control group of Canadian children (Fisher et al., 1997). A significant decrease in this kind of behavior was evidenced in nearly all children after a few years of adoptive placement but the degree of recovery seem to be related to the duration of children's institutionalization experience (Ames, 1997; Fisher et al., 1997).

Problems with peers have also been reported among the group of previously institutionalized children and these problems seemed to persist even after 3 years after the adoption (Ames, 1997; Fisher et al., 1997).

Chisholm (1998) has also presented significant evidence for the deleterious impact of institutional rearing in children's attachment development, especially for

children who were later placed in adoptive families. This result is explored in more detail in the next section of this Chapter.

The English and Romanian Adoptees (ERA) study team is another research group that has been using a longitudinal design to assess the long-term developmental impact of early institutional deprivation. Thomas O'Connor (University of Rochester), and Michael Rutter (University of London) are some of the most recognized researchers who take part in this study of Romanian institutionally reared children adopted into United Kingdom families. These children were assessed at three different time points, at the age of 4, 6 and 11 years, and compared to a group of adopted children born in the UK (O'Connor et al., 1999; O'Connor et al., 2003; Rutter et al., 2007).

Over the last few decades this group has also demonstrated the negative outcomes of institutionalized children regarding physical and cognitive development (Rutter & the ERA Study Team, 1998) and social and emotional functioning (O'Connor et al., 1999; O'Connor et al., 2003; Rutter et al., 2007).

Children's height was one of the domains negatively influenced by institutional rearing, proportional by the duration of institutionalization experience (Rutter & the ERA Study Team, 1998).

In particular, these studies have shown that the extreme conditions of deprivation experienced by these children may lead to the development of an autistic-like pattern of behavioral and social difficulties (Rutter et al., 1999) or to the manifestation of inattention/overactivity that seems to persist after several years of adoptive placement (Kreppner et al., 2001; Stevens et al., 2008).

Stereotypies and in particular rocking behavior have also been reported by this research group in almost half of the children when they were first placed in their adoptive UK families (Beckett et al., 2002). Although the frequency of stereotypical behavior seemed to diminish with time, researchers still could find a significant percentage of children exhibiting it at the age of 6 years (Beckett et al., 2002).

The ERA Study Team has also revealed a higher prevalence of atypical attachment behavioral patterns in the previously institutionalized Romanian group when

compared with a non-deprived group of UK adoptees (O'Connor et al., 1999; O'Connor et al., 2003) but these results will be discussed in further detail in the following Chapter.

Finally, The St. Petersburg - USA - Orphanage Research Team established by a partnership between researchers from the University of Pittsburgh, USA, like Robert McCall and Christina Groark and Russian Child Development specialists, aimed to design an intervention plan that would improve the quality of caregiving in the “Baby Homes” of St. Petersburg orphanages and consequently these infants’ development (The St. Petersburg - USA Research Team, 2008).

The sample comprised children from birth to four years and the baseline assessment, prior to the intervention, revealed that the development was compromised in most developmental levels (Groark, Muhamedrahimov, Palmov, Nikiforova, & McCall, 2005). Furthermore, these children showed frequent and diverse self-stimulating activities, a low range of emotional expressiveness and very poor quality of play (Groark et al., 2005; The St. Petersburg - USA Orphanage Research Team, 2008).

In this sense, several intervention strategies were planned, including institutional structural changes and caregivers training, aiming to increase caregiving stability and responsiveness as well as a more positive relationship between the children and their caregivers (Groark et al., 2005; The St. Petersburg - USA Orphanage Research Team, 2008). A quasi-experimental study was designed and of the three institutions participating in the study, only two received the intervention. One of these institutions only received caregiver’s training whereas the other received caregiver’s training and an intervention in the institutional structure. The third institution was used as a control. Post-intervention assessments, at least 4 months after the conclusion of the intervention, revealed significant developmental gains for children in the institution where both forms of intervention were implemented. Major progresses were found regarding children’s physical growth (height, weight and chest circumference), social-emotional development (positive social behavior, quality of play, self-regulation), language and cognition (Groark et al., 2005; The St. Petersburg - USA Research Team, 2008). Positive results were also found in caregivers’ social-emotional behavior and responsiveness to the child’s cues as well as in the quality of the dyadic interaction between child and caregiver (Groark et al., 2005; The St. Petersburg - USA Research Team, 2008). Interestingly, children who displayed more severe developmental delay or

impairment at baseline were the ones who benefited more from the intervention, showing the most significant rates of recovery (Groark et al., 2005).

The present review clearly shows that studies of institutional reared children in Eastern Europe are abundant and children's developmental status is concerning.

Other studies with children adopted into the Netherlands from Asia, Colombia or Ethiopia reported better developmental results after a mean of 8.7 months of placement in adoptive families (van Londen, Juffer, & van IJzendoorn, 2007). These children, as the ones adopted from Eastern Europe, all experienced institutional rearing but nevertheless showed a normative developmental status and high rates of security of attachment (61%), although disorganized attachment was found in 36% of the children. However these children were placed very early, before the age of one year ( $M = 5.5$  months), and some of them (26%) lived for some time in foster families, which according to the study, results seemed to be protective regarding children's mental and motor development.

In contrast, existent research about development of institutionally reared children in Western Europe is scarce, perhaps because this is a less used solution of welfare state policies in most west European countries.

Greece is one of the exceptions, since a lot of infants are still admitted to institutions once they are abandoned or taken out of their biological families due to social or economic reasons (Vorria et al., 2003). Results from a study with infants living in one of Athens' largest institutions show that the overall quality of care (personal care, furnishing, language experiences, etc.) was low but very similar to the level of the day center attended by the children in a family reared comparison group (Vorria et al., 2003). In any case, given the description, this institutional setting seems to be of much better quality than the standard care units described by the BEIP study regarding Romanian institutions.

Nevertheless, stereotypical and aggressive behaviors were also frequently observed in institutional care children as compared to a family reared group (Vorria et al., 2003). Additionally, institutionalized children had lower scores on cognitive development and more social-emotional behavior problems than the control group, even after controlling for birth weight (Vorria et al., 2003). An observational measure of

temperament was also used and institutionalized children scored higher on shyness and negative emotion subscales and lower on the activity and sociability subscales compared to the control group (Vorria et al., 2003). The study also assessed quality of attachment and found significant higher rates of disorganized classifications among the institutionalized group (Vorria et al., 2003). Individual child characteristics assessed in the study like developmental status, birth weight or temperament did not seem to be associated with attachment classifications (Vorria et al., 2003).

A lot of other research studies with institutionalized or post-institutionalized children have reported significant problems in these children's cognitive development (Bruce, Tarullo, & Gunnar, 2009), ability to identify facial expressions of emotion (Bruce et al., 2009; Wismer Fries, & Pollack, 2004), inhibitory control (Bruce et al., 2009) and neurobiological functioning (Carlson & Earls, 1997; Gunnar, Morison, Chisholm, & Schuder, 2001).

In particular, high cortisol levels (Gunnar et al., 2001) and dysregulations in typical daily patterns of cortisol production (Carlson & Earls, 1997) have been identified among institutionalized or previously institutionalized children. Interestingly, cortisol levels were still elevated in previously institutionalized children even after several years of adoptive placement: an association between afternoon cortisol levels and children's institutionalization length existed (Gunnar et al., 2001). It has been proposed that these neurobiological alterations may mediate the impact of early adversity on infants' psychological and physical development (Gunnar, 2000).

As seen in the previous review, attachment is one of the most recurrent research topics with institutionalized children and it will be described in the following in detail.

## **2. ATTACHMENT IN INSTITUTIONAL REARED CHILDREN**

As presented in Chapter 1, most research with high risk samples such as maltreated or abused children is focused on attachment disorganization. On the other hand, studies with institutional reared children mainly focus on inhibited and disinhibited forms of attachment disorder (O'Connor et al., 2003). In the following, the

most discussed topics on attachment disorders like conceptualization, etiology, assessment and intervention will be overviewed.

### **2.1. Attachment Disorders and Institutional Rearing**

Attachment theory holds that when infants complete their first birthday they would be expected to display a clear and differentiated attachment relationship with at least one of their caregivers, selectively seeking that person for comfort in times of threat or distress, and protesting when separation from this figure occurs (Bowlby, 1969/1982). Even regarding familiar caregivers, children would progressively organize them into a hierarchy, according to their proximity and preference for each one of them (Bowlby, 1969/1982).

Although in literature the authors usually use the term mother to refer to the main attachment figure this is not always necessarily the case. This figure can be the mother, the father and sometimes a grandparent but inevitably presents a person that is consistently close and not only assures basic caregiving to the child, like bathing and feeding, but most importantly responds to the child's signals and frequently initiates social interaction with him/her (Bowlby, 1969/1982). Based on the repetitive experiencing of caregiving interactions, the child will be able to build an idea of certain adults as available and responsive to their needs, electing one or more as attachment figures, through a hierarchical order of preference (Zeanah & Fox, 2004). This tendency for children to prefer one figure over all of the others has been termed "monotropy" by Bowlby (1969/1982).

In the case of children living with their families it is usually not hard to identify this person/hierarchy, and as long as they frequently engage with their caregivers and have a cognitive age of 9 months, they will probably show a distinct pattern of attachment to these figures (Zeanah & Fox, 2004). The same does not happen for children who do not have the opportunity to interact regularly with a responsive, available and consistent caregiver as it is the case of institutionalized children (Bowlby, 1969/1982). However, Bowlby (1969/1982) underlines that even institutionalized children will tend to select a "special" or "preferred" caregiver as long as they are given the opportunity to do so.

Research has pointed out that only a small number of persons can assume the role of an attachment figure. Although there is still not clear evidence of the maximum number of adults to whom a child can attach to (American Association of Child and Adolescent Psychiatry [AACAP], 2005; Zeanah & Fox, 2004; Zeanah et al., 1993), it is reasonable that it is not “limitless” (Cassidy, 2008). Some studies have pointed out that children can attach to a maximum of three or four people (Grossmann & Grossmann, 1991) but regardless of the exact number of attachments that is possible to develop, which is certainly variable across children, there is evidence that when cared by a large number of people, children frequently show difficulties and disturbances in the development of an attachment relationship (Tizard & Rees, 1975; Vorria et al., 2003; Zeanah et al., 2003; Zeanah et al., 2005).

Some early studies, mentioned in Chapter 1, have identified and described a set of disturbed and/or atypical behaviors, frequently found in children with deprivation or parental care disruption (Bowlby, 1944; Goldfarb, 1945; Spitz, 1945) and classic studies described early on this Chapter have reported similar patterns of emotional and behavioral problems, characterized either by ‘indiscriminate sociability’, absence of wariness of strangers or by extreme social withdraw and lack of emotional reciprocity (Provence & Lipton, 1962).

The study of Tizard and Rees (1975) is among the first studies that consistently assessed and reported atypical attachment behaviors in institutionalized children.

One of the most significant results was that while the comparison group, of children living with their families, showed discriminate attachment behaviors towards a restricted number of people at the age of two years, the institutionalized group showed underdeveloped attachment behaviors towards a much broader group of caregivers (Tizard & Rees, 1975). Thus, although most children exhibit some kind of preference to their caregivers most were described as “*not deeply attached to anyone*”. Furthermore, the caregivers’ reports of institutionalized children frequently mentioned the expression of “clinging” behavior which was surprisingly associated with “shallow affections”. Of 26 children, 18 were considered by the caregivers as “not caring deeply about anyone”. But, while 8 of these children showed severe withdrawn behavior and almost no interactions with adults, the other 10 showed intense efforts to get adults attention, whether these were familiar or unfamiliar. This “overfriendly”, “attention and comfort



seeking” and “affectionate” behavior towards unfamiliar people were also reported in post-institutionalized children by their adoptive or biological parents, but not in the group of family reared children.

Similar to what has been described for other developmental areas in the first part of this Chapter, some of the most relevant research about the impact of institutional rearing on attachment has been conducted with children reared in Eastern Europe orphanages.

The BEIP study group has presented some of the most meaningful findings considering attachment behaviors of children living in institutions.

In 2002, Smyke, Dumitrescu and Zeanah reported that institutionalized children from a standard care unit in Romania presented significantly higher levels of indiscriminate and inhibited behavior than children from a pilot unit, that provided more consistent and individualized caregiving, and from a comparison group of children living with their families. In this study, the authors even supported the existence of a “*continuum of caretaking casuality*”: different levels of disordered attachment behavior in the three groups of children were found, where children living in more deprived setting (standard care unit) showed higher rates of indiscriminate and inhibited behavior. This specific result will be developed ahead in this Chapter.

In 2005, the BEIP study group presented similar results with a bigger sample, showing again that institutionalized children in Romania displayed significantly more attachment disturbances than Romanian children living with their families (Zeanah et al., 2005). Additionally, this study reported that while children living with their families showed fully a developed attachment to their parents in SSP, most institutionalized children displayed an underdeveloped attachment to their caregivers. Furthermore, the ratings of “attachment development” were associated with attachment disordered behaviors, inhibited type, suggesting that children assessed as less attached to the caregivers were the ones who showed more signs of inhibited attachment disorder, according to their caregivers report.

Furthermore, BEIP results regarding the randomized foster care trial provided some of the most significant support regarding institutionalized children attachment development problems. Results showed that children “Cared as usual” in the

institutional setting had significantly less secure attachment classifications in SSP (17.5%) than the group of children randomly selected for foster care, where 49.5% of the children were rated as secure in SSP (Smyke et al., 2010). In addition, the group of children that remained in institutions showed significantly more atypical insecure classifications (40%) than children living with foster families, where only 13.1% of the children were found to be atypically insecure regarding attachment classifications (Smyke et al., 2010). This assessment was conducted when children were 42 months old, 11-36 months after their random selection into one of the two groups. At this point, major differences could already be seen regarding the attachment classifications of foster care children, given that these classifications were statistically non distinguishable from the comparison group of children who always lived with their families (Smyke et al., 2010).

The ERA Study Team also has reported important findings regarding attachment in post-institutionalized children from Romania.

In one of their studies, a UK home-reared group and a Romanian institution reared group were compared regarding their attachment classifications in a separation/reunion procedure, when they were four years old (O'Connor et al. 2003). Results suggest significant differences between groups, in respect to attachment classification, as well as an effect of duration of deprivation for the institutional reared children. Romanian children institutionalized for longer periods of time (from 6 to 24 months) showed the most negative distributions in attachment classification (O'Connor et al. 2003). An interesting aspect of these results is that although institutional reared children had lower rates of secure and higher rates of disorganized/controlling classifications than the control group, the major differences were observed in insecure-other distributions (O'Connor et al. 2003). About 50% of the children who were institutionalized and adopted after the age of 6 months, were classified in the separation/reunion episode as having atypical forms of insecurity, not yet described in normal or risk samples (O'Connor et al. 2003).

In this study, two different methods were used to assess attachment disordered behavior. First, an observational measure was used to assess what the authors called "nonnormative patterns of attachment", described as atypical behaviors regarding attachment, sociability, wariness or exploration displayed by the child during the

separation/reunion procedure. Here, once again, differences were found between Romanian adoptees and UK adoptees. In the first group this kind of disturbance was found in 34.2% of early placed children and 37.8% of the late placed children whereas in UK adoptees it was found in 13% of the sample (O'Connor et al. 2003). Second, a report measure, based on the ratings of parents' interviews, was used to assess disinhibited behavior and late-placed previously institutionalized children also scored higher than the control group in this assessment. Furthermore, both measures of atypical attachment behavior seemed to be more prevalent among children classified as insecure-*other* in SSP (Ainsworth et al., 1978), which seems to validate the underlying assumption that this classification group represents children with atypical attachment behavioral patterns (O'Connor et al. 2003).

Follow-up studies, conducted when children were 6 and 11 years old, revealed that mild to high levels of indiscriminate behavior persisted in a significant number of later adopted previously institutionalized children, even after several years of placement in the adoptive families (Rutter, O'Connor, & the ERA Study Team, 2004; Rutter et al., 2007). In contrast, most of the children in the group of UK adoptees who showed mild levels of indiscriminate behavior at age 6, did not reveal this kind of atypical behaviors at age 11, suggesting that the display of mild levels of indiscriminate behavior may have different meanings in the two groups, probably associated with the different degrees of deprivation experienced early in their lives (Rutter et al., 2007).

This hypothesis has also been suggested by a study that compared institutionalized and family reared children in Ukraine, with or without HIV infection (Dobrova-Krol et al., 2010). Results showed that children in institutions displayed less secure and more disorganized attachments and indiscriminate behavior than children living with their families, regardless of the presence or absence of HIV infection. Interestingly, the quality of caregiving in institutionalized children seemed to be positively associated with children's security, unrelated to children's disorganization and positively associated with indiscriminate behavior. The first two results are easily understandable in the light of the attachment theory and research showing that parental sensitivity may be less relevant for disorganization than it is for organized patterns of attachment (see Chapter 1). The last result is more striking and it is explained by the authors as a possible indication that children's appealing behavior may result in more attention and responsiveness from the caregivers that is not reflected in more positive

attachment behaviors on the children's part due to the "*shallow nature*" of their initiatives. A possible "*equifinality of indiscriminate behavior*" is also suggested. Since this counter-intuitive finding was not found among family reared children, the authors follow Rutter and colleagues' (2007) assumption that indiscriminate behavior probably has a different etiological root and developmental course in institutionalized children as opposed to children from other risk samples.

The longitudinal study that assessed Romanian institutionalized children adopted into Canadian families has also provided some valuable information regarding the attachment development of early deprived children. These children were assessed at two different time points, one when they were in the adoptive families for a mean time of eleven months, having a mean age of 30 months (Chisholm, Carter, Ames, & Morison 1995), and another when they were in the adoptive families at least for 26 months, and had ages comprised between 53 and 110 months (Chisholm, 1998). Additionally, the Romanian adopted group was divided in two: an early adopted group (whose institutionalization time did not exceed 4 months) and a later adopted group (who remained in the institutional setting for at least 8 months).

One of the most important results was that the later adopted group of Romanian children showed significant better results regarding attachment security in the follow-up assessment than at 30 months. In fact, there were no significant differences between this group and the early adopted and family reared groups in a report measure of attachment quality (Chisholm, 1998). However, in an observational measure of attachment, that included a separation-reunion procedure, later placed adopted children did not yield better results. They were more frequently classified with typical and atypical insecure patterns of attachment than the early adopted and family reared children. Also, indiscriminate behavior, assessed through parents' interview, seemed to be significantly reduced in follow-up assessment for the early adopted group but not for the later adopted Romanian children, who continued to display considerably more indiscriminate behavior than both of the comparison groups (Chisholm, 1998).

In sum, most studies with samples of institutional reared children have focused on the assessment of attachment disordered behaviors. In contrast, only some have assessed the prevalence of disorganized attachment among these children.

Vorria and colleagues' study (2003) with institutionalized Greek children reported significantly higher rates of disorganized attachment among these children (65.8%) as compared to control children living with their families (25%). This study also has examined whether there were differences regarding caregivers' sensitivity between institutionalized children classified as secure or disorganized (Vorria et al., 2003). However, no significant differences between the two groups were obtained, suggesting that sensitivity alone is not sufficient to explain the development of such distinct types of attachment. The authors suggest that the unfavorable ratios (4/6:1) between infants and caregivers may lead the later ones to interact with the children in extremely insensitive and disciplinary forms, which may be frightening and thus lead some children to the development of a disorganized attachment (Vorria et al., 2003). This study also analyzed the association between some variables related to the child's pre-institutionalization experiences and the child's classification at SSP (Ainsworth et al, 1978). Factors like child's prematurity, reported health problems, birth weight or other family variables like maternal institutionalization experience, ethnical background or immigration were not associated with children's attachment type (Vorria et al., 2003).

Zeanah and colleagues' study (2005) reported a similar distribution of disorganization (65.3%) in their sample of institutionalized children in Romania, despite the higher level of deprivation in Romanian institutions. In contrast, studies that assessed post-institutionalized children's attachment with their adoptive mothers have found lower rates of disorganized attachment. The study of Marcovitch, Goldberg, Gold, Washington, and Wasson (1997) only classified 40% of the Romanian children adopted into Canadian families as having a disorganized attachment with their adoptive mothers.

Summarizing, most empirical data focusing on attachment disorders in institutional reared children comes from studies with post-institutionalized children, after their international adoption. These studies have some limitations since that, according to Zeanah and Smyke (2008, p. 227), "*they do not include assessments of individual differences in the preadoptive caregiving environments nor are they able to determine anything about the children's possible attachments within the institutions. In addition, they are somewhat less representative of institutionally reared children since those adopted are likely to be selected based on nonrandom factors*".

In this sense, research assessing children while they are still experiencing deprivation is needed, in order to better understand which specific aspects of caregiving and environmental risk may be responsible for children's maladaptive outcomes, particularly regarding attachment. Since a few similarities can be found between foster care and institutionalized children, especially concerning the instability in early care, a brief review of studies focusing on attachment disorders in this group of children will be presented next.

## **2.2. Attachment Disorders and Foster Care: a Brief Overview**

Infants placed in foster care not only face the separation from their main attachment figures but often have prior histories of adverse rearing conditions, characterized by different kinds of abusive or neglect experiences (Albus & Dozier, 1999; Oosterman & Schuengel, 2008; Stovall-McClough & Dozier, 2004). Considering these risk factors, it is not surprising that a diversity of maladaptive developmental outcomes have been identified in this population, especially regarding social-emotional development and attachment.

Oosterman and Schuengel (2008) have assessed 61 foster children, aged between 26 and 88 months when children were in their foster family for 3 to 76 months. The authors found 18% of children with signs of RAD inhibited and, or indiscriminate subtypes, and 13.1% of children with signs of secure base distortions. Interestingly, foster parents' sensitivity did not seem to be correlated with signs of RAD, which led the authors to conclude that the foster parents' sensitivity may not be enough as an effective intervention to RAD signs. This study also found that foster parents sensitivity was positively associated with signs of secure base distortions. Thus, the authors suggested that some of the children's secure base distortions behavior may result in more parental attention and, as a consequence, in more sensitive caregiving. This explanation would be more acceptable if the score of secure base distortions behavior would not be negatively correlated with security of attachment. Nevertheless, this is a very interesting study, mainly since it is one of the few that assessed attachment disorders beyond the scope of inhibited and indiscriminate behaviors.

Other studies with foster children have described a high prevalence of disordered attachment behaviors in this sample of children. For instance, Albus and Dozier (1999)

refer to the frequent expression of indiscriminate behavior or extreme fear of unfamiliar adults by these children. The authors mention that separation from caregivers and traumatic attachment related experiences are probably the source of these disturbed behaviors.

Another study with previously maltreated foster children has reported that 38% of the children met the DSM-IV criteria for diagnosis of RAD (Zeanah et al., 2004). Maternal risk was assessed and mother's psychiatric problems emerged as an important predictor of disordered attachment, inhibited type. Both mother's psychiatric problems and substance abuse seemed to act as predictors of disinhibited attachment disorder (Zeanah et al., 2004).

Pears, Bruce, Fisher and Kim (2010) provide recent evidence for the fact that maltreated foster children are at greater risk for developing attachment disordered behaviors. They found that, when compared to a control group of non-maltreated children living with their families, there were more maltreated foster children with higher levels of reported indiscriminate behavior. Furthermore, indiscriminate behavior was found to be associated with children's poor inhibitory control, even if controlling for cognitive developmental status. This, and the fact that the number of children's foster placements was negatively associated with inhibitory control has led the author to the suggestion that the association between early adverse experiences (like inconsistent caregiving and maltreatment) and indiscriminate behavior may be mediated by children's regulatory skills.

Although most studies focusing on attachment disorders have been conducted with samples of institutional reared children, there is some empirical data regarding the development of attachment disordered behaviors in foster children. This brief review suggests that these children also seem to be at a higher risk for developing attachment disorders, due to the presence of a multiplicity of risk factors in their lives like maltreatment, severe maternal psychiatric disorders or substance abuse. In particular, a vast majority of these children have experienced a disruption of early attachment relationships, followed by inconsistency in caregiving. According to the attachment theory these factors can be powerful risk factors for their attachment development.

Therefore, it has been suggested that, in contrary to what happens in institutionalized children, where children frequently do not have the opportunity to develop a selective attachment relationship, attachment disorders and indiscriminate behavior in foster children and other risk samples are probably associated with attachment relationship distortions rather than with the absence of a discriminated attachment relationship (Dobrova-Krol et al., 2010).

In the following, some diagnostic considerations about attachment disorders will be reviewed. Moreover, to better understand the predictors and developmental course of atypical attachment behavior, it would be useful to improve the knowledge about the conceptual and etiological issues regarding disorganized and disordered attachment behaviors. Therefore, these topics will be discussed afterwards.

### **2.3. Attachment Disorders: Diagnostic Considerations**

While showing the impact of caregiving deprivation on attachment, classic studies like the one of Tizard and Rees (1975), and Provence and Lipton (1962) have contributed to the inclusion of the diagnostic category of Reactive Attachment Disorder on DSM-III (APA, 1980).

Since then, the diagnostic criteria and disorders characteristics have been reviewed, culminating in the latest version that can be found in DSM-IV-TR (APA, 2000).

Reactive Attachment Disorder is currently described as a disturbed and developmentally inappropriate way of relating socially in most contexts, associated with pathological care, beginning before the age of five years. Two different sub-types are described in the DSM IV-TR (APA, 2000):

- a) the "inhibited" form, associated with a persistent failure to initiate or respond to most social interactions, being characterized by children's excessively inhibited, hypervigilant or contradictory responses (e.g. mixture of approach, avoidance, an resistance to comforting frozen watchfulness);
- b) the "disinhibited form", associated with a pattern of diffuse attachments, i.e., indiscriminate sociability or lack of selectivity in the choice of attachment figures, associated with excessive familiarity with unfamiliar adults.



Both sub-types have been found in samples of institutionalized or maltreated children but the disinhibited/indiscriminate form is clearly more common, especially among institutional reared children (Chisholm, 1998; O'Connor et al., 1999, 2003; Rutter, Kreppner, O'Connor, & ERA study team, 2001; Zeanah et al., 2002). Zeanah (1996) has even suggested that this sub-type of the disorder has emerged from the classic studies' descriptions of institutionalized children, while the inhibited type was drawn based on the descriptions of severely maltreated children.

Over the last few years there have been considerable clinical and empirical contributions regarding attachment disorders phenomenology and conceptualization, resulting in several critics to the DSM-IV-TR (APA, 2000) and ICD (WHO, 1992) criteria for RAD. In the following, the main focus will be on the diagnostic category of Reactive Attachment Disorder in the DSM-IV-TR. This diagnostic formulation is usually criticized for its narrow view of attachment disorders, and for not being able to integrate in its successive revisions the body of developmental research produced over the years (Boris & Zeanah, 1999; Zeanah, 1996).

Nevertheless, a broader group of critiques to DSM-IV-TR diagnostic category of RAD have been pointed across the literature, such as:

- a) Some of the key features of attachment disorders remain unanswered in this conceptualization, and the criteria presented need additional research (O'Connor et al., 1999);
- b) The diagnostic criteria are more focused on children's disturbed social behavior, in general, than specifically on disturbed attachment behavior (Zeanah, 1996; Zeanah & Fox, 2004; Zeanah et al., 1993);
- c) The specific reference on the criteria of DSM IV-TR to the existence of severe pathological care as one of the requirements to RAD diagnosis should be reconsidered, first because this is not clearly defined, second since it implicitly leads one to think about maltreatment cases and third it excludes a considerable amount of children that have not experienced this kind of care but still have serious problems regarding the relationship with their caregivers (Howe, 2003; Minnis et al, 2006; Richters & Volkmar, 1994; Zeanah, 1996; Zeanah & Fox, 2004);

- d) The consideration closely associated with the previous point, that this categorical diagnosis represents a maltreatment syndrome (Richters & Volkmar, 1994; Zeanah, 1996; Zeanah et al., 1993);
- e) The requirement defined in DSM-IV-TR to rule out pervasive disturbances of development, since there is no solid reason to impede the co-occurrence of both disorders (Zeanah, 1996), and in fact the co-existence of both conditions is very likely to be found in these children (Zeanah & Fox, 2004);
- f) The requirement for the disturbance to be evident across contexts has risen some discussion about the focus of the disturbance, i.e. is it focused on the child or on a specific relationship (Boris & Zeanah, 1999; O'Connor et al., 1999)? This is an important question since a child can have a disturbed attachment relationship with a caregiver and not show this kind of disturbed behaviors outside that specific relational context (Zeanah et al., 1993; Zeanah, 1996);
- g) The fact that this categorical conceptualization does not include any reference to the importance of child's characteristics and inter-individual differences to the etiology of the disorder (Zeanah & Fox, 2004).

Summarizing, these arguments show the need to improve the current DSM-IV-TR categorical diagnosis. In addition to the issues regarding the content of some diagnostic criteria, there are still a limited number of studies that support these criteria (Hanson & Spratt, 2000; Richters & Volkmar, 1994; Zeanah & Fox, 2004; Zeanah et al., 1993). One of the studies that tried to assess inter-rater agreement and the validity of criteria used to diagnose attachment disturbances in children showed less favorable results for both sub-types of disorder described in the DSM, as compared to alternative criteria, which focused less on general social behavior and more on specific attachment behavior (Boris, Zeanah, Larrieu, Scheeringa, & Heller, 1998).

Thus, in response to these concerns, a proposed revision for DSM-V diagnostic category of RAD has been developed. The major difference of this proposed revision of RAD is the division of the two DSM-IV sub-types into two disorders: Reactive Attachment Disorder of Infancy and early Childhood and Disinhibited Social Engagement Disorder. Furthermore, these revised criteria included the empirical contributions of studies that have been addressing the question of attachment disorders

in children exposed to distinct forms of caregiving deprivation (Zeanah & Gleason, 2010). Thus, Reactive Attachment Disorder is described as a pattern of disturbed and developmentally inappropriate attachment behaviors, in which the child rarely or minimally turns preferentially to a discriminated attachment figure for comfort, support, protection and nurturance. Additionally, these children reveal a persistent pattern of social and emotional disturbance characterized by lack of responsiveness in social interactions, limited positive affect and/or episodes of unexplained irritability, sadness, or fearfulness, which are evident during nonthreatening interactions with adult caregivers (Zeanah & Gleason, 2010).

Disinhibited social engagement disorder is described as a pattern of behavior in which the child actively approaches and interacts with unfamiliar adults by exhibiting reduced or absent reticence, overly familiar behavior, diminished or absent checking back with adult caregiver after venturing away, or willingness to go off with an unfamiliar adult with minimal or no hesitation (Zeanah & Gleason, 2010).

Thus, for Reactive Attachment Disorder (former inhibited sub-type) the focus is now placed on the absence or disturbed quality of children's attachment behaviors instead of being based on children's social behavior, in general (Zeanah & Gleason, 2010). For Disinhibited social engagement disorder, criteria are now more focused on children's disturbed social behavior, referring less to children's disinhibited or diffuse attachment behaviors, given the empirical suggestion that the core of this disorder is actually indiscriminate social behavior (Zeanah & Gleason, 2010).

Meanwhile, preceding this revision of the categorical conceptualization of RAD, some alternative conceptualizations of attachment disorders have arisen.

Based on the work of Lieberman and Pawl (1988), Zeanah and colleagues (1993) have presented an alternative view of attachment disorders, with the following sub-types or categories: Non-attachment disorder, Indiscriminate attachment disorder, Inhibited attachment disorder, Aggressive attachment disorder and Role reversal attachment disorder (for a more detailed description of criteria see Zeanah et al., 1993). These disturbances could be diagnosed in children from the first to the fourth year of life, based only on the child's behavior. Non attachment would be the only disorder

posing the need for children to exhibit this kind of behavior across all of her significant relationships (Zeanah et al., 1993).

In fact, according to these authors, clinical disorders of attachment could be defined as situations “*when the emotions and behaviors displayed in the attachment relationships are so disturbed as to indicate or substantially to increase the risk for persistent distress or disability in the infant*” (Zeanah et al., 1993, p. 338).

Afterwards, Lieberman and Zeanah (1995) reviewed this conceptualization, defining three main configurations of attachment disorders, some of them with different characteristics: a) *Nonattachment*, with indiscriminate sociability or emotional withdrawal; b) *Disordered attachment*, with inhibition, self endangerment or role reversal and c) *Disrupted attachment*, defined as a grief reaction after loss.

More recently, as an alternative way of considering attachment disorders, Boris and Zeanah (1999) have proposed a continuum, in which at one end would be secure attachment, followed by insecure but organized forms of attachment, disorganized attachment, secure base distortions and finally non-attachment disorders at the other end.

This alternative approach to describe attachment disorders has received some support from clinicians and researchers (Howe, 2003; Hughes, 2003; Marvin & Whelan, 2003) whereas others argued that it is not as useful as traditional categories, in terms of predictability of future outcomes (Catham, 2008).

However, although this new approach of attachment disorders overcomes some of the difficulties identified in DSM diagnostic criteria, and expands attachment disorders conceptualization, it still needs additional work on its validation and empirical support (AACAP, 2005).

In conclusion, the increased research in the last few years focusing on Reactive Attachment Disorder has led to a series of questions concerning its conceptualization. Some authors have even suggested that the emotional and behavioral patterns described in RAD diagnostic might not reflect an attachment disorder, arguing that could equally be seen as a “social impairment” (see Green, 2003) or a “failure of intersubjectivity” (see Minnis et al., 2006). Additionally, some authors mention that the comorbidity

between symptoms associated with attachment disorders and other well known psychopathological disturbances (e.g. anxiety, behavior or pervasive developmental disorders) frequently makes the differential diagnostic very difficult, which often culminates into errors of under or over diagnostic RAD (AACAP, 2005; Hanson & Spratt, 2000).

Specifically, studies with institutionalized or post-institutionalized children have pointed out that a significant comorbidity exists between less optimal forms of attachment, like attachment disorganization or attachment disordered behaviors, and other kinds of clinical problems like stereotypies, aggression, disruptive behavior, problems with peers, hyperactivity and inattention (O'Connor et al., 1999, 2000, 2003; Smyke et al., 2002; Vorria et al., 2003; Zeanah et al., 2002)

Nevertheless, there is some evidence supporting the distinction between attachment disordered behavior and other emotional and behavior problems and suggesting that the high comorbidity rates may be explained by common etiological factors associated with early deprivation (O'Connor et al., 1999).

However, given the substantial overlap of indiscriminate behavior and social and emotional behavioral problems, it would be very useful to understand which social-cognitive processes are common to both kinds of clinical problems. A better understanding of common etiological course would help to explain why both disturbances are so frequently found together (O'Connor et al., 2000).

Bruce and colleagues' study results (2009) may provide some insight to this question: the authors found an association between disinhibited behavior and poor inhibitory control. The lack of inhibitory control may help explain why children do not seem to show reticence and immediately approach unfamiliar people (one of the symptomatic expressions of indiscriminate behavior) but also why they frequently show difficulties in the relationship with peers, in maintaining attention or controlling their behavioral impulses.

Also it has been suggested that disinhibited behavior could be etiological related with children's difficulty in the identification and interpretation of relevant social cues which would justify their apparent inability to respect interpersonal limits (O'Connor et al., 1999, 2000). However, the fact that disinhibited behavior has not been found to be

associated with children's ability to detect and interpret other's basic emotions in an experimental procedure provides at least partial and preliminary evidence to refute that hypothesis (Bruce et al., 2009).

These differential diagnostic questions underlining the importance of attachment disorders assessment will be reviewed in the following.

#### **2.4. Attachment Disorders Assessment**

Clinical signs of attachment disorders have been reported in several studies across the last few decades. Nevertheless, empirically validated measures of attachment disorders have only recently emerged.

Most of the work regarding attachment disorders assessment has relied on report measures with essentially the same methodology: a series of questions conducted to caregivers about child's attachment behaviors, in which the interviewer aims to obtain a sufficient probe to rate each one of the specific behaviors and code for withdrawn and/or indiscriminate attachment disorder behavior. Some examples of these measures are described in O'Connor and colleagues (1999), Chisholm and colleagues (1995) and Smyke and colleagues (2002) (for a more detailed review see Zeanah et al., 2002). Perhaps the most popular measure is the one described in Smyke and colleagues' study (2002), currently known as Disorders of Attachment Interview (1999; see Method section).

Different considerations about how to assess attachment disorder and indiscriminate behavior in particular have led to the elaboration of different measures, among different research groups. Zeanah and colleagues (2002) assessed the convergence of these similar but distinct measures of indiscriminate behavior on a sample of institutionalized children. Results showed that significant convergence among these measures existed, proving the reliability of the assessments for this kind of attachment disordered behavior, in this specific type of samples (Zeanah et al., 2002).

Notwithstanding the proven reliability of these report measures, some limitations, shared with all report measures, need to be pointed out: i.e. the risk of biased information provided by the caregivers (Zeanah et al., 2002). O'Connor and colleagues (1999) have inclusively suggested a methodological error in their study, regarding the

report assessment of indiscriminate behavior. Thus, would explain the unpredictable result of mild and high scores of this disturbed behavior in some of the children of their control group that had not experienced deprivation and always lived with their families.

The best way to overcome this limitation is to use observational methods of assessment. However, this kind of measures is still scarce concerning attachment disturbances.

Probably the first study that tried to address this question was the one of Tizard and Rees (1975). The authors analyzed the correlation between the clinical observations of children's behavior towards strangers and the report measure of children's behavior, based on parents and caregivers' information. It has proven to be a significant convergence among report measures and the observations from the research team, namely regarding children's "overfriendly" behavior towards unfamiliar people.

One of the studies that included some form of observational assessment of atypical attachment behaviors was the one of O'Connor and colleagues' (2003), with previously institutionalized children in Romania. The authors used an observational measure of child's atypical behavior during a separation-reunion procedure and classified children's attachment, exploration, fear or wariness behavior towards the mother or the stranger as normative or non-normative, based on a pre-defined set of conceptual guidelines reported by Marvin, Orlrick and Britner (1998). Since a report measure of disinhibited behavior was also included, (above mentioned and described in O'Connor and colleagues' study 1999), it was possible to analyze the convergence between these two different methods for assessing atypical attachment behavior (O'Connor et al., 2003). Results showed a modest intercorrelation between these measures, adding support for the validity in the assessment of attachment disturbed behaviors.

What seems more interesting in this observational measure is that the most relevant information for the scoring of observed atypical attachment manifestations relied on the child's behavior toward the stranger on the separation-reunion procedure (O'Connor et al., 2003). It was in the context of this interaction that most of the atypical patterns of behavior emerged. This is consistent with the rationale of the first reliable

observational measure of indiscriminate behavior, the RISE (Riley, Atlas-Corbett, & Lyons-Ruth, 2005).

The RISE (Riley et al., 2005), that will be discussed in detail later, is a standardized measure of indiscriminate behavior, based on the assessment of the relative engagement of the child toward the stranger and caregiver, and on the examination of the child's display of affective engagement and attachment behavior towards the stranger (e.g. physical closeness, comfort seeking) during the SSP.

Since the RISE assesses indiscriminate behavior throughout the SSP this is also the procedure used to assess the quality of attachment according to Ainsworth traditional patterns, the authors emphasize the importance of evaluating the discriminant validity of the RISE (Lyons-Ruth et al., 2009). Indeed, further analysis revealed independence in the variance explained by these two assessment measures regarding caregiving risk and behavior problems (Lyons-Ruth et al., 2009).

Moreover, given that the RISE (Riley et al., 2005) is a very recent measure of indiscriminate behavior, data is still lacking regarding the convergence between this observational measure and the above described report measures of indiscriminate behavior. It would be important to assess whether these methodologically different measures are addressing the same construct (Lyons-Ruth et al., 2009).

One of the most unclear topics regarding the assessment of attachment disorders is the way in which it relates to the traditional classifications of attachment since indiscriminate or disinhibited behavior has frequently been found in children with organized and even secure attachment classifications.

Nonetheless, O'Connor and colleagues (2003) call attention to the possibly deceiving expression of proximity seeking and similar kinds of attachment behaviors by a child who is developing a brand new attachment relationship. This does not mean that the child is attached to the caregiver to whom these behaviors are directed (O'Connor et al., 2003), since he/she may exhibit this kind of apparent attachment behavior to unfamiliar people as well, meaning that in fact the child is expressing indiscriminate or disinhibited behavior. Although some studies have reported this kind of behavior among children with a selective attachment relationship and with a typical secure/insecure classification on SSP (Chisholm, 1998; Tizard & Rees, 1975), according to O'Connor



and colleagues (2003), these attachment relationships should not be considered as truly organized since it is known that organized patterns of attachment can not coexist with the expression of such disturbed forms of attachment behavior (Bowlby, 1969/1982). Zeanah (1996) supports this idea of incompatibility between attachment security and attachment disorder behaviors, suggesting that attachment disorders necessarily imply that children have developed an insecure attachment.

These results have led some authors to question the use of SSP and other traditional assessment methods with these samples as they may not be suited to assess children who experienced extreme caregiving deprivation and, in that sense, probably did not have the opportunity to organize a pattern of attachment behavior similar to the ones described in non deprived samples (O'Connor et al., 2003; Zeanah et al., 2005). The SSP was designed to assess the individual differences in infants' attachment quality and not to determine whether or not an attachment relationship exists (MacLean, 2003). Following this thought, and since they were assessing institutionalized children, Zeanah and colleagues (2005) have developed a five point rating scale aiming to capture the "stage of development" of children's attachment during SSP (Ainsworth et al., 1978). This scale ranged from 1, if there was no evidence of attachment behavior or discrimination among familiar and unfamiliar adults, to 5, if there was evidence of attachment behavior consistent with A, B, C or D classification in SSP (for more detail see Appendix A, Zeanah et al., 2005). Results from this study showed that while the community group of children was all placed at the top of the scale, only 3% of the institutionalized group of children was classified as having a full developed attachment to their caregivers. Furthermore, when the authors tried to match the attachment patterns with this rating scale classification, they found that most children classified with traditional organized or disorganized patterns revealed underdeveloped attachments to their caregivers, which led to the conclusion that *"the meaning of secure and disorganized attachment in the community and institutionalized groups are different"* (Zeanah et al., 2005, p. 1024).

Nevertheless, traditional procedures for assessing attachment in infancy can still be useful to understand the organization of attachment behavior in institutionalized children, as far as researchers do not resume the assessment to the use of these traditional classification methods that will probably be ineffective when it comes to

capture a whole different array of attachment related behavioral manifestations (O'Connor et al., 2003).

To conclude, there is no widely accepted method for assessing attachment disordered behaviors (O'Connor & Zeanah, 2003a) and some authors advise caution in using these research assessment tools when trying to establish a clinical diagnosis of attachment disorder (Zeanah & Emde, 1994). It is further suggested that disorders of attachment should be assessed based on the observation of the specific relationship between the child and the caregiver, giving more attention to this information and to the history of this dyadic relationship than to the child's more broad pattern of social behavior (Zeanah & Emde, 1994).

Furthermore, the distinction between attachment disorders and other atypical forms of attachment seems especially relevant given that both are often found among children from high risk samples. In this sense, the main questions regarding the conceptualization of attachment disorders and disorganization will be considered next.

### **2.5. Attachment Disorders and Disorganization: Conceptual Issues**

Since both disorganization and disorders of attachment are frequently found in high risk samples and particularly in institutionalized children, it seems useful to understand their similarities and their differences and to which degree they are associated.

It has been suggested that attachment disorganization and attachment disorders share some characteristics, especially with the inhibited/withdrawn type (Green, 2003; Marvin & Whelan, 2003; Minde, 2003; O'Connor & Zeanah, 2003b). That might be due to the fact that both constructs share similar sources in the clinical and research work with samples of maltreated children. However, in spite of the partial overlap, it is important to note that these are distinct constructs that reflect qualitatively different behavioral manifestations (O'Connor et al., 2003b). To date empirical data is still not available to account for a "*direct link*" between attachment disorganization and inhibited type of attachment disorders (Minnis et al., 2006).

One of the most important differences relies in the fact that disorganized attachment is considered to be a pattern of attachment, that although atypical and somewhat disturbed is manifested within the context of a selective attachment. As it has

been described in Chapter 1, disorganization represents the lack of a consistent and organized attachment strategy assessed based on the child's behavior towards the caregiver through SSP (Ainsworth et al., 1978). Usually, it is signaled by a set of aberrant but discrete behaviors manifested by the child in a stressful situation, in the presence of the caregiver, revealing that something within the relationship is threatening or disorienting the child. Research has pointed to the frequent association between children's attachment disorganization and several forms of atypical caregiving, either in the form of frightening/frightened or disrupted parental behavior (Lyons-Ruth et al., 1999; Main & Hesse, 1990). Thus, when the child is in the presence of SSP's natural clues to danger he/she shows bizarre or conflicting behaviors towards the caregiver, instead of coherent secure, avoidant or resistant attachment strategies.

In contrast, attachment disorders have been found to be associated with extreme forms of early caregiving deprivation, as it is the case of institutional rearing, foster care or extremely abusive or neglectful family environments (Boris et al., 2004; Lyons-Ruth et al., 2009; Zeanah et al., 2005). The conceptualization of attachment disorders emerged from clinical and empirical descriptions of a persistent form of atypical behavior towards strangers among these children, manifested by superficiality and lack of reticence on approach and lack of social boundaries or, on the contrary, by an intense fear and withdrawal. These unusual behavioral manifestations in the presence of unfamiliar adults were in most cases accompanied by the child's inability to use the caregiver as a secure base/secure haven, or, on the other hand, by an indiscriminate approach and search for comfort among available adults. These behavioral reports, together with the children's early caregiving experiences have led to the assumption that, contrary to attachment disorganization, the existence of a selective attachment relationship is not assured in the case of disorders of attachment (O'Connor & Zeanah, 2003a).

This knowledge, and the fact that evidence of disorganized behavior is frequently limited to SSP (Ainsworth et al., 1978), as opposed to attachment disorders that reflect a "*pervasive disturbance*", have led O'Connor and Zeanah (2003a) to suggest that disorders of attachment are a separate clinical entity, with a more severe behavioral manifestation. Accordingly, some authors claim that disorganized attachment indicates an increased risk to develop later psychopathology, whereas a disordered attachment is by itself pathological (Zeanah & Smyke, 2005). Other authors argue that indiscriminate

behavior, in particular, seems to predict a broader pattern of behavioral problems than attachment disorganization and thus may be considered as a more severe kind of atypical attachment behavior (Lyons-Ruth et al., 2009) and at least partially, independent from disorganization (Boris et al., 2004; Lyons-Ruth et al., 2009).

However, Boris and Zeanah (1999) have proposed a continuum conceptualization of traditional classifications of attachment and attachment disorders in which at one end would be secure attachment, followed by insecure but organized forms of attachment, disorganized attachment, secure base distortions and finally non-attachment disorders at the other end. O'Connor and Zeanah (2003b) underline that although useful, this continuum conceptualization should be cautiously interpreted given the research and clinical data suggesting the “qualitative” differences between disorganized and disordered attachment behaviors. On the other hand, the relationship between attachment quality, assessed through traditional methods, and attachment disorders, assessed through the lens of diagnostic manuals or alternative conceptualizations, is still unclear thus making it hard to place both in the same continuum (O'Connor & Zeanah, 2003b).

There are not a lot of studies focusing on the association between disorganization and attachment disorders, and existent research data has presented inconsistent results. Some studies have analyzed the association between report measures of indiscriminate behavior and children's attachment disorganization in SSP (Ainsworth et al., 1978) and could not find a significant link between these two forms of atypical attachment, either in institutionalized (Zeanah et al., 2005) or in other high risk samples (Boris et al., 2004). In contrast, some studies with high risk samples have assessed indiscriminate behavior through observation and found an association between indiscriminate behavior and children's attachment classification, with insecure-organized or disorganized children displaying the highest scores of indiscriminate behavior (Lyons-Ruth et al., 2009).

A study by O'Connor and colleagues (2003), with a sample of pre-school previously institutionalized children, has also found an association between reported indiscriminate behavior and an alternative category of disorganization called “insecure/other”. This “insecure-other” category included children that did not fulfill the criteria for the traditional organized (A, B, C) or disorganized patterns of attachment but

also exhibited “non-normative” behavioral patterns (Kreppner, Rutter, Marvin, O’Connor, & Sonuga-Barke, 2011). These “non-normative” patterns referred to the children’s exploration, fear, sociable or attachment behaviors that were not consistent with children’s expected organizational patterns of behavior at SSP (Kreppner et al., 2011). Furthermore, the insecure-other category included observations of children’s atypical behaviors towards the stranger like attachment related behaviors, or sequences of sociable and fearful behavior. This description of the criteria of “insecure-other” category may help to explain the association found with indiscriminate behavior, since some behaviors assessed through report measures of indiscriminate behavior may be captured simultaneously through this modified coding scheme for the classification of children’s behavior of SSP.

Discrepancy of results makes it difficult to draw a definitive conclusion about the convergence of disorganization and attachment disorders, particularly regarding indiscriminate behavior. Some of the discrepancies found among studies seem to be due to methodological differences in the conceptualization and assessment of both disorganization and attachment disorders, underlining the need for a clarification.

### **2.5.1. Conceptualization of indiscriminate and inhibited behaviors**

Concepts like “disinhibited social behavior”, “disinhibited attachment behavior”, “disinhibited attachment disorder”, “indiscriminate behavior”, “indiscriminate friendliness”, and “overfriendliness”, have been used across studies (Bruce et al., 2009; Chisholm, 1998; O’Connor et al., 1999, 2003; Smyke et al., 2002; Tizard & Rees, 1975; Zeanah et al., 2002). Usually these terms refer to the same kind of behavioral manifestations: lack of wariness in approaching unfamiliar people, wandering off in unfamiliar places without checking back and/or willingness to go off with strangers.

However, different methods have been used to assess indiscriminate behavior and distinct interpretations of this same phenomenon have arisen.

One of the most recent topics of discussion relies on the fact that indiscriminate behavior has been described in children with a selective relationship, whether this is an institutional caregiver or an adoptive, foster or biological parent (Boris et al., 2004; Chisholm, 1998; Lyons-Ruth et al., 2009; O’Connor et al., 1999; Tizard & Rees, 1975; Zeanah, Scheeringa, Boris, Heller, Smyke, & Trapani, 2004; Zeanah et al., 2002).

First of all, these findings are inconsistent with the assumption of DSM-IV that disinhibited type of RAD is characterized by the lack of selectivity of attachment figures. Additionally, indiscriminate behavior has been inclusively reported among post institutionalized children classified as organized secure or insecure in SSP (Chisholm, 1998; O'Connor et al., 2003). O'Connor and Colleagues (2003) have found support in Bowlby's work to suggest that indiscriminate behavior is not compatible with the existence an organized attachment relationship. Furthermore, the authors claimed that probably the problem relies in the way attachment quality is being assessed, since the traditional measures are designed to assess the quality of selective attachment relationships and these children may not have developed such a relationship or, at least, may not have been able to develop a behavioral pattern of attachment similar to the one found in non deprived children (see section 2.4, this Chapter).

On the other hand, some research data suggests that the existence of disordered behavior towards strangers and the existence of a selective relationship with a caregiver are not mutually exclusive. Zeanah and colleagues' study (2005) partially supported this assumption through the analysis of the association between the ratings of children's observed attachment behavior towards the caregiver and children's inhibited and disinhibited types of attachment disturbance. Results showed that while children who exhibited signs of the inhibited attachment disorder showed incompletely developed attachments to their caregivers, children exhibiting the indiscriminate sub-type did not so. Thus, the indiscriminate sub-type appears to be unrelated to the degree of development of attachment. Additionally, the study results revealed an association between the quality of institutional caregiving and inhibited attachment disordered behavior. However, this association was not found for the disinhibited sub-type of attachment disorders (Zeanah et al., 2005).

Inhibited behavior or the withdrawn pattern of attachment disorders has been far less studied than indiscriminate behavior or disinhibited pattern of attachment disorders (Minnis et al., 2006). The most characteristic feature of inhibited attachment behavior is the evidence of minimal or total absence of attachment behavior. It is also associated with the child's inconsistency or total failure to actively look for comfort with a discriminated caregiver, even when highly distressed, as well as with poor emotional

regulation and serious difficulties in social engagement and reciprocal interaction (Zeanah & Smyke, 2008).

Summarizing the two sub-types of attachment disorders, the “inhibited form” refers to the absence of attachment behaviors and the “disinhibited form” refers to existence of attachment behaviors that are indiscriminately directed (Zeanah et al., 2002).

Several studies with post-institutionalized children support the idea that these sub-types of attachment disorder have at least different pathways of recovery. While the inhibited type of attachment disordered behaviors tends to disappear once the child is placed with an adoptive family, the same does not happen with disinhibited type that seems to persist several years after adoption, even though children have by then a clear selective relationship with their parents established (Bruce et al., 2009; Chisholm, 1998; O’Connor et al., 2003). Nevertheless, empirical data showed the frequent co-occurrence of these sub-types in a sample of maltreated children after three months in foster care (Zeanah et al., 2004). A possible explanation would be that this might not be enough time for the signs of inhibited attachment disorder to remit, as it has been proven to occur in children assessed a few years after adoption (Bruce et al., 2009; Chisholm, 1998; O’Connor et al., 2003). Furthermore, results from this and other studies suggest that despite being different, the sub-types of RAD should not be seen as totally independent clinical entities since children often show signs of both manifestations of disordered attachment (Smyke et al., 2002; Zeanah et al., 2004).

The fact that indiscriminate behavior has been frequently described in children with selective attachments and even classified as secure, makes the role of indiscriminate behavior within the attachment theory paradigm still unclear (O’Connor et al., 2003) and has even led some authors to question the inclusion of indiscriminate behavior in the attachment disorders group (Chisholm, 1998; Zeanah, 2000; Zeanah & Smyke, 2008). One of the arguments is that it might better reflect a distinct clinical problem associated with early experiences of neglect (Zeanah, 2000).

In the same line, some researchers have questioned some of the core characteristics usually attributed to indiscriminate or disinhibited behavior. It was suggested that this kind of behavior is not truly sociable (given that is superficial and

not reciprocal) or indiscriminate (given the existence of some kind of preference for familiar adults), considering it as a ‘developmental delay’, difficulty or inability to inhibit the approach and respect boundaries in social relationships (O’Connor et al., 1999, 2003).

One study has inclusively tested the correlations between a report measure of aggression and a few report measures of indiscriminate behavior to see if the last were measuring impulsivity instead of attachment disordered behavior. However, the weak correlations indicate that each measure seemed to assess a distinct problem (Smyke et al., 2002). The fact that Zeanah and colleagues (2002) have shown no association between all measures of indiscriminate behavior and a report measure of aggression also rules in favor of the argument that these are separate clinical problems possibly with the same etiology.

Some studies with previously institutionalized (Bruce et al., 2009), or with maltreated foster children (Pears et al., 2010) have found a negative correlation between indiscriminate or disinhibited behavior and inhibitory control, which led them to suggest that poor skills of inhibitory control might explain the lack of reticence or interpersonal boundaries displayed by these children in the presence of unfamiliar adults. In addition, it has been proposed that maybe the items usually applied to the report assessment of indiscriminate behavior may have different meanings and etiological grounds (MacLean, 2003). This is partially supported by the results of Chisholm study (1998), where only the items describing more severe behavioral tendencies like “willing to go off with a stranger” and “wandering without distress” were found to be associated with children’s quality of attachment. So, according to the above referred hypothesis, while some of the items implied in the assessment of indiscriminate behavior would be more associated with children’s inhibitory control skills, which would explain the association with hyperactivity and impulsivity among these children as well as the negative correlation with inhibitory control, others would be more linked with attachment secure base behaviors, which would explain the results of Chisholm (MacLean, 2003).

Moreover, studies with institutional reared children, after their adoption by relatively sensitive and responsive families, have shown the persistence of indiscriminate behavior through middle childhood and early adolescence, and the lack



of association between these behaviors and the quality of adoptive care, suggesting that some kind of “*biological programming*” may be implicated in the development of this type of disturbed behavior (Rutter et al., 2007).

Some authors have claimed that indiscriminate behavior may even be adaptive in an institutional context, since children get more attention and proximity from adult figures (Smyke et al., 2002), being subsequently reinforced by the adoption experience (Chisholm, 1998). In the same line, it has also been suggested that disinhibited behavior should not be conceptualized as a disturbance, but rather as a form of children’s evolutionary adaptation, allowing them to cope with extremely negative caregiving experiences (Balbernie, 2010). Nevertheless, it should be kept in mind that this kind of disturbed behavior towards strangers may signal significant clinical disturbance and even place children at risk, given their absence of reticence regarding new people and places that can be potentially harmful (O’Connor et al., 2000; Rutter et al., 2007).

In sum, the relevance of inhibited and disinhibited types of attachment disorders has been thoroughly acknowledged by clinical and scientific communities. Even the alternative conceptualizations of attachment disorders (Boris & Zeanah, 1999; Lieberman & Zeanah, 1995; Zeanah et al., 1993) that emerged as an attempt to overcome the flaws in the categorical diagnosis of RAD have maintained these sub-types as non-attachment disorders. Across conceptualizations it can be seen that common to both sub-types, besides the absence of a discriminated attachment figure, is the fact that “*comfort seeking function of attachment is almost always seriously problematic*” (Zeanah, Boris, & Lieberman, 2000, p. 298). Nevertheless, some differences can be found regarding alternative conceptualizations and the DSM-IV-TR diagnostic formulation of attachment disorders: disorders are conceptualized as dimensional, children should have a mental age of at least 10 months and the existence of pathogenic care is not required (Zeanah et al., 2000).

However, in addition to inhibited and disinhibited sub.types, the alternative conceptualizations, already described in the previous section (Boris & Zeanah, 1999; Lieberman & Zeanah, 1995; Zeanah et al., 2000; Zeanah et al., 1993) have introduced an additional major category of attachment disorders, referred as secure base distortions that will be addressed in the following.

### 2.5.2. Conceptualization of secure base distortion behavior

The concept of secure base distortions describes the clinical manifestation of disturbance(s) in an attachment relationship, thus implying that, contrary to the disorders of non-attachment, an attachment relationship between a child and a discriminated caregiver exists but it is seriously disturbed (Zeanah et al., 2000). Four patterns of relationship specific secure base distortions are described in the more recent formulations of these alternative criteria (Zeanah et al., 2000):

- a) *Attachment disorder with self-endangerment*, in which children's exploration behavior is characterized by an extremely dangerous and provocative quality. These behaviors, systematically occur in the presence of a specific caregiver (e.g. run out into the traffic), and the child seems to be unable to adaptively use this caregiver as a secure base/secure haven. This pattern of behavior is frequently accompanied by aggressive behavior, directed to the self or to the caregiver, mostly displayed in situations where comfort seeking behavior was expected;
- b) *Attachment disorder with Clinging/Inhibition*, where children's exploration behavior is seriously compromised. Children are incapable of using the caregiver as a secure base from which to explore, especially in unfamiliar situations or in the presence of unfamiliar adults;
- c) *Attachment disorder with Vigilance/Hypercompliance*, in which children's exploration behavior is also compromised due to extreme emotional constriction, vigilance and compliance towards the caregiver's requests. The child seems to be afraid of displeasing the caregiver in some way and sometimes even seems to be afraid of the caregiver himself. The child's behavior is especially evident in the presence of particular emotional and behavioral manifestations from the caregiver as when they strongly display anger or frustration;
- d) *Attachment disorder with role reversal*, that, as the name suggests, corresponds to a role reversal in the attachment relationship, where the child is the one who acts as a caregiver, assuming the responsibility to care for the well-being and protection of the parental figure.

This perspective not only offers an innovative perspective towards attachment disorders but also overcomes the so criticized narrow conceptualization of attachment disorders described in DSM-IV-TR (APA, 2000). Thus, contrary to the implicit requirement of the DSM-IV-TR (APA, 2000) that no selective attachment relationship should exist in attachment disorders, this conceptualization conceives a set of disordered behaviors that not only occur in the presence of a discriminated attachment relationship, but are most likely confined to this specific relationship (Boris & Zeanah, 1999).

There are very few studies showing interrater reliability for secure base distortions but the ones existing have presented promising data, not only concerning reliability (Boris et al., 1998; Oosterman & Schuengel, 2008) but also concerning the conceptualization of these relational disturbances as significant clinical entities by showing that children with secure base distortions showed overall less adaptive relationships with the caregivers than children with other clinical symptoms (Boris et al., 1998). However, additional research is needed, in order to validate these types of relational disorders and understand the way in which these relate to both sub-types of non-attachment disorders (AACAP, 2005).

Furthermore it is crucial to clear out the etiological questions associated with these forms of disordered attachment behaviors in order to understand the similarities and differences regarding their onset, developmental course and behavioral correlates, which would allow the design of more effective interventions to address these problematic behaviors.

## **2.6. Attachment Disorders and Disorganization: Etiological Role of Institutional and Early Family Rearing**

Despite of the different terms used and the different kinds of deprivation referred, most of the studies report higher rates of disorganized and disordered attachment behaviors in children reared in institutional contexts. Thereafter, it is assumed that something within the institutional rearing experience poses major obstacles to children's development of a discriminated and adaptive attachment relationship. Several questions regarding the etiological role of institutional rearing on attachment disorders and disorganization have been discussed throughout attachment theory and research. These

main etiological issues will next be described, starting with a review of the impact of the most distal or macro variables of institutional care, like the quality of institutional routines regarding children's nutritional and hygiene needs or cognitive or motor stimulation activities. Then, the impact of micro variables regarding the quality of relational caregiving or individual differences in the length of institutional experience will be discussed. Finally, although research has not dedicated a lot of attention to the subject, existent empirical data concerning early family risk factors that might be implicated in the etiology of attachment disorders and disorganization in institutionalized children will be discussed.

The study of Tizard and Rees (1975), previously described in the first part of this Chapter, assessed children in institutions that were globally rated as positive, being characterized by reasonable adequate conditions to care for small children, both regarding human resources and basic needs routines. Even so, these children displayed severe signs of disordered attachment behavior, especially the type currently defined as disinhibited. Thus, contrary to what happened in Romanian orphanages, in this study children were not exposed to global and extreme deprivation, having their needs of hygiene, nutrition, cognitive and social stimulation met. However, these children did not had the opportunity to experience "parental like" or individualized relational, being cared by professional caregivers that avoided and/or discouraged the development of close and meaningful personal relationships with the children.

These results suggest that global stimulation, nutrition and hygiene deprivation are probably not the main variables implicated in the etiology of attachment disorders.

A study with Romanian institutional reared children partially validates this hypothesis for attachment disorganization, revealing no association between children's weight and developmental status when they left the institution and their attachment classification in a separation/reunion procedure with the adoptive parents at the age of four years (O'Connor et al., 2003). Chisholm (1998) also has not found an association between indiscriminate behavior, displayed at least two years post-adoption and the overall quality of the institution or the physical care received by the child in the institutional setting. Nevertheless, it is not clear which dimensions of the institutional quality were assessed and what were the criteria used. On the other hand, the fact that the institutional deprivation indicators were assessed through the retrospective report of

the parents in both of these studies raises some questions regarding the accuracy of this information.

Huge differences can be found regarding the general quality of the institutional contexts reported throughout the studies with institutional reared children in the last few decades. However, some characteristics have been frequently associated with institutional care like shift work, high child/caregiver ratios, and the absence of a consistent and available caregiver to respond to children's individual needs (Johnson, 2000; The St. Petersburg - USA Orphanage Research Team, 2008). In this sense, there are a lot of factors within institutional caregiving that may pose considerable challenges for children's development of a selective and organized attachment relationship.

First, as Bowlby (1969/1982) emphasized, a child will be able to develop an attachment relationship during the first year of life, as long as he/she has an adult figure consistently available. It is known that in institutional settings there are only professional caregivers, with a lot of children under their care, which may prevent them to emotionally invest in the children (Smyke et al., 2002). Some of them may even avoid getting emotionally involved with the children since they are aware that they will eventually leave the institution (The St. Petersburg - USA Orphanage Research Team, 2008; Tizard & Rees, 1975; Vorria et al., 2003). The less than optimal ratios and shift work may also difficult the caregivers capability to promptly respond to children's needs and after continually experiencing that their signaling of distress is not followed by a response from the caregivers, children may stop signaling effectively or to signal at all (Catham, 2008; Vorria et al., 2003). Accordingly, extremely insensitive and unresponsive caregiving has been associated with disorganized attachment (Lyons-Ruth & Jacobvitz, 1999). Bowlby has inclusively argued that this inconsistency and multiplicity of caregivers at institutions may lead the child to get less emotionally responsive, avoid to get emotionally tied and eventually "*stop altogether attaching himself to anyone*" (1982, pp 28). Catham (2008) supports this idea and points some studies showing that the absence of significant and emotional relationships with caregivers may result on the deficient regulation of some neurotransmitters usually released during intimate social interactions. Moreover, the author advances the hypotheses that this may lead children to stop investing in the construction of a close relationship with a caregiver since they probably do not get much pleasure out of it.

This brief review illustrates the unanimously accepted assumption of the adverse impact of institutional caregiving routines. However, in order to understand the etiology of disorganized and disordered attachment behaviors it is necessary to go further and explore the specific micro variables associated with these atypical attachment behaviors in institutional reared children. Although most studies are especially interested in comparing institutionalized children with community or foster care children, being the focus on whether or not a child is institutionalized and its implications for several areas of child development, some research has explored these proximal etiological factors.

Some important empirical data comes from the BEIP study's comparison between continuously institutionalized children with children randomly assigned to more individualized forms of care.

The study of Smyke and colleagues (2002) compared two different groups of institutionalized children in Romania, one from a standard care unit (where children had multiple caregivers who were randomly assigned to work in day, evening or night shift) and one from a pilot unit (where children were consistently cared by a pool of only four caregivers during day time) and revealed that children in the standard unit had higher mean scores in the interview measures of indiscriminate and inhibited behavior.

Another BEIP study has gone further and analyzed the attachment quality of 42 months children that after a period of institutional rearing were randomly assigned to placement in foster care (Smyke et al., 2010). They found that when compared to continuously institutionalized children, the group of foster care children had significantly more secure and less atypical insecure attachments. Although in this study they could not find an association between individual quality of caregiving and security, or organization of attachment at 42 months of age, it became clear that the quality of caregiving made a difference in children's attachment development since the transition to more "family like" care resulted in significant better results regarding children's attachment (Smyke et al., 2010).

This BEIP group has also analyzed the impact of individual differences in caregiving on children's attachment outcomes focusing on the quality of their relationship with the institutional caregiver.

One study compared the mean scores of reported indiscriminate and inhibited attachment in two groups of children: those who were identified as favorites by a caregiver in the unit and those who were not. Results pointed that children considered as favorites had significant lower scores of both sub-types of disordered attachment behavior (Smyke et al., 2002).

Similar data was presented by the study of Zeanah and colleagues (2002) that assessed the levels of indiscriminate behavior in the two above mentioned distinct caregiving settings, according to the existence of a preferred caregiver. They found that the majority of children in the standard caregiving setting still displayed high levels of indiscriminate behavior, despite having a preferred caregiver. However, the percentage of children in the same unit showing indiscriminate behavior was higher when a preferred caregiver did not exist (Zeanah et al., 2002). Accordingly, if the existence of a discriminated adult figure in the institutional context did not rule out the emergence of indiscriminate behavior, at least it seemed to act as a buffer mechanism or protective factor for some children.

These studies clearly showed that increased deprivation in terms of individualized or “family like” care was associated with more severe levels of disordered attachment behavior regarding both inhibited and indiscriminate type. Interestingly though, compared to indiscriminate behavior, inhibited behavior seemed to be more dramatically reduced when higher individualized care was provided. This is illustrated by the study of Smyke and colleagues (2002) that revealed no significant differences between the reported inhibited behavior of children in the pilot unit and in the comparison group of children living with their families (Smyke et al., 2002).

Moreover, it is important to notice that Chisholm (1998) in her study with post-institutionalized children had some distinct results from the BEIP study group. When assessing children’s indiscriminate behavior, several years after adoption, she found higher scores among children who had been considered as favorites by institutional caregivers. Although the procedure used to assess if children were caregivers’ favorites at the institution is not explained, one may assume that it has been based on retrospective report since this is a study with post-institutionalized children. If this was the case, this may constitute an important methodological limitation.

Furthermore, some research data has presented similar levels of indiscriminate behavior in adopted children who experienced different kinds of caregiving deprivation prior to adoption i.e. mostly institutional versus non-institutional care (Bruce et al., 2009; O'Connor et al., 2000). But, although lower levels of disturbed behavior would be expected in the foster care group, similar to what has been found in the BEIP study, it should be considered that these children also have experienced caregiving disruption and possibly deprivation, if not before, at least when they were taken out of their foster or biological families in order to be adopted (Bruce et al., 2009). The hypotheses of the important role of caregiving inconsistency in the etiology of disinhibited attachment behavior is also supported by the fact that both of these groups showed clearly higher levels of indiscriminate behavior than did children from a comparison group of non-adopted, family reared children (Bruce et al., 2009). Consistently, a study with maltreated foster children has shown the association between caregiving instability and indiscriminate behavior, revealing that children who experienced more frequent disruptions in care were the ones displaying higher levels of indiscriminate behavior (Pears et al., 2010). These results are in line with Bowlby's assumption that major separations from the attachment figures may have a profound impact not only in children's current psychological well-being but also in their subsequent development especially regarding social and emotional domains of functioning (Bowlby, 1973).

Although research evidence partially supports the importance of inconsistency in caregiving, it equally suggests that it may not be the main and certainly not the only etiological factor implicated in the emergence of attachment disordered behavior. A study of Lyons-Ruth and colleagues (2009), with a sample of never institutionalized high risk children (characterized by maltreatment or maternal psychiatric illness) has shown high levels of indiscriminate behavior among these children. Furthermore, indiscriminate behavior was predicted by severity of caregiving risk, being this relationship mediated by maternal disrupted communication, specifically by maternal disorientation. These results indicate that the quality of caregiving, in terms of affective and significant interactions with the child, may be an equally powerful variable in predicting the emergence of indiscriminate behavior. In this study there were no rotating shifts and multiple caregivers but these mothers were characterized by "*awkward*", "*uncomfortable*" and "*quick to disengage*" interactions with their children, seeming like "*they did not know their infants well and were not confident in how to interact with*



them” (Lyons-Ruth et al., 2009, p. 369). It is plausible to infer that this quality of interaction is also commonly found among institutionalized children and their caregivers given the low caregiver-child ratios, high shift rotation and “professional quality” of the relationships that reflect the relational dynamics of many institutions.

This is an important question since it may be argued that it is not the rotation and multiplicity of caregivers in itself that may work as a risk for the development of attachment disordered behavior. Instead, the implications of these caregiving conditions, like “*lack of depth of emotional engagement of caregivers during critical early periods of attachment formation*” (Lyons-Ruth et al., 2009, p. 369) may be the true obstacle to the healthy and adaptive development of children’s attachment. Consequently, increasing depth of engagement and responsiveness between the institutionalized child and his/her caregiver could have a positive impact in the child’s ability to develop and organize an attachment relationship with this institutional caregiver (Zeanah et al., 2005).

The other way in which research has addressed more proximal processes, presumed to play a role in attachment development, is through the analysis of age and duration of institutionalization. This question is associated with the possibility posed by Bowlby (1969/1982) and other authors (O’Connor et al., 1999) of existing a ‘sensitive period’ in the development of an attachment relationship in a way that the impact of deprivation experience would depend on the developmental phase in which it occurred.

Currently, the inconsistency of results do not allow for a clear delimitation of such a sensitive period. On the other hand, Stovall-McClough and Dozier (2004) called attention to an important issue in their study with foster children. Despite the fact that early placed children showed more positive results regarding attachment they were not able to clearly determine whether this additional difficulty in older children’s development of attachment was due to children’s age per se (which would lead us to assume that as children grow older attachment to new caregivers becomes more difficult) or to the amount of time they’ve been exposed to very negative caregiving conditions.

Nevertheless, several studies have focused on these variables. The study of Zeanah and colleagues (2005) has not found an association between the duration of

institutional experience and signs of attachment disordered behavior, both inhibited and disinhibited sub-types. However, these results refer to assessments conducted when children were still at the institutions and most of the studies that have found associations between attachment disordered behaviors and length of institutionalization have been conducted with institutional reared children, when they were already placed within their adoptive or foster families. According to Zeanah and colleagues (2005), this environmental difference can explain the absence of association found in their study.

For instance, an ERA's study (O'Connor et al., 1999), with Romanian, orphanage reared children, found that if children were adopted before the age of 6 months they showed lower levels of attachment disordered behaviors and a more favorable developmental course of this attachment disturbance at age 4, when compared with children adopted after the age of 6 months. This association was not mediated by children's nutritional status or cognitive impairment. However, other factors have been proven to mediate the association between disinhibited behavior and duration of institutional placement, like children's inhibitory control skills, and these have not been analyzed in this study (Bruce et al., 2009).

This association between duration of institutional placement and subsequent manifestation of attachment disordered behaviors was also reported in follow-up studies when children were 6 and 11 years old (O'Connor et al., 2000; Rutter et al., 2004; Rutter et al., 2007). However, the length of institutionalization only seems to predict later manifestation of attachment disorders when we consider the distinction between children adopted before and after 6 months of age, since more or less prolonged periods of institutionalization after that age do not seem to be associated with different developmental outcomes regarding attachment (Rutter et al., 2007).

Other studies with samples of institutional reared children, placed in foster care or adoption, have also revealed the link between institutionalization length and later manifestation of attachment disordered behaviors (Smyke et al., 2010).

Nevertheless, we have to underline the existence of considerable intra-group variability since the age of placement among the children who exhibit higher number of attachment disorders behavior highly varied and 38% of the children exposed to

prolonged periods (6-24 months) of institutionalization did not show any sign of attachment disorder behavior (O'Connor et al., 1999).

On the other hand, other studies with post-institutionalized children have found no association between children's age when they left the institution and indiscriminate behavior assessed when they were with the biological or adoptive families (Tizard & Rees, 1975).

These studies showed that even after the first year of life a significant part of the previously deprived children were able to develop an attachment relationship once a consistent caregiver available become. Nevertheless, it seems like when deprivation, in terms of responsive and consistent caregiving, persists after 6 months of age, the probability of children developing attachment disordered behaviors substantially increases. Furthermore more prolonged periods of deprivation can create additional difficulties for children's attachment development. Even when a selective attachment is formed, some children continue to exhibit several forms of disturbed and dysfunctional attachment behaviors. Thus, some studies suggest the existence of a "sensitive period" for attachment formation (as predicted by Bowlby, 1969/1982) but it is still not possible to delineate it. This seems to be related with the fact that in most studies children's age of deprivation experiencing is frequently confounded with the length of institutional rearing, being not uncommon for both criteria to be used interchangeably. This makes it difficult to discern between the effects of each one of these variables on children's developmental outcomes as stated by Stovall-McClough and Dozier (2004).

Furthermore and based on the results above presented, it can be inferred that when considering the role of institutional deprivation on the etiology of attachment disorders, the most significant factors are the ones related with the quality of relational caregiving experienced by the child. Even when all the basic needs are assured and children have the opportunity to interact with relatively adequate caregivers, a large number of them still show signs of disordered attachment behavior. On the other hand, improving the quality of individualized caregiving, with more available and stable caregivers, seems to lead to better results regarding attachment disordered behaviors (Smyke et al., 2002).

Notwithstanding, caregiving deprivation can not be the only determinant factor since clinical and empirical reports show that not all children exposed to extreme

pathogenic care develop this kind of symptoms and, on the other hand, not all of the children who reveal signs of attachment disorder are exposed to extreme pathogenic care (Bruce et al., 2009; Minde, 2003; O'Connor et al., 1999, 2000; Richters & Volkmar, 1994), although all of them have experienced some form of “environmental adversity” (Zeanah & Fox, 2004, p. 37).

Additionally, as already mentioned earlier, the striking finding that disordered attachment behaviors, especially indiscriminate behavior, remain in previously institutionalized children, even after a prolonged period living with a sensitive and responsive family, still remains unexplained (O'Connor et al., 2000). Maybe part of the answer relies in the distinction between both sub-types of attachment disordered behavior. Some authors have raised the question of whether they are different types of the same disorder or two different disorders (Zeanah et al., 2004). Data points to a conceptualization of the inhibited type as more dependent of current attachment relationships, and the indiscriminate type as a more pervasive disorder (Chisholm, 1998; O'Connor et al., 2003; Smyke et al., 2009). These findings, in addition to the fact that one subtype is much more common than the other, suggest that they probably have distinct etiological origins and correspond to two separate entities (O'Connor et al., 2003).

Moreover, while considering the etiological factors associated with disorganized or disordered attachment behaviors in institutionalized children, it is important to attend to empirical research focusing on the impact of environmental adversity on children's neurobiological functioning since these changes may consequently influence children's social and emotional development.

In fact, the neurobiology of human development has become a growing topic of interest giving the recent amount of empirical data showing that adverse early experiences may alter the subjects' genetic expression as well as brain structure and functioning (Cicchetti & Rogosh, 2001; Parker, Nelson, & the BEIP Core Group, 2005). In the first two years of life the mechanisms of neural plasticity are still highly vulnerable to environmental input, underlining the role of the brain as one of the most important genetic and epigenetic determinants of psychopathological and resiliency mechanisms (Cicchetti & Curtis, 2006). Among the multiplicity of environmental influences on children's development, parenting and caregiving variables have been

underlined as one of the most important mediators of the impact of early experiences on children's neurobiological functioning.

Research with rodents has revealed that individual differences in maternal care can affect the genetic expression of systems responsible for behavioral and endocrine response to stress (Meaney, 2001). Furthermore, laboratory rodents empirical data has shown that early maternal deprivation influences subsequent reactivity of the hypothalamic pituitary-adrenal (HPA) axis (Meaney et al., 1996), increasing the subjects vulnerability to stress (for a review, see Levine, 2005). Although later intervention can attenuate the effects of this inadequate parental nurturing early in rodents life, some damaging seems to be permanent (Bredy, Humpartzoomian, Cain, & Meaney, 2003).

However, studies with primates have revealed slightly different results. Different experimental procedures manipulating the length and frequency of infant-mother separations reveal that infant primates display behavioral and endocrine signs of a stress response whenever they are separated from their mother (Levine, 2005). Nevertheless, contrary to what happens with rodents, primates HPA system does not seem to be permanently damaged by these early adverse experiences (Levine, 2005). Even in Suomi's (1997) well known experiences with rhesus monkeys raised in total isolation, results only showed significant behavioral alterations in later phases of development, failing to determine consistent correspondent damaging in these primates' HPA responses.

Moreover, similar results have been presented for human samples. As we have seen in Chapter 1, highly dysfunctional forms of caregiving (e.g. intrusiveness, unresponsiveness, insensitivity) have been associated with children's elevation in glucocorticoid activity (Gunnar et al., 1996; Spangler et al., 1994), suggesting that parental quality of care may be an important buffer mechanism for children in stressful situations. It has inclusively been suggested that extreme early adversity, like maltreatment experiences, may influence neural networks sensitization to subsequent stressful experiences, thus increasing the subjects' vulnerability to psychopathology (Gunnar, 2000; Gunnar & Vasquez, 2006). However, studies regarding the neurobiological effects of early adverse experiences are scarcer and difficult to interpret giving the methodological constraints associated with ethical parameters of human

research. Even so, over the last decade more research has been focused in understanding the impact of abuse and maternal deprivation experiences, especially on children's limbic-hypothalamic-pituitary adrenocortical system and general brain functioning.

Research with infants in foster care has revealed low morning cortisol levels in these children, when compared with similar SES children living with their biological families (Dozier et al., 2006). Furthermore, a study with preschool children placed with a new foster family has not only revealed lower levels of morning cortisol production among these children but also a dysregulation of cortisol daytime pattern (Bruce et al., 2009).

Consistently, studies with children living in Eastern Europe orphanages have shown low morning levels and general lack of diurnal variation in children's glucocorticoids levels (Carlson & Earls, 1997; Kroupina, Gunnar & Johnson, 1997). However, these neurobiological abnormalities seem to disappear once children are taken out of the institutions and placed in responsive family environments, exception made for some children with very extreme previous deprivation experiences (Gunnar, 2001; Kertes, Gunnar, Madsen, & Long, 2008). Thus, only some children continue to display elevated basal levels of cortisol production, in particular children that revealed growth difficulties associated with psycho-social deprivation (Kertes et al., 2008) which may be due to the association between this environmental physical condition and chronic elevations of corticotropin-releasing hormone and glucocorticoids (Gunnar, 2000).

It is assumed that parental deprivation is the main explicative factor for the initial neurobiological dysregulation and consequent recovery. When the child is offered the opportunity to develop a consistent relationship with a nurturing and responsive caregiving, he/she is allowed to experience a sense of safety in the world and thus reorganize his/her stress and threat response systems (Loman & Gunnar, 2010). Nonetheless, the fact that early institutional rearing is usually accompanied by other adverse experiences like lack of stimulation in several different areas, abrupt separation from parental figures and in many cases lack of individualized and prompt responsiveness to children's attachment and affective needs, makes the interpretation of these results difficult. Some studies with maltreated children have inclusively suggested that the alterations found in daytime cortisol production were associated with

psychopathology, namely with clinical depression (Hart, Gunnar, & Cicchetti, 1996; Kaufman, 1991).

However, in contrast to what was found with maltreated depressed children, nonmaltreated children with clinical depression symptoms did not show an altered pattern of cortisol levels during mourning (Hart et al., 1996). On one hand these results advocate for the effect of cumulative risk on children's neurobiological functioning and on the other imply an association between maltreatment and daytime cortisol production abnormalities. Nevertheless, research focusing on maltreated or abused children HPA axis has found inconsistent results, either pointing to an elevated or a blunted functioning of this system in these high risk samples (De Bellis, Lefter, Trickett, & Putnam, 1994; De Bellis et al., 1999). These differences in research data are probably due to the elevated inter-individual variability and methodological constraints, since it is extremely hard to control for a myriad of variables in these samples that can influence subject's neurobiological functioning like the type of maltreatment, duration of exposure to abusive experiences, time passed between the experience of abuse and the study's assessment or current psychopathological symptoms (Gunnar & Vazquez, 2001).

In any case, it seems like the neglectful environment, typical of institutional rearing, significantly alters children's circadian rhythm as shown by their flat or globally altered cortisol production during daytime. Furthermore, it seems like this early and repeated exposition to stressful experiences and consequent chronic HPA axis responsiveness may lead to brain exposure of neurotoxic levels of glucocorticoids, which, by its turn, can result in cognitive deficits (Chugani et al., 2001). The cognitive impact of institutional rearing has already been reviewed in this Chapter (for a review see MacLean, 2003) but it is important to refer that these experiences have specifically been associated with alterations in medial prefrontal cortex, which may impact not only children's responsiveness to stress but also their self-regulation and attention skills (Sullivan & Brake, 2003). Some recent studies have supported this idea, revealing increased difficulties in these areas among foster care or institutionally reared children (Bruce et al., 2009; Colvert et al., 2008). It has also been proposed that the cognitive impairments frequently observed in institutional reared children may be explained by a persistent and early developed dysregulation in HPA axis (Stevens et al., 2008), which would be consistent with the rodents research data above described.

In sum, early adverse experiences can alter children's neurobiological functioning, particularly the systems involved in stress responsiveness, and caregiving experiences can work as important mediators of this causal link. In the case of institutionalized children, not only institutional care variables but also early experiences of parental care may be an important part of the equation when it comes to explain the implications of adversity exposure to children's developmental outcomes. In general, it should be underlined that variations in maternal sensitivity may influence children's stress reactivity and thus psychopathology (Sheridan & Nelson, 2009). In an early period of life, the presence of a sensitive caregiver is essential to help the infant manage arousal and buffer the HPA axis reactivity (Gunnar, Brodersen, & Rigatuso, 1993). This data is consistent with the studies, described in Chapter 1, showing that securely attached children display lower cortisol levels in the face of SSP stressors than insecure or disorganized children (Spangler & Grossmann, 1993). Thus, maternal sensitivity has been associated with secure attachment and secure attachment has been associated with more adaptive responsiveness to stressors. It has been suggested that more adequate and sensitive parenting may increase the children's perception of their ability to cope with stress (Gunnar, 1993). Consequently, the availability and efficiency of parents in helping children regulate their emotions, when they are still not able to do it on their own, will influence not only their perceived coping skills for dealing with adversity but also their brain structures and reactivity of the HPA axis (Gunnar, 1993; Gunnar, 1998). Both of these factors will impact children's physiological response to stress. These considerations are crucial in the case of institutionalized children since most of them have spent some time of their lives with their biological families that in most cases are characterized by dysfunctionality, violent interactions and general lack of adequate parental skills. Thus, any attempt to understand the etiology of developmental sequelae of institutionalized children can not be restricted to the analysis of institutional experience variables but also has to attend to pre-institutionalization risk factors that may be the cause of children's later difficulties, either through a direct causal link or just by increasing children's vulnerability to subsequent adverse experiences.

In this framework, maternal depression was consistently studied, given that caregiver's depressed mood and behavioral withdrawal usually difficult their adequate performance of the parent role, and negatively influences mother-child interactions. In the words of Sheridan and Nelson (2009, p. 50) "*in the depressed mother-infant dyad,*



*the depressed mother is often unavailable or affectively unresponsive; consequently, the infant may experience behavioral disorganization, and the mother and infants' attentive/affective behaviors would become desynchronized*'. Therefore, it is not surprising that maternal depression may complicate the mothers buffering of their infants external stressors leading to increased cortisol reactivity on the infants (Essex, Klein, Cho, & Kalin, 2002). Furthermore, the persistent early exposure to negative emotionality found in infants of depressed mothers has been associated with right frontal brain asymmetries, caused by the impact of the adverse patterns of caregiving on children's synaptic pruning and neuronal organization (Sheridan & Nelson, 2009). For its turn, this reduced left frontal brain activity has been linked with children's increased experience of negative affect and decreased ability to experience joy which may heighten their risk for psychopathology.

Moreover, even when institutionalized children have not lived with their biological families, they were usually still exposed to a variety of prenatal risk factors. For instance, maternal substance abuse is a relatively common situation among these children and the developmental impact of in-utero exposure to alcohol or other harmful substances like cocaine is well documented. Consumption of alcohol during pregnancy may have a detrimental impact in children's IQ, language, memory and attention skills (Kodituwakku, 2007) but it can also influence children's social behavior, complicate children's reading of social cues or, in more extreme cases, lead to an apparent manifestation of indiscriminate behavior, given the relative lack of differentiation between the caregivers and other unfamiliar adults (Kelly, Day, & Streissguth, 2000). On the other hand, maternal use of cocaine during pregnancy has been associated with children's subsequent difficulties in attentional or emotional expression domains (Frank, Augustyn, Knight, Pell, & Zuckerman, 2001). In particular, cocaine abuse seems to negatively impact the parents' neuroregulatory systems which can influence their responsiveness to the infants' signals (Swain, Lorberbaum, Kose, & Strathearn, 2007). Thus, not surprisingly, a study conducted with children with pre-natal exposition to drugs has found an association between maternal intrusiveness behavior and children's disorganized attachment (Swanson et al., 2000).

Additionally, given the multiplicity of environmental risk factors usually associated with institutionalized children's biological families, it is not infrequent for these children to born premature. Prematurity has been related to several behavioral and

emotional problems in infancy and early childhood like difficulties in approach behavior and self-regulation (Wolf et al., 2002) or problems in adaptability and attention (Chapiesky & Evankovich, 1997; Tu et al., 2007).

In conclusion, the questions of etiology of attachment disorders and disorganization in institutional reared children have earned some attention from recent research but the fact that most studies are conducted with post-institutionalized or with children that were already at the institution for some time when the assessment occurred makes it difficult to address the impact of other variables, more associated with children's individual characteristics (prenatal factors or pre-institutionalization experiences), institutional caregiver's characteristics or with other micro-variables of the quality of institutional caregiving.

Some decades ago, Provence and Lipton (1962), in their study with institutionalized children have underlined the importance of individual characteristics (like innate developmental potential) and early risk factors (like prematurity) as possible mediators of the impact of the deprivation experience in child's developmental pathways.

The importance of children's individual variables for their subsequent development has also been underlined by Zeanah and Fox (2004). These authors have raised the question of whether the interaction between children's characteristics, like temperament, and certain contextual factors, like caregiving deprivation, would account for children's development of attachment disorder behaviors. Nevertheless, there are still not a lot of studies with specific samples of institutional reared children that have addressed these questions.

The relationship between children's temperament and individual differences in attachment has been explored by several studies and although some have reported the absence of a linear association between these two variables (Vaughn & Bost, 1999) it has been suggested that temperament may influence the quality of children's attachment to the caregivers, since the particular way in which children express their attachment cues may influence mothers' reaction and consequently have an impact in the quality of the dyadic interactions (Zeanah & Fox, 2004).

Considering children in institutions, Zeanah and Fox (2004) suggest that temperamental features of withdrawn or negative affectivity may turn the child less competent to attract the caregivers attention and nurturance, thus reducing the opportunities for social stimulating interactions and consequently to the extension of the behavioral inhibition. In contrast, children with the opposite temperamental characteristics would be more competent in asking for caregivers' attention but since they are generally not available to answer to the child's bids of attention this may lead to the development of indiscriminate behavior.

To our knowledge, the relationship between temperament and attachment disorders has not been empirically explored but there are some studies with disorganized attachment. For instance, Vorria and colleagues (2003) have not found an association between attachment organization/disorganization and children's temperamental characteristics in their study with Greek institutionalized infants. Nevertheless, the authors showed that children in the institution scored higher on report measures of shyness and negative emotionality and lower on report measures of activity and sociability than the control group of children living with their families. Following the hypothesis of Zeanah and Fox (2004), these temperamental characteristics, together with the environmental adversity, may pose additional difficulties for children's adaptive development, namely regarding attachment. In contrast, positive temperamental features may buffer the effect of institutional deprivation and act as a protective factor towards children's development of attachment disordered behaviors (Zeanah & Fox, 2004). According, the study of Vorria and colleagues (2003) showed that institutionalized children classified as secure in SSP (Ainsworth et al., 1978) tended to be more positive in their social behavior and affective expression, namely towards the caregiver. This is an interesting result, but it leads to the main question of whether this positive social emotional behavior evoked more personalized attention and sensitive responsiveness from the caregivers, favoring children's secure attachment, or, on the contrary, if the development of a secure attachment stimulated a more positive social and emotional expression (Vorria et al., 2003).

Thus, children's temperament may be one of the most significant individual characteristics when it comes to understand the intra-group variability found in the developmental outcomes of children exposed to early caregiving deprivation (Zeanah & Fox, 2004) but additional research is needed to analyze this hypothesis.

The second set of variables proposed by Provence and Lipton (1962) as crucial to the understanding of institutionalized children developmental outcomes, have received significantly less attention from research studies.

One of the few studies that assessed child's pre-institutionalization experiences was the one of Bruce and colleagues (2009). Prenatal and early risk factors were assessed after adoption, based on the retrospective report of the parents, and no association was found between these risk indicators and disinhibited behaviors in both groups of previously institutionalized or foster care children (Bruce et al., 2009). Nevertheless, this study had the important limitation of relying on parents' reports, several years after adoption, to assess children's pre-institutionalization experiences, which may have conditioned the accurateness of the information provided (Bruce et al., 2009).

Therefore, despite the importance of these background variables for children's developmental outcomes, as documented by several studies, they are far less studied in institutional reared children and the existing research reveals important methodological limitations. Additional research is needed, in order to enlighten the role of caregiving characteristics, children's individual factors or biological family variables in the etiology of attachment disorganization and disorder behavior (Bruce et al., 2009).

### **2.7. Impact of Favorable Environment in Attachment Disorders and Disorganization**

We have been describing the negative impact of early institutionalization on children's attachment development but it is important to refer that although parental disruption and institutional deprivation seem to mark their subsequent relational experiences, some of these children are able to develop selective, organized and even secure attachment relationships with new caregivers when they get the opportunity to do so (Chisholm, 1998; O'Connor et al., 2003; Smyke et al., 2010; Tizard & Rees, 1975).

Tizard and Rees (1975) described in their study that about 80% of the adoptive parents of previously institutionalized children reported that they children were attached to them. Some limitations can be addressed to this study since the attachment assessment was based on parental report and non-systematic observations but some other studies have presented similar results.

Chisholm (1998) found that 66% of the Romanian institutionalized children adopted into Canada were securely attached in the early placed group (adopted with four months of age or less). This percentage was a little lower if we consider the later adopted group (adopted after 8 months, 37%), but it was still significant. O'Connor and colleagues (2003) found a similar number of secure children adopted from Romanian orphanages to the UK, i.e. 41.5% in children adopted before 6 months of age and 33.3% in later adopted children (between 6 and 24 months).

Smyke and colleagues (2010) reported that 49.5% of the Romanian institutionalized children placed in foster care were classified as securely attached in SSP at 42 months of age.

Additionally, the study of van Londen and colleagues (2007), with previously institutionalized children, internationally adopted into the Netherlands, has found a very positive rate of secure children (61%).

This data reinforces the idea that the most important intervention with children that experienced very adverse rearing conditions like maltreatment, institutionalization, or multiple placements in foster care, is to provide them with a consistent, available and responsive caregiver, allowing them to develop a selective relationship with an attachment figure (AACAP, 2005).

Nevertheless, unlike other developmental domains like cognitive or motor development where a catch up after placement in family environment is frequently reported (Dennis, 1973; Gunnar, Bruce, & Grotevant, 2000; Provence & Lipton, 1962) the negative impact of the early deprivation experiences is frequently still evident in children's relational functioning and attachment development, even when children are able to develop an attachment relationship with their caregivers.

Provence and Lipton (1962) refer that when compared to family reared children, institutional reared children in foster care were less likely to approach foster parents in search of comfort or help to deal with problem solving situations. Plus, their attachment to the parental figures seemed to be at early stages of development.

Superficiality and "indiscriminate friendliness" are also described in the interpersonal behavior of previously institutionalized children, even after considerable

time of placement with the biological, foster or adoptive families (Provence & Lipton, 1962; Tizard & Rees, 1975).

Furthermore, disordered attachment behaviors and higher rates of atypical insecure or disorganized classifications have been found across studies of post-institutionalized children (Chisholm, 1998; O'Connor et al., 2003; Smyke et al., 2010; van Londen et al., 2007).

These empirical findings suggest that there is a substantial amount of children that need specific clinical interventions in order to help them overcome the social-emotional difficulties that lasted from extremely adverse early caregiving environments and pose serious obstacles to the development of a discriminated and organized attachment relationship with their new caregivers. Nevertheless, research is still scarce concerning efficient forms of intervention to address the problematic behaviors manifested by these children (Dozier & Rutter, 2008).

Traditional attachment based interventions, aimed to increase parental sensitivity and the quality of parent-child interaction may be important, especially when the child remains with the same caregivers, but may not be enough to address these children's needs since that based on their previous caregiving experiences, they probably developed expectations of adult caregivers as unavailable and untrustworthy (Howes & Ritchie, 2002). This is confirmed by the fact that even when placed with sensitive and responsive adoptive or foster parents these children still display difficulties either in attaching to these new figures or in developing an organized and even secure quality of attachment (Minde, 2003). According to O'Connor and Zeanah (2003b), "*what may be needed is specialty training to help parents override the normal, expected reaction to aversive child behavior that does not have the same meaning as the same behavior in non deprived children*" (p. 324). After several years of maladaptive caregiving these children frequently build up negative representations about themselves and the others that are daily expressed through disordered attachment behaviors such as "indiscriminate sociability" and "emotional distance" that may constitute significant obstacles for adoptive and foster care parents (Lieberman, 2003).

Nevertheless, a randomized clinical trial developed by Juffer and colleagues (1997) with internationally early adopted children has shown the positive effects of a

brief intervention, aimed to increase parents' sensitivity, in reducing children's disorganized attachment. Although this was a lower risk group, since children were adopted before they were 6 months old, the results are still encouraging and deserve further replication.

Intervention focused on parents' representation of their own attachment experiences may also be an important to consider regarding deprived children, since research has been showing increase attachment security among children with adoptive or foster parents with secure states of mind (Dozier et al., 2001).

Meanwhile, a specific intervention emerged, claiming to be attachment-based and suited to treat attachment disordered behaviors, known as "holding therapy". This modality of intervention advocates that the therapist should use physical contact with the child, in order to help him/her in releasing the feelings of anger that are preventing the development of an adaptive attachment relationship with the caregiver. The use of coercive and non validated practices and the alleged death of some children during the implementation of "holding therapy" have lead to several critiques and even to the relegation of this modality of intervention by a significant part of the clinical and scientific community (AACAP, 2005; Hanson & Spratt, 2000; O'Connor & Zeanah, 2003b).

Other kinds of interventions for attachment disorders, less controversial and more generally accepted have been described. Some have been focusing on the foster or adoptive parents, helping them to cope with the feelings of confusion and rejection that may derive from these disordered attachment relationships but the impact of these interventions in children's ability to develop discriminated attachments remains unproved (Minde, 2003). Others are more focused on the children and try to develop their individual skills to deal with stress, or simply assume that the therapist may act as an alternative attachment figure and the development of a secure relationship between the child and the therapist may lead to improvements in children's disordered behaviors (Haugaard & Hazan, 2004).

Nevertheless, clinical recommendations formulated to date underline not only the importance of helping the caregiver to deal with the feelings of anxiety and confusion that arise in the context of a disturbed attachment relationship with their child but

mainly the need to develop dyadic psychotherapy (followed by family therapy if necessary) in order to help the caregivers to acknowledge their strengths and weaknesses in specific moments of interaction with the child, where the final goal would be to develop more adaptive patterns of emotional communication within the dyad (AACAP, 2005). Nevertheless, it is important to note that even when the caregiver is able to respond adequately and in a sensitive way to the child's needs, it will probably take some time until the child is able to challenge and overcome the set of representations developed, based on adverse patterns of previous interactions with a caregiver. These representations can block his/her ability to rely in the attachment figure and in the capacity of this figure to protect him/her and comfort him/her in times of distress (Haugaard & Hazan, 2004).

In sum, specific interventions to address children's attachment disorders are scarce and lack empirical validation (O'Connor & Zeanah, 2003a).

Globally accepted is the need for these children to have consistent, available, sensitive and responsive caregivers but it's worth remembering that as Lieberman (2003) stated "*'Good enough' parenting is often not good enough for an emotionally disturbed child. In this sense, adoption is a radical intervention only if the adoptive parents become adept interveners, able to decode and respond appropriately to the child's psychological needs*"(p. 282).

### **3. CONCLUSION**

Among the developmental effects of institutional rearing, attachment to caregivers has been one of the most studied topics. Beyond the normative range of inter-individual differences in the organization of attachment relationships, clinicians and researchers have described two main forms of atypical attachment development that appear to be related to less optimal patterns of early care: Disorganization of Attachment and Disordered Attachment Behaviors. Despite the variety in quantity and quality of deprivation reported across studies with institutional reared children, findings usually point to increased rates of atypical insecure, disorganized or disordered forms of attachment to caregivers when compared to family reared or even foster cared children (O'Connor et al., 2003; Tizard & Rees, 1975; Vorria et al., 2003; Zeanah et al., 2005).



Nevertheless, and despite their indisputable clinical usefulness, there are still several questions remaining to be answered regarding the etiology, conceptualization, assessment and intervention of attachment disorganization and attachment disordered behaviors. Clinicians and researchers should gather efforts in order to improve our knowledge on this matter, given the evidence of their prevalence in children who experienced inadequate or disrupted care and the fact that they are not better described by another diagnostic category or conceptualization (Hanson & Spratt, 2000; Lieberman & Zeanah, 1995; Richters & Volkmar, 1994).

Finally, we should underline the very negative impact of institutional rearing for children's development in general and to children's attachment development in particular. Empirical research has shown that higher quality of relational caregiving and more "family like", individualized care are associated with better developmental outcomes, especially regarding social emotional development. As recently stated by American Academy of Child and Adolescent Psychiatry (AACAP, 2005) "*sensitive caregiving and psychological investment in the child, which are essential ingredients of healthy attachments, are far more likely in families than in institutions*" (p. 1215).

The empirical data presented reinforces the importance of assessing disorganized and disordered attachment behaviors in Portuguese children. Given that there are nearly no studies focusing on this relevant political, social and psychological issues in Portugal, the study described in the second part of this dissertation aims to contribute to the understanding of the role of early family risk and institutional quality of care in Portuguese institutionalized children's attachment outcomes.



## **Part II**

*A Study about Attachment Disorganization and Attachment  
Disordered Behaviors in Portuguese Institutionalized Children:  
the Role of Early Family Context and Institutional Care*



## Chapter 3

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### *Attachment Disorganization and Attachment Disordered Behaviors in Portuguese Institutionalized Children: Aims, Hypotheses and Method*

This Chapter presents an original study focused on the attachment quality of Portuguese institutionalized infants. First, the aims, research questions and hypotheses will be reviewed. Subsequently, methodological questions will be described, regarding participants' descriptive data as well as the measures and the data collection procedure used in this study.

#### **1. AIMS**

In the year of 2009, there were 9 563 institutionalized children in Portugal (ISS, 2010), of which 850 were under three years of age. Furthermore, there were only 658 children in foster care, 30 if we focus on children younger than 3 years old. Thus, it is easy to conclude that in Portugal the most common welfare response to children who

were abandoned or taken away from their biological families, due to the lack of social-economic conditions or disturbed child rearing practices is institutionalization. Moreover, it should be noticed that although institutionalization is meant to be a temporary welfare response, it frequently becomes a prolonged solution. In 2009, 37% of the children and/or adolescents were institutionalized for more than four years and 20% were living in an institutional setting for more than two years (ISS, 2010). Inclusively, in the last report on institutionalization from ISS, one to two years of institutionalization in child and youth shelters is considered to be a “short permanency period”. Regarding children under three years of age, about 27% were institutionalized for one year and 11.8% were at the institution for a period of two to three years.

Nevertheless, there has not been a lot of research within the country to examine the quality of care provided by the institutional settings in Portugal and the developmental implications of this rearing experience, namely in what concerns small children’s attachment quality.

Moreover, among the few studies conducted with institutionalized children in Portugal, results are not consistent. While one study conducted with preschool children (Pereira et al., 2010) has not found high levels of attachment insecurity using the Attachment Behavior Q-Sort (Waters, 1995), other study with preschool and school age children (Pinhel, Torres, & Maia, 2009) has found significantly lower levels of security among institutionalized children, as compared to family reared children, using the Attachment Story Completion Task (Bretherton, Ridgeway, & Cassidy, 1990). The small size of the samples, the methodological differences and the fact that differences in the quality of institutional care were not considered in these studies, may explain the inconsistency of results. In any case, these studies have focused on later developmental phases and, to our knowledge, differences in attachment quality of Portuguese institutionalized children under three years old remain unexplored.

This task seems urgent considering that contemporary research with institutionalized children has shown alarming consequences of institutional deprivation in several areas of children’s development, like physical growth, cognition, and social emotional functioning as discussed in Chapter 2.

Most of these results come from studies conducted in Eastern Europe orphanages where deprivation is known to be global and severe. Nonetheless, and assuming that Portuguese institutions are better equipped to answer children's developmental needs, studies conducted with children from Greek (Vorria et al., 2003) and United Kingdom (Tizard & Rees, 1975) institutions where the overall quality of care is quite superior to the ones in Eastern Europe, still reveal several delays and clinical problems, especially regarding children's social and emotional development.

In fact, attachment has been one of the most recurrent topics of research with institutional reared children, given that in these settings they are generally deprived of regular and individualized interactions with a limited and consistent number of caregivers (see Chapter 2). According to attachment theory, these aspects of institutional care can pose serious risk for children's attachment development and, in extreme situations, may even impede the child of developing a selective and organized attachment relationship (see Chapter 1).

Given this knowledge, the present study aims to describe attachment quality and the frequency of attachment disorganization and attachment disordered behaviors in a group of Portuguese institutionalized children and explore the association between these individual differences in attachment and the quality of institutional caregiving. Consequently, and given that there are almost no studies describing the quality of care of Portuguese institutions, this task was considered as one of the main goals. In this sense, the Assessment of the Quality of Institutional Care (AQIC, Silva et al., 2010) was developed in order to assess structural and relational aspects of the quality of institutional care, based on researchers' systematic observations throughout two years of data collection at different institutional settings. Regarding attachment, a "home" version of the SSP was used in order to assess individual differences in organized patterns of attachment (according to Ainsworth and colleagues, 1978, classification method), disorganized attachment behaviors (according to Main and Solomon, 1990, coding scheme) and indiscriminate behavior (according to the RISE and colleagues, 2005, rating scale). Plus, ratings from the caregivers' report of children's behavior (according to DAI, Smyke and Zeanah, 1999) were used to assess indiscriminate and inhibited behavior and secure base distortions.

Additionally, given that validated measures for assessing attachment disorders have only recently emerged, especially the ones that rely on observation methods, some authors have expressed the need for examination of the concurrent validity of these measures (e.g. Lyons-Ruth et al., 2009). This study will try to answer this reply. Particularly the convergence between a report and an observational measure of indiscriminate attachment behavior will be analyzed in this group of Portuguese institutionalized children.

Furthermore, although there is now significant empirical evidence to conclude that institutional rearing may undermine children's attachment development, there is still a lot to clear out regarding the specific aspects that can be implicated in the etiology of attachment disorders and attachment disorganization in institutionalized children (e.g. Bruce et al., 2009; Zeanah & Fox, 2004).

Hence, having developmental psychopathology as a theoretical framework, a multilevel and multi-method approach was used in order to explore individual, relational and contextual etiological factors associated with attachment disorganization and attachment disorder behaviors. The social-emotional and temperamental correlates of these atypical forms of attachment were also analyzed in this study.

On the other hand, since one of the most discussed topics in attachment disorders research has been the way in which these disturbances relate to the traditional classifications of attachment quality and in particular with attachment disorganization (e.g. O'Connor et al., 2003) the subject of comorbidity between disordered and disorganized attachment will also be a target of analysis in this study.

## **2. RESEARCH QUESTIONS AND HYPOTHESES**

Being the main goals of this study already outlined, the research questions and hypotheses that guided this study will be described in the following.

1. *What are the frequencies of disorganized and attachment disordered behaviors in this group of Portuguese institutionalized children?*



Given that different studies with institutionalized children have found similar elevated levels of disorganization (Vorria et al., 2003; Zeanah et al., 2005) and attachment disordered behaviors (Tizard & Rees, 1975; Zeanah et al., 2002), regardless of the differences among the institutional settings, high levels of disorganization and attachment disordered behavior are also expected in this group of Portuguese institutionalized children.

2. *What are the developmental, behavioral, temperamental and social-emotional correlates of attachment disorganization in this group of institutionalized children?*

Following the existent empirical data with institutionalized children (e.g. Vorria et al., 2003), a more positive social emotional functioning of organized children as compared to disorganized children is expected. Accordingly, disorganized children are expected to reveal more behavior problems and social-emotional difficulties. In the line of what has been presented by developmental research (Vaughn & Bost, 1999) and empirical studies with institutionalized infants (Vorria et al., 2003), a lack of association between disorganized attachment and children's temperamental features, i.e., difficultness, is expected.

3. *Is there convergence between the observational and report measures of indiscriminate behavior in this group of institutionalized children?*

To our knowledge, the question of whether report and validated observational measures of indiscriminate behavior are assessing the same construct still has not been addressed by empirical studies. Nevertheless, a significant convergence between these different measures of indiscriminate behavior is expected, in consonance to what Zeanah and colleagues (2002) have found regarding different report measures of indiscriminate behavior.

4. *What are the developmental, behavioral, temperamental and social-emotional correlates of attachment disordered behaviors in this group of institutionalized children?*

Research with foster care children suggests that externalizing and internalizing symptomatology are positively associated with secure base distortions (Oosterman & Schuengel, 2008) and studies with post-institutionalized children have shown that indiscriminate behavior seems to be particularly

associated with externalizing problems (O'Connor et al., 1999, 2000, 2003). Thus, similar associations are expected in the present sample of institutionalized children. For inhibited behavior, there are not a lot of studies to be drawn upon. Nevertheless, Smyke and colleagues (2002) suggest that aggression is not associated with this form of attachment disturbed behavior. Then, given the characteristics associated with this sub-type, if an association is found with behavioral problems it would be expected to be with internalizing disorders. Furthermore, it was hypothesized that children reported by the caregivers as exhibiting high levels of inhibited behavior would score higher on the measure of social withdrawal behavior.

Following empirical data from studies with post-institutionalized children, a relationship between children's emotional functioning and indiscriminate attachment behavior is not anticipated (O'Connor et al., 1999).

In what temperament is concerned, and since its association with attachment disturbed behaviors is largely unexplored, the current study assumes Zeanah and Fox (2004) hypothesis that temperamental characteristics, added to environmental risk, may pose a serious risk for children's attachment development. In that sense, children with a more difficult temperament in the current study would be reported by the caregivers as more disturbed regarding their attachment behaviors.

Concerning children's developmental status, no associations are expected between individual differences in growth, cognitive, motor or language development and attachment outcomes. Exceptions made for an association between language development and inhibited and indiscriminate attachment, based on the report of Smyke and colleagues (2002) of a link between these variables in a sample of institutionalized children.

5. *Are disorganization and attachment disordered behaviors associated with individual differences in the early familial context?*

Despite the evidence for the importance of early relational and environmental experiences for children's attachment development, provided by developmental attachment research (e.g. Sroufe et al., 2005a), this question has not been thoroughly analyzed in studies with institutionalized children. First, most of the research with institutionally reared children was conducted when children were

already placed with an adoptive family, thus making the access to information regarding early risk factors more difficult. Nonetheless, some studies (Bruce et al., 2009; Chisholm, 1998) have analyzed the association between children's attachment outcomes and these early background experiences but the use of retrospective and indirect assessments are frequent methodological constraints that limit the validity of these empirical results.

Thus, although some association was expected between early family risk factors and attachment disorders and disorganization, no specific hypotheses were formulated for this research question.

6. *Are disorganization and attachment disordered behaviors associated with individual differences in quality of care experienced by the children at the institutional setting?*

There seems to be a significant divergence in the degree of deprivation experienced by children in the studies conducted in Western (Tizard & Rees, 1975; Vorria, 2003) and Eastern Europe (Smyke et al., 2002; Zeanah et al., 2005). These differences were especially associated with the quality of physical arrangements, stimulating materials and daily routines. Notwithstanding, these studies have reported similar levels of children's disorganization and attachment disordered behaviors. Thus, institutional differences in terms of structural aspects (e.g. quality of physical space, furnishing and material equipment), health and safety routines are not expected to be associated with differences in both of these forms of atypical attachment in the current study.

On the other hand, it is hypothesized that other aspects, more associated with institutional relational care like caregiving stability or the provision of more individualized care would be associated with lower levels of indiscriminate and inhibited behavior, as it has been suggested by previous studies with institutionalized children (Smyke et al., 2002). Although the association of individualized care with disorganization and secure base distortions has not been assessed by previous research, it is expected that, in the same line with indiscriminate and inhibited behavior, more consistent and individualized care would be linked with lower levels of attachment disorganization and secure base distortions.

Other caregiving variables have been associated with these atypical forms of attachment across studies, leading us to organize the following hypotheses for each specific attachment outcome:

- a) *Attachment Disorganization* - some studies have failed to find an association between caregivers' sensitivity (Vorria et al., 2003) and quality of relational caregiving (Dobrova-Krol et al., 2010) and attachment disorganization in institutionalized children. However, Zeanah and colleagues (2005) have found an association between better quality of caregiving (which included indicators of caregiver's sensitivity and withdrawn behaviors in interaction with the children) provided at institutional setting and children's lower scores of attachment disorganization. So, it is expected that children with better overall quality of care and more cooperative (and thus less intrusive) caregiver's will be less disorganized in SSP in this sample of Portuguese institutionalized children. Regarding sensitivity, and based on developmental attachment research, it is hypothesized that individual differences in this caregiver's variable would not be associated with children's disorganization. To our knowledge, the association between the existence of a preferred caregiver within the institution and children's attachment disorganization has not been empirically explored. Nevertheless, it is reasonable to expect that when children have a more personalized relationship with a caregiver, this figure can be more responsive to their affective and attachment cues, thus minimizing "disruptions" in affective communication which would reduce the risk of attachment disorganization (Lyons-Ruth & Jacobvitz, 1999).
- b) *Indiscriminate attachment* - In terms of indiscriminate behavior empirical data is less consistent given that some studies showed no association between the quality of relational care (which included indicators of caregiver's sensitivity and withdrawn behaviors in interaction with the children) and indiscriminate behaviors (Zeanah et al., 2005), while others found a counterintuitive positive association (Dobrova-Krol et al., 2010). On the other hand, Lyons-Ruth and colleagues (2009) study with a sample of high-risk children has found that indiscriminate behavior was predicted by severity of caregiving risk, being this relationship mediated by maternal disrupted communication. As a consequence, an association is expected between children's indiscriminate

behavior and lower overall quality of care and caregiver's cooperative behavior in interaction situations. Regarding the association between indiscriminate behavior and the existence of a preferred caregiver at the institutional setting, Zeanah and colleagues (2002) found that although the majority of children with a preferred caregiver (assessed through a report measure) still displayed high levels of indiscriminate behavior, the percentage of children showing the same kind of behavior was higher when a preferred caregiver did not exist (Zeanah et al., 2002). In this sense, it is expected that children with a preferred caregiver in the current sample of institutionalized children will display lower levels of indiscriminate behavior than children who do not have such a relationship.

- c) *Inhibited behavior* - Zeanah and colleagues (2005) have found an association between higher quality of relational care and lower levels of inhibited behavior. In this sense, a similar association is expected between lower levels of inhibited behavior and a higher overall score of quality of care and a more positive behavior of the caregiver's in interactive situations. Regarding the existence of a preferred caregiver, the study of Smyke and colleagues (2002) has shown that the existence of a personalized relationship between the child and a given caregiver at the institution, (i.e. child considered as a "favorite" by the caregiver), was associated with a significant decrease in inhibited behavior. For that, it is hypothesized that children with a preferred caregiver in the present sample of institutionalized children would show less inhibited behavior.
- d) *Secure Base Distortions* - one of the few studies that assessed the relationship between caregiver's sensitivity and secure base distortions has revealed an intriguing positive association between these variables (Oosterman & Schuengel, 2008). In this sense, and given the lack of studies focusing on this form of attachment disorders, a specific hypothesis regarding the association of secure base distortions and overall quality of care and quality of caregiver's behavior in interaction situations was not formulated.
7. *What is the etiological role of early family risk factors, and quality of institutional care in children's disorganized and attachment disturbed behaviors?*

Studies with institutionalized children unanimously suggest that the quality of institutional caregiving is one of the most important factors in the etiology of attachment disorganization and attachment disorders in institutionalized children (Smyke et al., 2002; Vorria et al., 2003; Zeanah et al., 2005). However, there is still a lot to clear out regarding which specific institutional caregiving factors are involved in the development of each one of these specific attachment outcomes. Moreover, it seems like institutional caregiving deprivation is not enough to explain the myriad of intra-group variability found among the quality of institutional reared children's attachment behaviors (Bruce et al., 2009; O'Connor et al., 1999, 2000; Zeanah et al., 2005).

Therefore, the impact of the quality of institutional caregiving and early background factors in the etiology of disorganized and disordered attachment behaviors will be explored in this group of Portuguese institutionalized children. The expectation is that both past and concurrent risk factors will be important in the prediction of disorganized and disordered attachment behaviors but different constellations of these risk factors will be implicated in the etiology of each specific attachment outcome.

8. *Is attachment disorganization associated with attachment disordered behaviors in this group of Portuguese institutionalized children?*

Given that one of the few studies that analyzed this association in institutionalized children has failed to find a significant link between organized or disorganized traditional SSP classifications, and indiscriminate or inhibited behavior (Zeanah et al., 2005), a similar result was predicted for the current study with Portuguese institutionalized children. Regarding secure base distortions, we do not have knowledge of any study assessing this kind of disordered behaviors in institutionalized children. A recent study of Oosterman and Schuengel (2008) has assessed secure base distortions in a sample of foster care children (mean age = 56.88 months) and found them to be associated with security of attachment assessed by AQS (Waters, 1995). However, given the differences in the children's age, quality of caregiving and in the method used to assess attachment quality, no specific hypothesis was formulated regarding the association between children's classification at SSP and their manifestation of secure base distortions in the present sample.

9. *Is it possible to identify different patterns of attachment disordered behavior and if so, are these associated with different constellations of early family and institutional care risk factors?*

As discussed in Chapter 2, the question of attachment disorder behaviors conceptualization is still a current topic of debate. Even though empirical data suggests that inhibited and indiscriminate behavior tend to co-occur (Smyke et al., 2002; Zeanah et al., 2004), research results also point to different pathways of recovery and distinct associations with caregiving and relational variables for these different sub-types of attachment disorder behavior (O'Connor et al., 2003; Zeanah et al., 2005). Consequently, some authors have stated that probably indiscriminate and inhibited behaviors have different etiological grounds and may even correspond to separate disorders instead of differentiated sub-types of the same disturbance (O'Connor et al., 2003; Zeanah et al., 2004). Moving on to secure base distortions behavior even less is known regarding its role in the construct of attachment disorders and its association with indiscriminate and inhibited behavior. The study of Oosterman and Schuengel (2008) has found almost no comorbidity between this alternative conceptualization of attachment disturbance and the more widely used types of indiscriminate and inhibited behavior. Given this state of knowledge, the present study aims to examine the existence of diverse patterns of attachment disordered behaviors in a group of Portuguese institutionalized children, focusing on the differences among these distinguishable patterns of attachment disturbance, regarding children's early care risk factors and current quality of institutional caregiving. So, according to empirical data to date, there is the expectation to find at least four different groups of children in terms of their reported exhibition of indiscriminate, inhibited and secure base distortions behavior, namely: a pattern with predominance of indiscriminate behavior, a pattern with predominance of inhibited behavior, a pattern with predominance of secure base distortions behavior and a mixed pattern of attachment disorder behaviors with particular saliency of indiscriminate and inhibited behaviors. It is further hypothesized that these patterns will be associated with different risk factors concerning early and current quality of care, being the mixed pattern of

predominant inhibited and indiscriminate behavior associated with more extreme forms of caregiving deprivation.

After the exposition of the objectives, research questions and hypotheses, the method of the current study will be described in the following. First, the participants will be characterized, i.e., children, caregivers and institutions, and afterwards a brief revision of the measures and procedure used in the current study will be conducted.

### 3. METHOD

#### 3.1. Participants

The sample consists of 85 children, 41 girls (48.2%) and 44 boys (51.8%), with ages ranging from 12 to 30 months ( $M = 19.22$ ,  $SD = 6.22$ ) at the time of assessment. Descriptive statistics of the sample of children can be found in Table 1. These children were living in 19 temporary shelters from the north of Portugal at least for five months when they were assessed by this study ( $M = 10.58$ ,  $SD = 4.43$ ), although 30 (35.3%) were already institutionalized for twelve months or more.

Given that one of the major interests of this study was to assess attachment behaviors in infancy, the following criteria were selected for the sample constitution: Age range of 12-30, since that according to Bowlby (1969/1982) children are expected to display a fully developed attachment at the end of the first year of life; institutionalization length of five months or more, in order to assure that children had the opportunity to develop a selective attachment relationship with a caregiver (Stovall & Dozier, 2000; Oosterman & Shuengel, 2008); Cognitive developmental level of at least 10 months ( $M = 17.94$ ,  $SD = 6.16$ ), based on BSID-III (Bayley, 2006), following the reference of Smyke and colleagues (2002) and Zeanah and colleagues (2002). Exclusion criteria included severe sensorial or neurological impairment as well as fetal alcohol syndrome.

Age of admission at the institutional setting ranged between 0 and 24 months ( $M = 8.16$ ,  $SD = 7.38$ ). In fact, more than half of the children in the sample ( $n = 46$ ) were older than six months when they entered the institution and 25.9% of the children ( $n =$



22) came directly from the maternity to the institution, thus having no experience of living with their biological family. Regarding ethnicity, most of the children in the sample were Caucasian (94.1%,  $n = 80$ ) and Portuguese descendants. However, there were some African, Romanian or Spanish descendents, but due to their small number were placed in the same category of other ethnicities (5.9%,  $n = 5$ ).

Table 1  
*Children demographic and developmental characteristics*

N = 85		
	<i>n</i>	%
<b>Gender</b>		
Female	41	48.2
Male	44	51.8
<b>Ethnicity</b>		
Caucasian	80	94.1
Other	5	5.9
	<i>M (SD)</i>	Range
<b>Age at assessment (months)</b>	19.22 (6.22)	12-30
<b>Age of admission at the institution (months)</b>	8.16 (7.38)	0-24
<b>Length of time in institutional care (months)</b>	10.58 (4.43)	5-29
<b>Cognitive developmental age at assessment (BSID-III)</b>	17.94 (6.16)	10-33

The reasons for the children's withdrawn from the family and consequent placement at the institution were diverse and so these were aggregated into eight main categories (Table 2): negligence (included a myriad of social and economic situations that prevented the family to assure the children's safety and basic needs); lack of

parental skills (comprised teenager parents, substance abusive parents, or parents already referenced by social services for their inability to care for their children in the past); lack of socioeconomic conditions; parental psychopathology or mental retardation; child's physical abuse; child's sexual abuse; child's abandonment; family or domestic violence.

**Table 2**  
***Reasons for children's admission at the institution***

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N = 85

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	<i>n</i>	%
<b>Reason for admission at the institution</b>		
Negligence	26	30.6
Lack of parental skills	25	29.4
Lack of socioeconomic conditions	1	1.2
Parental psychopathology/mental retardation	8	9.4
Child's physical abuse	5	5.9
Child's abandonment	14	16.5
Family violence	5	5.9
Sexual abuse	1	1.2

---

Accordingly, the most common reasons for children's admission at the institution were negligence and lack of parental skills, with a percentage of 30.6% ( $n = 26$ ) and 29.4% ( $n = 25$ ), respectively, which is not surprising considering that these were the most comprehensive categories. Furthermore, eight children (9.4 %) were admitted due to parental psychopathology or mental retardation and fourteen (16.5%) were abandoned

by their family. The other categories were proved to be residual with only five children being admitted for physical abuse (5.9%), five for family violence (5.9%), one for socio-economic reasons (1.2%), and one for sexual abuse (1.2%). However, it is important to note that the motive for the child's admission into the institution does not exclude their exposition to the early risk factors implied in the other categories. For instance, low social-economic status was characteristic of a significant part of the families of children in the sample.

In fact, a significant amount of early risk factors was found in this group of children (Table 3). Eleven (12.9%) were born premature and sixteen (18.9%) were prenatally exposed to some potentially harmful substance (tobacco, alcohol, or other substances). Considering these children's birth-weight, almost half of the children (49.4%,  $n = 42$ ) were below the 25<sup>th</sup> percentile, 20% ( $n = 17$ ) were placed between the 25<sup>th</sup> and the 50<sup>th</sup> percentile and only 29.4% ( $n = 25$ ) of the children were above the 50<sup>th</sup> percentile.

These children were assessed with their primary caregiver at the institution, selected according to institutional staff interviews and researchers observations. The assessment of whether these caregivers were in fact an *assigned caregiver* or a *preferred caregiver* was conducted afterwards, according to the criteria described ahead in the measures section (see 3.2.3.1., this Chapter). Results showed that 48 children (56.5%) had an assigned caregiver but only 23 (27.1%) had a preferred caregiver. The duration of the child's relationship with the primary caregiver was almost indistinguishable from their time of institutionalization ( $M = 10.51$ ,  $SD = 4.39$ ), which is easily understandable considering that most of the caregivers (97.6%) were involved in child's caregiving since their first day of admission. Most importantly, all caregivers had a relationship with the children for at least five months at the time of the assessments for this study. Descriptive statistics regarding child-caregiver relationship indicators are mentioned in Table 4.

**Table 3**  
*Children's social and developmental risk factors*

N = 85		
	<i>n</i>	%
<b>Experience of living with biological family</b>		
Yes	63	74.1
No	22	25.9
<b>Premature</b>		
Yes	11	12.9
No	69	81.2
Missing information	5	5.9
<b>Prenatal exposition to harmful substances</b>		
Yes	16	18.9
No	62	72.9
Missing information	1	1.2
<b>Birth-weight percentile</b>		
< 25	42	49.4
25-50	17	20
>50	25	29.4

**Table 4**  
*Child-caregiver relationship indicators*

N = 85

	<i>n</i>	%
<b>Caregiver knew the child since the first day of admission</b>		
Yes	83	97.6
No	2	2.4
<b>Assigned caregiver</b>		
Yes	48	56.5
No	37	43.5
<b>Preferred caregiver</b>		
Yes	23	27.1
No	62	72.9
	<b><i>M (SD)</i></b>	<b>Range</b>
<b>Duration of the relationship with the primary caregiver (months)</b>	10.51 (4.39)	5-29

Sixty-five institutional caregivers participated in this study, 65 women (95.4%) and 3 men (4.6%) with ages comprised between 20 and 56 years old ( $M = 36.32$ ,  $SD = 10.14$ ). As it can be deducted, 20 (30.8%) of the 65 institutional care providers that participated in this study were selected as caregivers for more than one child. Most of these caregivers (63.1%,  $n = 41$ ) did not receive any kind of specific training for exerting this profession.

**Table 5**  
*Caregiver's socio-demographic and professional qualification information*

N = 65

	<i>M (SD)</i>	<b>RANGE</b>
<b>Age (years)</b>	36.32 (10.14)	20-56
<b>Days of work (per week)</b>	5.49 (1.00)	2-7
<b>Hours of work (per day)</b>	7.45 (2.65)	2-24
	<i>n</i>	<b>%</b>
<b>Gender</b>		
Female	62	95.4
Male	3	4.6
<b>Caregiver of more than one child</b>		
Yes	20	30.8
No	45	69.2
<b>Specific training for children's caregiver profession</b>		
Yes	24	36.9
No	41	63.1
<b>Formal education</b>		
Primary school	6	9.2
6 <sup>th</sup> grade	9	13.8
9 <sup>th</sup> grade	27	41.5
High school graduation	18	27.7
University graduation	5	7.7

Regarding formal education, 6 caregivers (9.2%) have only completed primary school, 9 caregivers (13.8%) completed 6<sup>th</sup> grade, 27 caregivers (41.5%) completed 9<sup>th</sup> grade, 18 (27.7%) graduated from high school and only 5 (7.7%) have finished university graduation.

In mean, the caregivers worked for 7.45 hours a day ( $SD = 2.65$ ) and 5.49 days a week ( $SD = 1.00$ ). Descriptive statistics regarding the caregivers that participated in the study are described in Table 5.

As it has been mentioned, children that participated in this study were recruited from nineteen Temporary Care Centers from the North of Portugal, that had been functioning as care shelters for children for a mean of 13.33 years ( $SD = 12.46$ ). The number of children and caregivers participating in the study from each institution are described in Table 6. For confidentiality reasons the Institutions' denominations were replaced for ordinal numbers, from 1 to 19. There seems to be some asymmetry regarding the number of children from each institution participating in the study, given that in some institutions eleven children were assessed (11.7% of the sample), whereas in others only one child was assessed (1.1% of the sample). This asymmetry is explained by differences among the institutions and by the age recruitment requisites. Most of the institutions (57.9%,  $n = 11$ ) were more oriented to care for small children, from zero to twelve years, while others were more oriented to care for older children and adolescents, although also cared small children when needed (42.1%,  $n = 8$ ). On the other hand, whereas some institutions only had availability to care for 10 children, others had as much as 54 children under their care at the same time.

The intra-group variability among institutions is also visible in other structural and human resources variables like the number of staff members, ranging from 4 to 51 ( $M = 16.22$ ,  $SD = 10.47$ ), number of bedrooms, ranging from 2 to 11 ( $M = 6.89$ ,  $SD = 2.98$ ) or number of children per bedroom, that ranged between 2 and 15 ( $M = 5.06$ ,  $SD = 3.82$ ). Descriptive statistics for Institutions are described in Table 7.

**Table 6**

*Number of children and caregivers participating in the study per Institution*

<b>Institution</b>	<b><i>n</i> (%) Children</b>	<b><i>n</i> (%) caregivers</b>
1	2 (2.1%)	2 (2.9%)
2	11 (11.7%)	8 (11.4%)
3	16 (17%)	12 (17.1%)
4	5 (5.3%)	5 (7.1%)
5	11 (11.7%)	8 (11.4%)
6	3 (3.2%)	1 (1.4%)
7	6 (6.4%)	5 (7.1%)
8	2 (2.1%)	2 (2.9%)
9	6 (6.4%)	4 (5.7%)
10	7 (7.4%)	4 (5.7%)
11	3 (3.2%)	2 (2.9%)
12	2 (2.1%)	1 (1.4%)
13	3 (3.2%)	3 (4.3%)
14	4 (4.3%)	4 (5.7%)
15	3 (3.2%)	1 (1.4%)
16	5 (5.3%)	5 (7.1%)
17	3 (3.2%)	1 (1.4%)
18	1 (1.1%)	1 (1.4%)
19	1 (1.1%)	1 (1.4%)
<b>TOTAL</b>	<b>94 (100%)</b>	<b>70 (100%)</b>



**Table 7**  
*Descriptive statistics of institutional settings*

	<i>M (SD)</i>	<b>Range</b>
<b>Years of functioning as a care shelter for children</b> (N = 18)	13.33 (12.46)	1-50
<b>Number of children at the institutional setting</b> (N = 19)	21.11 (9.75)	10-54
<b>Number of staff members</b> (N = 18)	16.22 (10.47)	4-51
<b>Number of bedrooms</b> (N = 19)	6.89 (2.98)	2-11
<b>Number of children sleeping in each bedroom</b> (N = 17)	5.06 (3.82)	2-15
	<i>n</i>	<b>%</b>
<b>Temporary Care Shelter</b> (oriented for children under 12 years old)	11	57.9
<b>Children and Adolescents Institutions</b> (oriented for children for children and adolescents older than 12 years old)	8	42.1

### 3.2. Measures

The measures used in the present study will be presented in the following, organizing them into three main categories: Child assessment, early family context assessment and institutional context assessment.

### **3.2.1. Child assessment**

#### **3.2.1.1. Attachment**

##### ***Attachment disorganization***

Children's attachment quality was assessed using a "home" version of the *Strange Situation Procedure* (SSP, Ainsworth et al., 1978). Children were assessed with their primary caregiver, in a room inside the institution that was usually inaccessible to the children, and therefore unfamiliar to them. This room was adapted in order to replicate as closely as possible the environmental characteristics and room dispositions usually found in standard laboratory settings. All SSP were videotaped, through hidden cameras, allowing for a subsequent coding. Although the original SSP is usually used to assess the attachment quality of children not older than 20 months, the decision to use this measure and the respective traditional classification systems (Ainsworth et al., 1978; Main & Solomon, 1990) with children up to 30 months in this study was taken based on three main reasons: consistently to what had been found in other empirical studies (Johnson et al., 2010; Nelson et al., 2007; O'Connor et al., 2003; Rutter et al., 2007), this group of institutionalized children revealed severe developmental delays, namely at the cognitive level; the procedure was previously used in a sample of institutionalized children and seemed to work well (Zeanah et al., 2005); The need for a single measure to the whole sample, being the SSP the most widely used measure to assess the quality of attachment in children up to 20 months (which consists of 62.4% of the sample) and given the inexistence of a consensual better measure to assess attachment quality in children aged between 20 and 30 months (Zeanah et al., 2005).

As previously discussed (see Chapter 2), the SSP is a standardized procedure constituted by eight episodes, described in Table 8, in which the child is exposed to a set of circumstances intended to trigger mild stress by the presence of "natural clues to danger" (e.g. unfamiliar place, unfamiliar person, separation from the caregiver, being left alone) which will predictably allow the assessment of the child's balance of the fearful, exploratory and attachment systems in a potentially threatening situation (Bowlby, 1969/1982).

**Table 8**

***SSP episodes (Ainsworth et al., 1978)***

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**Episode 1 (30 seconds)**

Experimenter introduces the child and caregiver to the unfamiliar room and reminds the caregiver with the instructions to the procedure. The caregiver seats on the indicated chair, the toys are presented to the child and the experimenter leaves.

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**Episode 2 (3 minutes)**

Caregiver and child are alone in the room.

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**Episode 3 (3 minutes)**

Stranger enters and sits on the chair. At minute 1 initiates a conversation with the caregiver, at minute 2 initiates interaction with the child and at minute 3 the caregiver leaves the room.

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**Episode 4 (3 minutes)\***

Stranger and child are alone in the room

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**Episode 5 (3 minutes)**

The caregiver returns to the room and the stranger leaves, leaving the child and the caregiver alone in the room

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**Episode 6 (3 minutes)\***

The caregiver leaves and the child is left alone in the room

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**Episode 7 (3 minutes)\***

The stranger enters the room and stays alone with the child for the rest of the episode

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**Episode 8**

The caregiver returns to the room and the stranger leaves, leaving the child and the caregiver alone in the room

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*Note.* \*Episodes shortened if the child reveals intense distress

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Ainsworth and colleagues (1978) coding system was used to assess children's attachment behavior throughout the procedure and particularly at the moments of reunion with the attachment figure, in order to score for the four scales of behavior ratings, i.e., proximity seeking, contact maintaining, resistance and avoidance, and determine an attachment classification of secure (B), insecure resistant (C) or insecure avoidant (A). Main and Solomon (1990) coding system (see Chapter 1) was also used in order to assess disorganized attachment behaviors, across all the episodes in which the mother was in the room. Both systems were used in order to determine a final disorganization rating and overall classification of organized or disorganized attachment classification. It is important to underline that the classification of disorganized attachment does not exclude the determination of a secondary/forced ABC classification.

Most of the videotaped SSP's (61.2%) were coded by a recognized expert rater, Elizabeth Carlson, professor at the Institute of Child Development, University of Minnesota. The other part of the videotaped assessments were coded by the author of the study, after an extensive process of training at the Institute of Child Development to become a reliable coder for ABC (Ainsworth et al., 1978) and D (Main & Solomon, 1990) classification systems. Interrater reliability was assessed for 20% of the sample, and was adequate both regarding the four way A, B, C, D classification ( $K = .76$ ), and the D vs. non-D differentiation ( $K = .90$ ). Divergences were resolved by conferencing.

Besides the traditional systems of ABC and D classifications (Ainsworth et al., 1978; Main & Solomon, 1990), an empirically derived additional category of *Insecure Other* was included in this study. As discussed in Chapter 2, several authors have questioned the use of SSP with samples of institutionalized children, given the doubts regarding these children's opportunity to develop a selective attachment with a caregiver. This procedure is oriented to the assessment of individual differences in attachment, thus assuming that an attachment relationship exists (Solomon & George, 2008; Zeanah et al., 2005). Indeed, research data has revealed distinct patterns of attachment behavior among institutionalized children as compared to the ones described in non deprived samples (O'Connor et al., 2003; Zeanah et al., 2005). Zeanah and colleagues (2005) rating scale, aiming to capture attachment "stage of development"

based on children's behavior at SSP showed that most institutionalized children classified with traditional organized or disorganized patterns revealed underdeveloped attachments to their caregivers. O'Connor and colleagues (2003) have also developed an additional category to classify previously institutionalized Romanian children at Cassidy and Marvin's (1992), SSP preschool version. This category, denominated of "Insecure-Other", was supported on Marvin, Olrick, and Britner (1998), "*normative/non-normative behavior organization coding system*" and described a deviant pattern of attachment related behaviors displayed by children at reunion and separation moments, namely towards the stranger, that were not captured by traditional ABC (Ainsworth et al., 1978) or D (Main & Solomon, 1990) coding schemes, and probably reflected the absence of a discriminated attachment to the caregiver (Kreppner et al., 2011).

In the same line, in the current study some children displayed atypical behavioral patterns throughout SSP that were not eligible for placement in D category (Main & Solomon, 1990). However, unlike the O'Connor and colleagues (2003), insecure-other category, the common characteristic that stood out as particularly salient among these children's was not their behavior towards the stranger (assessed in the present study through the RISE) but the relative absence or unusual combination of attachment related behaviors across SSP such as:

- a) Unusual behavioral combinations of avoidance and resistance on reunions, manifested by a subtle mix or shift in these behavioral strategies across reunions. This pattern is consistent with Crittenden's (1988) A/C pre-school classification of atypical attachment, but the subtle nature of children's behavior, exemplified by the low to moderate scores on avoidance and resistance behavioral ratings, excluded their inclusion in D category (Main & Solomon, 1990). Examples: a score of 4 on avoidance and resistance behavioral scales in both reunion episodes; a score of 4 on avoidance and 1 on resistance behavioral scales at episode 5, followed by a score of 4 on resistance and 1 on avoidance at episode 8.
- b) Flatness in behavioral ratings characterized by very low manifestation or almost total absence of proximity seeking, contact maintaining, avoidance and resistance behavior at reunion moments. This pattern is more consistent with

Zeanah and colleagues (2005) description of underdeveloped attachment, where children display a very reduced affective and behavioral range across SSP, namely in the caregivers presence. However, unlike Zeanah, the present study only focused on children's behavior on reunions and not transversely through SSP. Examples: absence of scoring on all behavioral scales on episode 8; absence of scoring on all behavioral scales on both episodes, except for a rating of 4 on proximity seeking on episode 5; absence of scoring on all behavioral scales on both episodes, except for a rating of 2 on proximity seeking on episode 5; total absence of behavioral ratings across both reunion episodes.

Accordingly, two researchers, trained in both SSP classification systems, reviewed the attachment classifications of all the cases in the sample. Applying these two criteria parameters to the ratings assigned to each of the four interactive behavioral scales by the original coders, 9 cases were identified and classified into *Insecure Other* category.

#### ***Attachment disordered behaviors***

Two measures were used for assessing attachment disordered behavior, the *Disturbances of Attachment Interview* (DAI; Smyke & Zeanah, 1999) and the *Rating of Infant and Stranger Engagement* (RISE; Riley, Atlas-Corbett, & Lyons-Ruth, 2005).

The DAI (Smyke & Zeanah, 1999; Portuguese version of Silva, Marques, Baptista, & Soares, 2007) is a semistructured interview that was administered to the child's primary caregiver. Mean time of administration was 20 minutes, but significant variability existed, according to the number of questions and follow-up probes found necessary to obtain a clear and detailed answer from the caregiver, regarding the child's behavior on focus. It consists of 12 items that explore the presence of signs of disordered attachment, of which five focus on the assessment of inhibited/withdrawn disorder behavior, three focus on the assessment of disinhibited/indiscriminate behavior and four focus on the assessment of secure base distortions. Items considered for each sub-type of attachment disorder behavior are described in Table 9.

Training for the administration of the interview was obtained with the authors, Charles Zeanah and Anna Smyke, at Tulane University. The interviews were audio-taped and subsequently scored by two trained researchers. Items were coded with a zero when there was no evidence of attachment disordered behavior, with a one when the caregiver's response indicated that attachment disordered behaviors were sometimes or somewhat evident in the child's behavioral repertoire, and with a two if a specific behavior indicative of attachment disorder was clearly present. So, the sum of the scores for each group of items resulted in a total subscale score ranging from 0-10 for the withdrawn/inhibited sub-type, 0-6 for the disinhibited/indiscriminate sub-type and 0-8 for the secure base distortions sub-type of attachment disordered behaviors. Based on this dimensional overall score of disturbance for each sub-scale, a dichotomous variable of high and low-level of attachment disorder behaviors was created based on Zeanah and colleagues study (2002). High levels of disorder behavior were defined as greater than two for inhibited behavior, equal or greater than two for indiscriminate behavior and equal or greater than two for secure base distortions.

The DAI is a well validated measure for the identification of attachment disordered behavior in high risk samples (Zeanah et al., 2004), and particularly in samples of institutionalized children (Smyke et al., 2002; Zeanah et al., 2002). In what indiscriminate and inhibited behavior sub-scales are considered, adequate internal consistency values have been reported in samples of institutionalized children, namely  $\alpha$  values of .80 for inhibited sub-scale and .83 for indiscriminate sub-scale (Smyke et al., 2002).

Interrater reliability of the interview ratings was assessed for 56% of the sample ( $n = 53$ ) and yielded an intraclass coefficient of  $r_{ic} = .92$ , range = .89 -.96, for the inhibited subtype,  $r_{ic} = .96$ , range = .96 -.97, for the indiscriminate subtype, and  $r_{ic} = .90$ , range = .87 -.94, for the secure base distortions subtype.

**Table 9**

***DAI items and sub-scales (Smyke & Zeanah, 1999)***

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**DAI Withdrawn/Inhibited behavior sub-scale**

1. Differentiates among adults
  - 2a. Seeks comfort preferentially
  - 2b. Actively seeks comfort when hurt/upset
  3. Responds to comfort when hurt/frightened
  4. Responds reciprocally with familiar caregivers
  5. Regulates emotions well
- 

**DAI Disinhibited/Indiscriminate behavior sub-scale**

6. Checks back with caregiver in unfamiliar setting
  7. Exhibits reticence with unfamiliar adults
  8. Unwilling to go off with a relative stranger
- 

**DAI Secure Base Distortions behavior sub-scale**

9. Self-endangering
  10. Excessive clinging
  11. Fearful, inhibited, hypervigilant with caregiver
  12. Pattern of controlling, role inappropriate behavior
- 

The RISE (Riley et al., 2005) is an observational measure that implies the coding of children's attachment-related forms of engagement with the stranger over all eight episodes of the SSP (Ainsworth et al., 1978). Contrary to the SSP's original coding



system, focused on the child's behavior towards the attachment figure, the RISE is a coding system to assess the infant-stranger interaction by comparison with the behavior exhibited by the child toward his/her familiar caregiver. Children are assigned with a nine-point rating scale, based on the extent of their affective engagement with the stranger compared to the caregiver and on the evaluation of their non-normative acceptance of physical contact or response to soothing from the stranger. Children who show a clear preference for and greater engagement with the familiar caregiver are scored with lower ratings and children who display non-normative forms of affective engagement and attachment behavior with the stranger are scored with the highest rating values; a score of five reflects the child's equal engagement with the stranger and caregiver; Accordingly, a score of five indicates the presence of indiscriminate attachment behavior.

The researcher who coded the SSP videos with the RISE scale was previously trained with one of the authors of this measure, Karlen Lyons-Ruth, in Harvard Medical School. The coder was naive to the criteria for the SSP classifications of both organized (Ainsworth et al., 1978) and disorganized (Main & Solomon., 1990) patterns of attachment.

Reliability yielded an intraclass coefficient of  $r_{ic} = .93$  ( $n = 10$ ).

#### **3.2.1.2. Developmental status**

The Bayley Scales of Infant and Toddler Development (3<sup>rd</sup> edition; Bayley, 2006) is an individual measure to assess the developmental functioning of infants and toddlers with ages comprised between 1 and 42 months of age. In this study, this measure was administered by trained examiners to assess children's cognitive, language and motor development. The presence of the caregiver throughout the administration of some items was required in order to encourage child's responsiveness to the examiner and consequently stimulate the child's best performance. The mean time of administration for the whole battery was about 90 minutes, often parted into shorter periods of testing according to the child's levels of cooperation, distractibility and tiredness.

Each sub-scale includes a series of items that are administered and scored as 1 if successfully completed by the child. A raw score is then computed through the sum of

all the items in which the child scored 1 and all the items preceding the child's starting point, previously tested for each child. Adjustments for prematurity were calculated for each prematurely born child. Scaled scores, composite scores, developmental ages and percentile ranks are determined based on the raw score for each sub-scale.

The cognitive scale is composed by a total of 91 items, formulated to assess sensorimotor development, exploration and manipulation, concept formation, memory and other relevant domains of cognitive processing. The language scale includes two sub-scales, a receptive communication sub-scale, which consists of 49 items (e.g. preverbal behavior, identification of referenced objects and pictures) and an expressive communication sub-scale, which consists of 48 items (e.g. babbling, gesturing, naming objects and pictures, using two-word utterances or verb tense). The motor scale also comprises two sub-scales, one more focused in the assessment of fine motor skills and other more oriented to the assessment of gross motor skills. The fine motor sub-scale consists of 66 items and allows the examination of children's fine motor competencies like prehension, perceptual- motor integration or motor speed. The gross motor scale consists of 72 items, and allows for the assessment of child's static positioning skills, like sitting or standing, or child's movement skills, like locomotion, coordination and balance.

#### **3.2.1.3. *Physical growth***

Children's medical records were consulted in order to obtain information regarding their weight, height and head circumference at the time of assessment. Subsequently, these measures were converted into percentiles using the WHO Child Growth Standards (<http://www.who.int/childgrowth/en/>). Information regarding physical growth was not available for one of the children assessed in the present study.

#### **3.2.1.4. *Temperament***

The Infant Characteristics Questionnaire (ICQ; Bates et al. 1979; Portuguese version of Carneiro et al., 2009) was administered to the child's primary caregiver in order to assess child's difficult temperament. Validity of this instrument for the assessment of children's difficult temperament has been presented (Lemelin et al., 2007).

The ICQ is a report measure and has three distinct forms developed for children of approximately 6 months, 13 and 24 months. Only the last two versions were used for the present study, being the 13 months form administered to the caregivers of children aged between 12 and 20 months and the 24 months version administered to the caregivers of children aged between 21 and 30 months. Both versions comprise a total of 32 items, each rated by the child's primary caregiver based on a 7-point Likert scale, indicating the caregiver's perceived difficulty in managing the described behavior (1 - very easy; 7 - very difficult). Time of administration was, in mean, 10 minutes.

The original item factor structure revealed four factors for the 13 months form and 7 factors for the 24 months form (Bates et al., 1979). However, the *fussy/difficult* factor, centered on the caregiver's perception of child's negative emotionality, has been described by studies focusing on the psychometric characteristics of this measure as the central and best validated factor (Bates et al., 1979, Magalhães et al., 2010). Accordingly, only the *difficult* factor was used in this study and the items included in this factor for each form of the instrument were selected based on the factor structure analysis conducted by the validation studies of ICQ in Portuguese normative samples (Carneiro, 2009; Magalhães, 2009). Empirically derived cutoff scores for the present study were also drawn from these validation studies of ICQ in Portuguese samples. Internal consistency values were adequate for the difficult factor in the previous studies, both for the 13 months ( $\alpha = .81$ ) and 24 months version ( $\alpha = .82$ ).

In the present study with institutionalized children, the Cronbach  $\alpha$  was lower with values of .72 for the 13 months form and .73 for the 24 months version, but still revealed acceptable values of internal consistency for both versions of the ICQ.

#### **3.2.1.5. Social-emotional functioning**

The Ages and Stages Questionnaire: Social-Emotional (ASQ: SE; Squires et al., 2002a) was administered to the child's primary caregiver in order to assess children's skills and difficulties regarding social and emotional functioning. The validity of the instrument in discriminating between typically developing children or children at risk of social and emotional problems has been empirically demonstrated (Squires et al., 2002b). The original instrument has eight versions, corresponding to eight age intervals: approximately 6, 12, 18, 24, 30, 36, 48, and 60 months. However, only four versions

were used in the present study: the 12 months version (administered to the caregiver's of children aged between 9 and 14 months), the 18 months version (administered to the caregiver's of children aged between 15 and 20 months), the 24 months version (administered to the caregiver's of children aged between 21 and 26 months) and the 30 months version (administered to the caregiver's of children aged between 27 and 30 months). The four versions of ASQ: SE assess several areas of social and emotional development in infancy like self-regulation, compliance, communication, adaptive functioning, autonomy, affect and interaction with people. Administration time for each questionnaire was in mean 10 minutes. The number of items in the four versions used in this study ranged from 22 to 29 (increasing in length with children's chronological age) and three options were available for the scoring of each item, namely: most of the time, sometimes and rarely or never (corresponding to a score of 0, 5 and 10 points according to the item's orientation). The questionnaire also includes an option for the caregiver's checking of whether a specific item is a matter of concern to him/her. Adding to these three-point scaled items, three open ended questions (with a different pattern of scoring) asking for general concerns of the caregiver or others regarding children's social-emotional development were available at the end of each questionnaire. However, the scoring of these questions was not included in the present study's analysis. Higher total scores are global indicators of children's social-emotional functioning problems and according to the authors, children scoring above the cutoff point should be referred for a diagnostic evaluation (Squires et al., 2002b).

A recent study analyzed the validity and psychometric characteristics of the ASQ: SE in a normative Portuguese sample (Candeias, 2010). However, results were significantly different from the ones found in the original validation study of the instrument (Squires et al., 2002b), displaying some fragilities of the instrument, namely in the discrimination between risk and well functioning children regarding social-emotional development. Known groups or criterion-referenced validity was also not satisfactory for most age versions of the instrument in the Portuguese sample, contrary to what was reported by the ASQ: SE authors. Despite these limitations, and the differences in the clinical risk and SES of the samples, the present study used the Portuguese study ASQ: SE cutoff points given the cultural similarities.

In terms of internal consistency, in the original ASQ: SE validation study (Squires et al., 2002b), the Cronbach  $\alpha$  values of 0.67, 0.81, 0.80, and 0.88 were obtained for the 12, 18, 24 and 30 months form, respectively. In the Portuguese study with a normative sample, the internal consistency values were considerably lower, namely 0.60, 0.64, 0.69 and 0.71 for the 12, 18, 24 and 30 months form, respectively.

In the present study, internal consistency values for the four age versions of the ASQ: SE, were more close to the ones presented in the Portuguese validation study but still quite different. A good Cronbach  $\alpha$  value was obtained for the ASQ:SE 12 months version, .82, but less than adequate values resulted for the 18, 24 and 30 months versions, being the Cronbach  $\alpha$  values of .66, .69 and .67, respectively.

#### **3.2.1.6. Social withdrawal**

The Alarm Distress Baby Scale (ADBB; Guedeney & Fermanian, 2001; Portuguese version of Figueiredo, 1998) was used in order to assess children's social behavior during the administration of Bayley Scales of Infant Development (3<sup>rd</sup> edition; Bayley, 2006). The scale requires that an unfamiliar adult initiates interaction with the child (using verbal speech, eye contact, and tactile stimulation), in the presence of the caregiver, which is why the scale is usually applied during clinical routine examinations. In this study, five minutes of the child's developmental assessment were videotaped and subsequently scored by thoroughly trained coders.

The ADBB consists of eight items: facial expression; eye contact; general level of activity; self-stimulation gestures; vocalizations; briskness of response to stimulation; relationship to the observer, and attractiveness to the observer. Children's behavior is assessed according to these items and rated according to a four-point scale, being a zero synonymous of optimal social behavior. ADBB total score is calculated based on the sum of the child's score in the eight items and more elevated scores are indicative of higher levels of social withdrawal behavior. A cutoff score of 4/5 points has been presented as efficient in discriminating socially withdrawn children by cross-cultural studies using ADBB (Lopes, 2004; Puura, 2004). Thus, in the present study, children with a score higher than 5 points were considered to be socially withdrawn.

### **3.2.1.7. Behavior problems**

The Child Behavior Checklist, preschool version 1 ½ - 5 (CBCL, Achenbach, & Rescorla, 2000; Portuguese translation of Gonçalves, Dias, & Machado, 2007) was administered to the child's primary caregiver in order to assess children's behavior problems. It consists of 99 items with child behavior descriptions, that the informant should rate as not true (0), somewhat or sometimes true (1), or very true or often true (2) regarding the child's behavior at the present or within the past two months. The CBCL yields a total problem score, broadband internalizing and externalizing scales, and narrowband scales (emotionally reactive, depressed/anxious, somatic complains, sleep problems, attention problems and aggression problems). In the present study only the total score (indicative of general psychopathology behavioral indicators) and the internalizing and externalizing sum scales were used. The instrument has revealed adequate psychometric characteristics in capturing pre-school children's behavior problems across different cultural societies, including Portugal (Ivanova et al., 2010).

Since this measure is only applicable to children of 18 months or older, information regarding behavioral problems was only available for 43 children in the present study (50.6% of the sample).

## **3.2.2. Early family context assessment**

### **3.2.2.1. Familial risk composites**

Information about the children and their biological families was collected through the consultation of the child's individual case record, with the help of one member of the institution staff that knew the child well (usually the psychologist or social worker). Caregiving and living conditions prior to institutionalization, biological family's demographic data and socio-economic conditions, child's prenatal and birth clinical information were the focus of this assessment. However, it is important to note that the amount of information available was not homogeneous for all children, being many of the children's individual record incomplete and thus a lot of the information missing.

Three theoretically oriented composites of early family risk factors were elaborated for each child, based on the information obtained, exception made for the cases where more than 25% of the variables included in the composite were missing.

Accordingly, the child's cumulative score for each risk composite was divided by the number of existing variables, resulting in a score of 0 to 1 for each subject included in each risk composite, thus indexing the proportion of risk components present for a given composite.

- a) *Prenatal risk composite*: the cumulative score obtained to index prenatal risk ranged from 0-4 and was based on the presence or absence of the following risk factors: maternal physical disease (e.g. AIDS, Hepatitis); maternal substance abuse during pregnancy; pregnancy without medical surveillance; and prematurity.
- b) *Family-relational risk composite*: the cumulative score obtained to index family-relational risk ranged from 0-4 and was based on the presence or absence of the following risk factors: government aid recipient; domestic violence (to the children and/or between parents or other family members living in the house); family previous referral by the social workers as a risk family (based in conditions such as maltreatment, negligence or abandonment of other children); and institutionalized or adopted siblings.
- c) *Emotional-negligence risk composite*: the cumulative score obtained to index family-relational risk ranged from 0-4 and was based on the presence or absence of the following risk factors: negligence as the reason for admission to the institution; maternal prostitution; maternal substance abuse; and maternal psychopathology or mental retardation. This composite was created in the attempt to capture the likely unavailability of the maternal figure.

### 3.2.3. Institutional context assessment

#### 3.2.3.1. Quality of institutional and relational care

The Assessment of the Quality of Institutional Care (AQIC et al., 2010) was used to assess structural and relational aspects of the quality of institutional care, based on researchers' systematic observations throughout the period of data collection at the institutions. Two main dimensions were assessed **for each institution**: (a) institutional resources and routines, in terms of human resources (6 items), equipment and material resources (13 items) and basic needs routines (4 items); (b) institutional relational care

including the developmental activities implemented at the institutional setting (4 items), stability and consistency of caregiving (5 items) and responsiveness to the child's stress signals (1 item). These dimensions were rated on a five-point scale (1- no/never present; 3- sometimes/somewhat present; 5- yes/always present). The total score for each dimension, sub-dimension and overall quality of institutional care was calculated through the sum of the items.

Interrater agreement was calculated based on intra-class correlations, for 31.6% of the institutional settings, and proved more than adequate for these two dimensions of AQIC: institutional resources and routines (ICC mean  $r_{ic} = .84$ , range = .64 - .97), institutional relational care (ICC mean  $r_{ic} = .87$ , range = .75 - .88).

Another dimension of AQIC assessed the individualized care provided by the caregivers of the institutional setting **to each child** in regard of her/his knowledge about the child, availability, sensitivity, and acceptance. This third dimension was rated based on a 9-point scale, being the availability, sensitivity and acceptance items rated based on the Ainsworth maternal sensitivity scales (Ainsworth et al., 1978) of *Availability vs Ignoring and Neglecting*, *Sensitivity vs Insensitivity* and *Acceptance vs Rejection*, respectively. The item of knowledge about the child was rated based on a scale built by the research team (Silva et al., 2010). The total score for individualized care was calculated through the sum of the ratings of the four items.

Interrater agreement for individualized care was calculated for 9.4% of the sample and it resulted in adequate values for the item knowledge about the child (ICC  $r_{ic} = .79$ ), availability (ICC  $r_{ic} = .91$ ), and acceptance (ICC  $r_{ic} = .81$ ). The sensitivity item had a slightly lower value of interrater agreement sensitivity (ICC  $r_{ic} = .66$ ), but the mean value for the total score individualized care was acceptable (ICC mean  $r_{ic} = .79$ , range = .66 - .91).

The second measure of the quality of care was not a direct measure of this construct but a proxy, based on the view that a child who had a single caregiver who was disproportionately responsible for the child would likely receive better quality care, on average, than a child who did not. To assess the existence of an "assigned caregiver", staff were asked whether there was a key worker who was more responsible for, or more frequently looked after the child. This information was individually checked by a



research team member through naturalistic observations of the daily routines. The terminology of assigned caregiver is used to highlight the fact that it is based in the reference provided by the staff, as opposed to an attachment-based approach that would assess the existence of the child's preferred figure.

The third measure of the quality of care was also not a direct measure of this construct but a proxy, based on the view that a child who had a "preferred caregiver" had probably received more than routine care from this person and had developed a special relationship with her/him. This determination was also based on researchers' systematic observations at the institution. Guided by attachment theory, child behavior toward their caregivers was rated on four separate scales, then used to determine whether a child had a "preferred caregiver": (a) proximity seeking assessed whether the child regularly and actively sought to increase proximity with any particular caregiver, particularly in unfamiliar or stressful situations; (b) separation distress assessed whether the child showed signs of anxiety or distress when left by a particular caregiver in unfamiliar places or with unfamiliar people or even when he/she noticed that the caregiver had ended her work shift and/or was leaving the institution; (c) positive responsiveness assessed whether the child responded in a more and particularly positive way to a particular caregiver's initiatives (e.g., accepting, displaying excitement and answering in a reciprocal way) and acknowledged the presence of a particular caregiver after a separation period (by looking, smiling, greeting, vocalizing, showing a toy or approaching the caregiver); (d) the caregiver as secure base/secure haven assessed whether the child used a particular caregiver as a secure base for exploration, referencing her frequently and, if distressed preferentially turned to the caregiver for comfort.

Each of the four scales was rated on a 3-point scale (0 - no evidence of the described behaviors; 1 - some evidence; 2 - clear and consistent evidence). A total score of children's attachment behaviors towards the caregiver thus ranged from 0-8. This total score was used to make a categorical determination of whether the child had a preferred caregiver. Those children scoring equal to or greater than 7 were deemed to have a preferred caregiver.

Interrater agreement for the existence of the child's preferred caregiver was calculated for 9.5% of the sample and was satisfactory (ICC mean  $r_{ic} = .78$ , range = .64 - .95).

### **3.2.3.2. Quality of child-caregiver interactions**

The Cooperation/Intrusiveness and Sensitivity/Insensitivity scales of Ainsworth and colleagues' (1978) were used to assess the quality of the caregiver's behavior in an interaction situation with the child. An interactive procedure was developed, consisting of four episodes, of five minutes each: 1) the caregiver is asked to play with the child using the materials of BSID-III (Bayley, 2006); 2) the caregiver leaves the room and a researcher unfamiliar to the child enters and tries to engage the child to play with the BSID-III (Bayley, 2006) materials; 3) the caregiver returns, the strange researcher leaves and takes the BSID-III (Bayley, 2006) materials, and the caregiver is asked to play with the child without using toys; 4) the experimenter enters the room and gives a difficult toy to the caregiver, asking him to help the child playing with it. All procedures were videotaped and subsequently scored by trained researchers. Furthermore, these researchers established reliability and received supervision for the scorings from two recognized experts in child development, Klaus and Karin Grossmann. Caregiver's Cooperation/Intrusiveness behavior was rated separately for the three episodes of the interactive procedure. Interrater reliability was established for 32% of the sample, being the values adequate for the episode with toys (ICC  $r_{ic} = .90$ ), episode without toys (ICC  $r_{ic} = .95$ ) and episode with difficult toy (ICC  $r_{ic} = .97$ ). Caregiver's Sensitivity/Insensitivity behavior was rated across the three episodes into a single score. Interrater reliability was calculated for 27% of the sample and was more than adequate (ICC  $r_{ic} = .91$ ).

### **3.2.3.3. Caregiver's script-like attachment representation**

The attachment script representation task (Waters & Rodrigues-Doolabh, 2004; Portuguese version e.g. Veríssimo, Monteiro, Vaughn, Santos & Waters, 2005) was administered to the child's primary caregiver. The task consists in presenting the caregiver with a list of words that will outline his/her production of a story. The researcher instructs the caregiver to read down each column of words, from left to right, with the intent to get a picture of a meaningful story and then make up their own story,

while trying to include the words in the list. The caregivers are previously informed that the task will be audio-taped and that they can stop their story and restart whenever they feel the need to do so. The task involves six sets of stories but only four are assessed and scored, being the other two used as control tasks. Of the main four word-prompt lists, two involve a parent-child dyad (*Doctor's Office* and *Baby's Mourning*) and two consist of adult/adult interactions (*Camping Trip* and *Sue's Accident*). A different order of story presentation was randomly selected for each subject although the three parent-child lists were always presented sequentially, being the same applied to the three adult-adult lists. All the audiotaped records were transcribed and then scored by trained researchers based on a 7-point scale according to the presence and quality of secure base scripts (Waters & Rodrigues-Doolabh, 2004). Means for the four stories scores were calculated, being this average value used as the caregiver's scriptedness score of secure base knowledge in data analyzes. Highest scores (4 or more) are usually given to well structured stories that acknowledge the other's emotional state and elaborate the story conflict in a positive way (Waters & Waters, 2006). Accordingly, these scores represent the presence of a secure base script and thus security in the subject's attachment representation. Lowest values (under 4) are attributed to stories that do not include the secure base script or have a bizarre content. Subjects with very low average scores are considered to be insecure regarding attachment. It should be acknowledged that 9 caregivers tended to include children in the adult-adult interaction stories. These stories were considered to be unscorable (Vaughn et al., 2007) and were thus excluded from the analyses of the current study.

Interrater reliability was calculated for 69.4% of the sample and the following values were obtained: *Baby's Mourning* (ICC  $r_{ic} = .89$ ); *Doctor's Office* (ICC  $r_{ic} = .86$ ); *Camping Trip* (ICC  $r_{ic} = .93$ ); *Sue's Accident* (ICC  $r_{ic} = .87$ ).

Although excellent values of internal consistency have been reported for this measure in normative samples (Bost et al., 2006), the Cronbach  $\alpha$  for the four stories in the current study was only acceptable (.67).

#### **4. PROCEDURE**

The present study is part of a larger research with Portuguese institutionalized children. The Portuguese Institute of Social Security was contacted and asked for permission to conduct this research study in Temporary Care Shelters in the north of Portugal. After obtaining this permission, an individual meeting was scheduled with the director and technical staff of each institution in order to present the study and ask for their permission and cooperation in data collection. Each institution listed the children under their care, with ages comprised between 12 and 30 months that had been institutionalized for at least 5 months. Although some authors have suggested that children placed in institutional care were able to develop an attachment relationship with the caregiver within two months of placement (Howes & Segal, 1993), we extended the institutionalization length to assure that children definitely had enough time and opportunities to develop a selective attachment relationship.

The legal and medical status of the children listed by the institutional settings as eligible for inclusion in this study was analyzed. All the children with severe sensorial or neurological impairments, or with fetal alcohol syndrome were excluded of the sample for the present study. The biological parents of the eligible children who still had a connection and visited the child at the institution were presented with the main goals of the study and asked for permission to assess their child. In the cases where the parents abandoned the children or did not come to visit them, being their location unknown, the director of the institution signed the consent for the child's participation in the study.

After determining which children were eligible for participating in the study, the research team gathered with the institutional staff in order to decide who was the primary caregiver to each child. The staff was asked if there was any caregiver who spent more time with the child, who knew the child better or that for some reason had established a unique relationship with that particular child. The staff suggestions were confirmed by naturalistic observations of the research team. When the staff and research team could not determine a caregiver to whom the child developed a special relationship, a caregiver that knew the child well and was present in children's daily routines was selected to integrate the present study's assessments as the primary caregiver to that child. Some cases existed where the same caregiver was selected as the

primary caretaker to more than one child. The maximum number of children with the same primary caregiver was four. All of the caregiver's selected were presented with the study and asked for informed consent.

All the assessments were conducted at the institutional setting. Socio-demographic information about the child and his/her biological family was obtained through a questionnaire administered to a member of the institutional staff and through the consultation of the child's individual case records, usually in a technical office. The other assessments with the children were conducted in an available room at the institution, always regarding children's rhythm and individual routine. Interviews with the caregivers were conducted in separate moments, and scheduled according to the caregiver's work shift and most favorable moments in terms of institutional amount of work. In some cases the caregivers offered to participate in the assessments out of their worktime. As it was mentioned, the SSP was conducted in an adapted room, unfamiliar to the child, usually at the end of the assessment protocol. The interactive procedure designed to assess the quality of caregiver's behavior was usually conducted at the beginning of the assessment protocol and the stranger in this task was always a different researcher than the stranger used at SSP. The administration of the whole assessment protocol required a mean of four visits to the institutional setting for each child.



## Chapter 4

### *Attachment Disorganization and Attachment Disordered Behaviors in Portuguese Institutionalized Children: Results*

#### 1. QUALITY OF ATTACHMENT

##### 1.1. Frequencies

The first research question assessed concerned children's attachment quality, in terms of organized and disorganized patterns of attachment, as well as children's display of disordered attachment, in terms of reported and observed indiscriminate behavior, as well as reported inhibited and secure base distortions behaviors.

Table 10 presents the distribution of children attachment classification in SSP, revealing that 36.5% of the children ( $n = 31$ ) were classified as secure, 20% ( $n = 17$ ) were

classified as insecure avoidant and only 2.4% ( $n = 2$ ) were classified as insecurely resistant regarding the relationship with their primary institutional caregiver. Thus, only 58.9% of the children displayed organized forms of attachment, being the remaining group classified with atypical attachment patterns, 30.6% ( $n = 26$ ) in the disorganized category and 10.6% ( $n = 9$ ) in the insecure-other category.

**Table 10**  
*Children's quality of attachment assessed in SSP*

(N = 85)				
Organized			Disorganized	Insecure-other
<i>n</i> (%)			<i>n</i> (%)	<i>n</i> (%)
A	B	C		
17 (20.0)	31 (36.5)	2 (2.4)	26 (30.6)	9 (10.6)

Table 11 lists the frequency of observed and reported disordered attachment behaviors, in terms of the corresponding categorical measures. Regarding observed indiscriminate behavior, half of the children (50.6%,  $n = 43$ ) were found to be disturbed. According to the caregiver's report, the percentage of children with high levels of disordered indiscriminate behavior was considerably lower (31.8%,  $n = 27$ ), although still relevant. In terms of reported inhibited behavior, 29.4% ( $n = 25$ ) of the children were considered to exhibit high levels of disturbance, having the exact same percentage (29.4%,  $n = 25$ ) been found for children displaying high levels of reported secure base distortions behavior.



**Table 11**

*Frequency of attachment disordered behaviors assessed through the RISE (observed) and DAI (reported)*

Indiscriminate behavior		Reported Inhibited Behavior	Reported Secure Base Distortions
<i>n</i> (%)		<i>n</i> (%)	<i>n</i> (%)
Observed	Reported		
43 (50.6)	27 (31.8)	25 (29.4)	25 (29.4)

When the number of children rated with high levels of any form of disordered attachment either using report or observational measures, was analyzed results revealed an impressive percentage of 76.5% ( $n = 65$ ).

### 1.2. Associations with Age and Sex

Preliminary analyses were conducted to check for the bivariate associations (i.e., point-biserial correlations or chi-square) between disorganized and disordered attachment and children's age and sex at assessment (Table 12).

Children's age was found to be marginally and negatively correlated with disorganization,  $r_{pb}(76) = -.22, p = .05$ , revealing that older children tended to be classified as not disorganized in SSP. Age was positively correlated with secure base distortions behavior,  $r_{pb}(85) = .26, p = .02$ , suggesting that older children's caregivers tended to report higher levels of these disordered forms of attachment behavior. Thus, regression analyses with these variables were performed with age as a covariate.

Children's sex was marginally associated with observed indiscriminate behavior,  $\chi^2(1) = 2.64, p = .08$ , revealing that most boys were disturbed (59.1%) and most girls were not disturbed in RISE (58.5%). In addition, sex was also related to reported secure base

distortions behavior,  $\chi^2(1) = 3.74$ ,  $p = .04$ , revealing that a higher percentage of girls were rated with lower levels of secure base distortions behavior (80.5%) as compared with boys (61.4%).

**Table 12**

*Associations between attachment disorganization and attachment disordered behaviors and children's age and sex*

	<i>n</i>	Age at assessment (months) <sup>a</sup>	Sex <sup>b</sup>
<b>Indiscriminate behavior (RISE)</b>	85	.06	2.64 <sup>+</sup>
<b>Indiscriminate behavior (DAI)</b>	85	-.04	.23
<b>Inhibited behavior (DAI)</b>	85	-.12	.25
<b>Secure base distortions behavior (DAI)</b>	85	.26*	3.74*
<b>Disorganization (SSP)</b>	76	-.22 <sup>+</sup>	.03

*Note.* <sup>a</sup>Point biserial correlations; <sup>b</sup>chi-square associations; <sup>+</sup> $p < .10$ , <sup>\*</sup> $p < .05$ .

## 2. ATTACHMENT DISORGANIZATION

The associations of attachment disorganization with early family risk, concurrent children's development and psychological functioning as well as with institutional quality of care were then analyzed. After exploring for these associations, the predictors of attachment disorganization were examined.

### 2.1. Association with Early Family Context

Correlations between disorganization and early family risk composites are listed in Table 13. The only significant association found was between disorganized attachment and family relational risk,  $r_{pb}(74) = .29$ ,  $p = .01$ , revealing that disorganized children were exposed to higher levels of family relational risk before their admission at the institution.

When the association between the variables that compound the family relational risk and disorganized attachment was analyzed individually, the only one that stood out as significant was the existence of previous referral of the child's biological family by the social workers as a risk family,  $\chi^2(1) = 3.94, p = .04$ , revealing that 46.9% of the children whose biological families were previously referenced by social services were disorganized whereas only 25% of the children coming from non referenced families were disorganized in SSP.

**Table 13**

*Correlations between attachment disorganization and early family risk factors*

	<i>n</i>	<b>Disorganization</b>
<b>Prenatal risk</b>	70	.03
<b>Family-relational risk</b>	74	.29*
<b>Emotional-neglect risk</b>	72	.02

*Note.* Point-biserial correlations; \* $p < .05$ .

## 2.2. Association with Child Individual Variables

### *Developmental status and physical growth*

No associations were found between disorganization and motor,  $r_{pb}(76) = .02, p = .88$ , cognitive,  $r_{pb}(76) = .17, p = .16$ , and language,  $r_{pb}(76) = -.06, p = .64$ , development percentiles. Regarding growth variables a single marginal association was found between disorganization and head circumference WHO percentile,  $r_{pb}(75) = .21, p = .07$ , suggesting that disorganized children were more likely to show higher percentiles of head circumference (Table 14).

**Table 14*****Correlations between attachment disorganization and growth percentiles***

<b>N = 75</b>	<b>Disorganization</b>
<b>Height percentile</b>	-.12
<b>Weight percentile</b>	.04
<b>Head-circumference percentile</b>	.21 <sup>+</sup>

*Note.* Point-biserial correlations; \* $p < .10$ .

***Psychopathology, temperament and social-emotional functioning***

No association was found between children's reported difficult temperament and disorganized attachment,  $\chi^2(1) = .94, p = .23$ . Furthermore, attachment disorganization did not seem to be associated with children's disturbed social-emotional functioning as reported by the caregivers,  $\chi^2(1) = .08, p = .49$ , or with observed social withdrawal behavior,  $\chi^2(1) = .57, p = .32$ . Dimensional scores of reported psychopathology were also not associated with disorganization at SSP, either in terms of total score,  $r_{pb}(43) = -.04, p = .84$ , internalizing,  $r_{pb}(36) = .03, p = .87$ , or externalizing,  $r_{pb}(36) = -.21, p = .21$ , sub-scales of problem behaviors.

**2.3. Associations with Institutional Context Variables*****Institutional placement***

Analysis of the point-biserial correlations between attachment disorganization and institutional placement variables revealed nonsignificant results, both for age of admission,  $r_{pb}(76) = .10, p = .38$ , and length of institutionalization,  $r_{pb}(76) = .11, p = .35$ .

***Institutional care***

The examination of the association between attachment disorganization and institutional care was first conducted for the more distal caregiving variables, regarding the

quality of institutional setting infra-structures, human resources and relational caregiving routines. Results, displayed in Table 15, revealed a single significant association between one of the sub-dimensions of institutional relational care and disorganization,  $r_{pb}(76) = -.26$ ,  $p = .02$ , meaning that disorganized children tended to receive lower levels of responsiveness to their distress signals.

**Table 15*****Correlations between attachment disorganization and institutional quality of care***

<b>N = 76</b>	<b>Disorganization</b>
<b>IRR: Human resources</b>	-.06
<b>IRR: Equipment and material resources</b>	-.07
<b>IRR: Basic needs routines</b>	-.01
<b>IRR: Total score</b>	-.07
<b>IRC: Developmental activities</b>	-.15
<b>IRC: Stability and consistency of caregiving</b>	-.04
<b>IRC: Responsiveness to children's distress signals</b>	-.25*
<b>IRC: Total score</b>	.18
<b>Quality of institutional care: AQIC Total score</b>	-.10

*Note.* IRR - Institutional Resources and Routines; IRC - Institutional Relational Care; Point-biserial correlations; \* $p < .05$ .

The second dimension of institutional care assessed, regarding the associations with attachment disorganization, was the quality of individualized care provided to each child. Results for this association are reported in Table 16. Two marginal significant correlations were found between disorganization and individualized care dimensions of availability,  $r_{pb}$

(76) =  $-.20$ ,  $p = .08$ , and sensitivity,  $r_{pb}$  (76) =  $-.21$ ,  $p = .06$ , suggesting that children classified as disorganized in SSP are more likely to receive higher levels of individualized care in terms of sensitivity and availability from the caregivers.

**Table 16**

*Correlations between attachment disorganization and individualized care*

N = 76	Disorganization
<b>IC: Knowledge about the child</b>	-.15
<b>IC: Availability</b>	-.20 <sup>+</sup>
<b>IC: Sensitivity</b>	-.21 <sup>+</sup>
<b>IC: Acceptance</b>	-.10
<b>IC: Total score</b>	-.17

*Note.* IC - Individualized Care; Point-Biserial correlations; <sup>+</sup> $p < .10$ .

The third matter of analysis focused on the association between attachment disorganization and the existence of a preferred or assigned caregiver for each child at the institutional setting. Results revealed that disorganization was not significantly correlated neither with the existence of a preferred caregiver,  $\chi^2(1) = 1.40$ ,  $p = .18$ , nor with the existence of an assigned caregiver for the child at the institutional setting,  $\chi^2(1) = .25$ ,  $p = .40$ . Moreover, disorganization was not associated with the total score of children's observed attachment behaviors towards the caregiver, that led to the determination of each caregiver as being or not preferred by each child,  $r_{pb}$  (76) =  $-.11$ ,  $p = .36$ .

Subsequently, the relationship between disorganization and the quality of the caregiver's behavior in play interaction with the child were examined. Findings revealed not significant regarding caregiver's mean cooperation behavior,  $r_{pb}$  (76) =  $.02$ ,  $p = .90$ , and caregiver's sensitivity behavior,  $r_{pb}$  (76) =  $-.01$ ,  $p = .37$ , across the three episodes assessed.

Finally, the association between children's disorganized attachment and caregiver's script-like attachment representation (dimensional scores) were examined but results revealed not significant for the mean scores of child-adult interaction stories,  $r_{pb} (76) = -.12$ ,  $p = .32$ , adult-adult interaction stories,  $r_{pb} (68) = .04$ ,  $p = .74$ , and secure base scriptedness score,  $r_{pb} (68) = .09$ ,  $p = .49$ .

#### **2.4. Predictors of Attachment Disorganization**

In order to understand the role of early family risk, child variables and quality of institutional care in the etiology of attachment disorganization, a multivariate logistic regression analysis was carried out.

However, aiming to select the variables to include in this final prediction model of attachment disorganization a set of multivariate logistic regression analysis were first carried out independently, for each of the following groups of theoretically oriented predictors of attachment disorganization:

1. Child demographic variables - age at assessment and sex;
2. Early family risk composites - prenatal risk, family-relational risk and emotional-neglect risk;
3. Children's developmental status variables - cognitive, language and motor development percentiles;
4. Children's psychological functioning variables - difficult temperament, social-emotional difficulties and social withdrawal behavior;
5. Institutional placement variables - age of admission at the institution, length of institutionalization;
6. Institutional quality of care - IRR Total score, IRC Total score, Individualized care Total score;
7. Relationship with institutional caregivers - existence of a preferred caregiver, existence of an assigned caregiver;
8. Caregiver's behavior and script-like attachment representation - cooperation behavior (mean score), sensitivity and secure base scriptedness score.

Thus, the position for each of the above described groups of variables was selected according to their temporal proximity and theoretical relevance for the construct of attachment disorganization. The plan of analysis was to retain the significant individual

predictors from each of these exploratory models, i.e., those whose  $p$  value was below .10, and combine them into a final prediction model of attachment disorganization (Table 21).

Table 17 presents the logistic model for the prediction of attachment disorganization, using age and sex as predictors. This model revealed to be not significant,  $\chi^2(2) = 4.06$ ,  $p = .13$ . However, in terms of individual predictors, age was found to contribute to the prediction of disorganization ( $p = .06$ ), suggesting that older children were less likely to be classified as disorganized in SSP. For this reason, this variable was retained to use in the final prediction model of attachment disorganization (Table 21). Furthermore, the following exploratory prediction models of attachment disorganization were conducted as controlling for age, inserted in step 1.

**Table 17**

*Binary logistic regression for attachment disorganization using child demographic variables predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	<i>Age</i>	-.09	.06	$\chi^2(2) = 4.06$
	<i>Sex</i>	.12	.82	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of attachment disorganization, i.e., predictors whose  $p < .10$ .

The regression model using children's age at step 1, followed by early family risk composites as predictors at step 2 (Table 18) was significant for the prediction of attachment disorganization,  $\chi^2(4) = 13.81$ ,  $p = .008$ . Age at assessment emerged, once again, as a significant predictor of attachment ( $p = .06$ ). Moreover, disorganized children were the ones that experienced higher levels of early family-relational risk ( $p = .005$ ). Thus, family relational risk was retained as a predictor to the final model of attachment disorganization (Table 21).



**Table 18**

*Binary logistic regression for attachment disorganization using children's age and early family risk composites predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	Age	-.09	.05	$\chi^2(1) = 4.53^*$
2	Age	-.09	.06	$\chi^2(4) = 13.81^{**}$
	Prenatal risk	.15	.90	
	<i>Family-relational risk</i>	3.98	.005	
	Emotional-neglect risk	1.09	.36	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of attachment disorganization, i.e., predictors whose  $p < .10$ ; \* $p < .05$ , \*\* $p < .01$ .

The regression model using children's age at step 1, followed by children's developmental status variables as predictors at step 2 was not significant for the prediction of attachment disorganization,  $\chi^2(4) = 7.29$ ,  $p = .12$ . The only individual predictor of attachment disorganization that came out as significant in this model was age ( $p = .04$ ). Consequently, there were no new predictors retained from this analysis to the final multivariate logistic model of attachment disorganization (Table 21).

The regression model using age at step 1, followed by children's psychological functioning variables as predictors at step 2 was not significant for the prediction of attachment disorganization,  $\chi^2(4) = 5.34$ ,  $p = .26$ . Age was once more the only significant predictor of attachment disorganization ( $p = .07$ ). Thus, temperament, social emotional difficulties and social withdrawal behavior indicators were excluded from the final multivariate logistic model of attachment disorganization (Table 21).

Table 19 describes the exploratory regression model of attachment disorganization, controlling for children's age at step 1 and with institutional placement variables inserted at

step 2. This model revealed significant for the prediction of attachment disorganization,  $\chi^2(3) = 8.35$ ,  $p = .04$ . Moreover, besides age ( $p = .06$ ), the only significant predictor of disorganization within the model was the age of admission at the institution ( $p = .08$ ). This result suggests that children who were older when first admitted at the institution were more likely to be classified as disorganized regarding their attachment with the institutional caregivers. Accordingly, age of admission was retained as a predictor variable to include in the final multivariate logistic model of attachment disorganization (Table 21).

**Table 19**

*Binary logistic regression for attachment disorganization using children's age and institutional placement predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	Age	-.09	.06	$\chi^2(1) = 4.01^*$
2	Age	-.88	.06	$\chi^2(3) = 8.35^*$
	<i>Age at admission</i>	.79	.08	
	Institutionalization length	.74	.14	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of attachment disorganization, i.e., predictors whose  $p < .10$ ; \* $p < .05$ .

The regression model using children's age at step 1, followed by institutional quality of care variables as predictors at step 2 was not significant for the prediction of attachment disorganization,  $\chi^2(4) = 6.90$ ,  $p = .14$ . Age emerged as the only significant predictor of attachment disorganization in this model ( $p = .05$ ). Consequently, variables of institutional quality of care were not retained as predictors to the final multivariate logistic model of attachment disorganization (Table 21).

The exploratory model for the predictors of attachment disorganization using children's age at step 1 and the existence of a preferred caregiver or assigned caregiver at step 2, revealed not significant,  $\chi^2(3) = 5.13$ ,  $p = .16$ . Besides age ( $p = .07$ ), there were no

significant predictors of attachment disorganization within this model. Therefore, the variables related with the existence of a particular relationship with the institutional caregiver were not retained to the final multivariate logistic model of attachment disorganization (Table 21).

The last group of variables examined as predictors of attachment disorganization was the one of caregiver's behavior in interactive situations and script-like attachment representation (Table 20). This model, with children's age inserted as predictor in step 1 and caregiver's variables inserted at step 2 of the regression, was found to predict attachment disorganization, to some extent,  $\chi^2(4) = 9.48, p = .05$ . Children's age ( $p = .04$ ), caregiver's cooperation ( $p = .06$ ) and caregiver's sensitivity ( $p = .06$ ) emerged as the individual significant predictors of attachment disorganization within this model. Results suggest that older children, with more sensitive caregivers were less likely to be disorganized regarding attachment.

**Table 20**

*Binary logistic regression for attachment disorganization using children's age, caregiver's behavior and script-like attachment representation predictors*

Step		B	p value	Model
1	Age	-.11	.05	$\chi^2(1) = 4.57^*$
2	Age	-.12	.04	$\chi^2(4) = 9.48^+$
	<i>C cooperation (mean score)</i>	.69	.06	
	<i>C sensitivity</i>	-.60	.06	
	C Secure base scriptedness score	.35	.45	

*Note.* C - Caregivers; Italics represent the predictors to be carried forward to the final prediction model of attachment disorganization, i.e., predictors whose  $p < .10$ ;  $^+ p < .10$ ,  $^* p < .05$ .

The association with caregiver's cooperation behavior indicated that higher levels of cooperation behavior from the caregiver's predicted attachment disorganization for the children. Thus, caregiver's cooperation and sensitivity were retained as prediction variables to the final multivariate logistic model of attachment disorganization (Table 21).

Finally, a final multivariate logistic regression was carried out (Table 21), using as predictors of attachment disorganization the variables that revealed significant in the previous exploratory regression analysis. Thus, children's age at assessment was inserted at step 1, family relational risk at step 2, children's age at admission at step 3 and caregiver's cooperation and sensitivity at step 4.

**Table 21**

*Final multivariate logistic model of attachment disorganization*

Step		<i>B</i>	Wald's	Odds ratio	Model
<b>1</b>	Age	-.09	4.22*	.91	$\chi^2(1) = 4.76^*$
<b>2</b>	Age	-.09	3.95*	.91	$\chi^2(2) = 10.93^{**}$
	Family-relational risk	2.72	5.69*	15.24	
<b>3</b>	Age	-.14	2.61 <sup>+</sup>	.87	$\chi^2(3) = 11.39^*$
	Family-relational risk	2.56	5.02*	13.17	
	Age at admission	.05	.44	1.05	
<b>4</b>	Age	-.14	2.27	.87	$\chi^2(5) = 14.83^*$
	Family-relational risk	2.51	4.19*	12.34	
	Age at admission	.05	.43	1.05	
	C cooperation	.48	2.07	1.61	
	C sensitivity	-.54	3.19 <sup>+</sup>	.59	

Note. C - Caregivers; <sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ .

This final model of prediction for attachment disorganization was significant,  $\chi^2(5) = 14.83$ ,  $p = .01$  and family-relational risk and caregiver's sensitivity proved to be significantly related with attachment disorganization. Exposure to family-relational risk increased the odds of a child being classified as disorganized regarding attachment by 12.34 times, whereas the caregiver's sensitivity in child-caregiver interactions reduced, to some extent, the odds of a child being classified as disorganized.

### **3. DISORDERED ATTACHMENT BEHAVIORS**

The analysis of the association between the different sub-types of disordered attachment and early risk factors, children's development and psychological functioning and institutional care variables is described below. Regarding indiscriminate behavior, these associations were first checked independently for observed and reported indiscriminate behavior, being the convergence between the measures examined afterwards. Subsequent to the presentation of the associations and correlates of each distinct form of attachment disturbance, results from the prediction analysis for each one of the sub-types are described.

#### **3.1. Indiscriminate Behavior**

##### **3.1.1. Observed indiscriminate behavior**

###### **3.1.1.1. Association with early family context**

There were no significant associations between observed indiscriminate behavior and children's prenatal risk,  $r_{pb}(79) = .07$ ,  $p = .52$ , family-relational risk,  $r_{pb}(83) = -.06$ ,  $p = .56$ , or emotional-neglect risk composites,  $r_{pb}(81) = .17$ ,  $p = .14$ .

###### **3.1.1.2. Association with child individual variables**

###### ***Developmental status and physical growth***

No associations were found between observed indiscriminate behavior and motor,  $r_{pb}(85) = -.05$ ,  $p = .67$ , cognitive,  $r_{pb}(85) = .02$ ,  $p = .87$ , and language,  $r_{pb}(85) = -.04$ ,  $p = .72$ , development percentiles. Accordingly observed indiscriminate behavior did not seem to be related with children's growth percentiles at the time of assessment, either considering

height,  $r_{pb}(84) = -.05, p = .65$ , weight,  $r_{pb}(84) = -.03, p = .82$ , or head-circumference,  $r_{pb}(84) = -.05, p = .64$ .

***Psychopathology, temperament and social-emotional functioning***

Results of the association between observed indiscriminate behavior and children's psychopathology, temperament and social-emotional functioning indicators are listed in Table 21. No association was found between children's reported difficult temperament and observed indiscriminate behavior,  $\chi^2(1) = .01, p = .54$ . On the other hand, observed indiscriminate behavior was marginally associated with children's reported social-emotional difficulties,  $\chi^2(1) = 2.54, p = .09$ , given that most of the children (55.4%,  $n = 36$ ) signaled by the caregiver's as having more social-emotional difficulties were also rated as indiscriminate based on researcher's observation. On the other hand, most children (65%,  $n = 13$ ) reported as functioning better in social-emotional domain were rated as not indiscriminate according to researchers' observation.

**Table 22**

***Correlations between observed indiscriminate behavior and psychopathology, temperament and social-emotional functioning***

	<i>n</i>	<b>Observed indiscriminate behavior</b>
<b>Difficult temperament<sup>a</sup></b>	85	.01
<b>Social-emotional difficulties<sup>a</sup></b>	85	2.54 <sup>+</sup>
<b>Social withdrawal behavior<sup>a</sup></b>	85	.05
<b>Internalizing problems<sup>b</sup></b>	43	-.02
<b>Externalizing problems<sup>b</sup></b>	43	.21
<b>Total score of behavioral problems<sup>b</sup></b>	43	.10

*Note.* <sup>a</sup>Chi-square associations; <sup>b</sup>Point-Biserial correlations; <sup>+</sup> $p < .10$ .

The association between observed indiscriminate behavior and social withdrawal behavior was not significant,  $\chi^2(1) = .05, p = .52$ . Dimensional scores of reported psychopathology were also not associated with observed indiscriminate behavior, either in terms of total score,  $r_{pb}(43) = .10, p = .54$ , internalizing,  $r_{pb}(43) = -.02, p = .88$ , or externalizing,  $r_{pb}(43) = .21, p = .19$ , sub-scales of behavioral problems.

### 3.1.1.3. Association with institutional context variables

#### *Institutional placement*

Analysis of the point-biserial correlations between observed indiscriminate behavior and institutional placement variables revealed no significant results, both for age of admission,  $r_{pb}(85) = .02, p = .89$ , and length of institutionalization,  $r_{pb}(85) = .06, p = .62$ .

#### *Institutional care*

Following the same logic of analysis conducted for attachment disorganization, the associations between observed indiscriminate behavior and the more distal variables of institutional quality of care were the first focus of examination. Results revealed no significant associations between observed indiscriminate behavior and Institutional Resources and Routines - Human resources,  $r_{pb}(85) = .10, p = .37$ , Equipment and material resources,  $r_{pb}(85) = .02, p = .83$ , Basic needs routines,  $r_{pb}(85) = .05, p = .67$ , Total score,  $r_{pb}(85) = .06, p = .59$  - Institutional Relational Care - Developmental activities,  $r_{pb}(85) = .10, p = .36$ , Stability and consistency of caregiving,  $r_{pb}(85) = .07, p = .51$ , Responsiveness to children's distress signals,  $r_{pb}(85) = .13, p = .22$ , Total score,  $r_{pb}(85) = .12, p = .27$  - or with the total score of the quality of institutional care,  $r_{pb}(85) = .09, p = .41$ .

Moving to the analysis of the relationship between observed indiscriminate behavior and individualized care, results revealed once again the absence of significant correlations, regarding the dimensions of Knowledge about the child,  $r_{pb}(85) = -.03, p = .82$ , Availability,  $r_{pb}(85) = .01, p = .94$ , Sensitivity,  $r_{pb}(85) = .04, p = .73$ , Acceptance,  $r_{pb}(85) = -.02, p = .83$ , or Total score of IC,  $r_{pb}(85) = -.00, p = .98$ .

Subsequent analysis focused on the association between indiscriminate behavior and assigned caregiver and preferred caregiver variables. Results, displayed in Table 23, revealed a lack of association between observed indiscriminate behavior and the categorical

measures of the existence of a preferred,  $\chi^2(1) = 1.66, p = .15$ , or assigned caregiver,  $\chi^2(1) = .10, p = .22$ , for each child at the institutional setting. However, observed indiscriminate behavior was marginally associated with the total score of children's attachment behaviors towards the caregiver,  $r_{pb}(85) = -.21, p = .05$ , indicating that indiscriminate children tend to display less attachment behaviors towards their institutional caregiver.

**Table 23**

*Correlations between observed indiscriminate behavior and preferred caregiver and assigned caregiver variables*

N = 85	Observed indiscriminate behavior
<b>Existence of preferred caregiver<sup>a</sup></b>	1.66
<b>Existence of an assigned caregiver<sup>a</sup></b>	.10
<b>Total score of children's attachment behaviors towards the caregiver<sup>b</sup></b>	-.21 <sup>+</sup>

*Note.* <sup>a</sup>Chi-square associations; <sup>b</sup>Point-Biserial correlations; <sup>+</sup> $p < .10$ .

Associations between observed indiscriminate behavior and the quality of the caregiver's behavior in play interaction with the child were next examined (Table 23). Results showed an association between indiscriminate behavior and caregiver's mean cooperation behavior,  $r_{pb}(85) = -.28, p = .009$ , and caregiver's sensitivity behavior,  $r_{pb}(85) = -.31, p = .004$ , suggesting that indiscriminate children are more likely to have caregiver's that are less cooperative and less sensitive in interactive situations with the child.

Finally, the associations between children's observed indiscriminate behavior and caregiver's script-like attachment representation (dimensional scores) were examined and results are listed in Table 24. There was a single significant association between children's indiscriminate behavior and the caregiver's composite narrative score in child-adult interaction stories,  $r_{pb}(85) = -.24, p = .03$ , suggesting that indiscriminate children caregivers' tend to have less secure script-like attachment representations.



**Table 24**

*Correlations between observed indiscriminate behavior and caregiver's interactive behavior and script-like attachment representations*

	<i>n</i>	Observed indiscriminate behavior
<b>Caregiver's interactive behavior</b>		
Cooperation	85	-.28**
Sensitivity	85	-.31**
<b>Caregiver's script-like attachment representation</b>		
Composite narrative score in child-adult stories	85	-.24*
Composite narrative score in adult-adult stories	76	-.08
Secure base scriptedness score	76	-.19

*Note.* Point-Biserial correlations; \* $p < .05$ , \*\* $p < .01$ .

### 3.1.2. Reported indiscriminate behavior

#### 3.1.2.1. Association with early family context

There were no significant associations between reported indiscriminate behavior and children's prenatal risk,  $r_{pb}(79) = .02$ ,  $p = .84$ , family-relational risk,  $r_{pb}(83) = -.01$ ,  $p = .96$ , or emotional-neglect risk composites,  $r_{pb}(81) = -.08$ ,  $p = .49$ .

### 3.1.2.2. Association with child individual variables

#### *Developmental status and physical growth*

No associations were found between reported indiscriminate behavior and motor,  $r_{pb}$  (85) = -.05,  $p = .67$ , cognitive,  $r_{pb}$  (85) = -.09,  $p = .41$ , and language,  $r_{pb}$  (85) = -.07,  $p = .54$ , development percentiles. Accordingly reported indiscriminate behavior did not seem to be related with children's growth percentiles at the time of assessment, either considering height,  $r_{pb}$  (84) = -.17,  $p = .11$ , weight,  $r_{pb}$  (84) = -.14,  $p = .20$ , or head-circumference,  $r_{pb}$  (84) = -.01,  $p = .92$ .

#### *Psychopathology, temperament and social-emotional functioning*

No associations were found between reported indiscriminate behavior and children's difficult temperament,  $\chi^2(1) = .04$ ,  $p = .59$ , social-emotional difficulties,  $\chi^2(1) = .04$ ,  $p = .54$ , observed social withdrawal behavior,  $\chi^2(1) = .87$ ,  $p = .26$ , or behavioral problems, either regarding internalizing,  $r_{pb}$  (43) = -.13,  $p = .40$ , externalizing,  $r_{pb}$  (43) = .16,  $p = .31$ , or total score,  $r_{pb}$  (43) = .01,  $p = .93$ , indicators.

### 3.1.2.3. Association with institutional context variables

#### *Institutional placement*

Analysis of the point-biserial correlations between reported indiscriminate behavior and institutional placement variables revealed nonsignificant results, both for age of admission,  $r_{pb}$  (85) = .05,  $p = .63$ , and length of institutionalization,  $r_{pb}$  (85) = -.16,  $p = .15$ .

#### *Institutional care*

Results regarding the associations between reported indiscriminate behavior and the more general variables of institutional quality of care are described in Table 25. There was a significant association between indiscriminate behavior and the total score of Institutional resources and routines,  $r_{pb}$  (85) = -.25,  $p = .02$ , indicating that children reported by the caregivers as more indiscriminate are more likely to be placed in institutional settings with a lower level of resources. Moreover, the existence of an association with one particular dimension of Institutional resources and routines,  $r_{pb}$  (85) = -.26,  $p = .02$ , suggests that

children with higher levels of indiscriminate behavior are more likely to be placed in institutional settings with lower quality of equipment and material resources.

A significant association was also found between reported indiscriminate behavior and the total score of quality of care,  $r_{pb}(85) = -.23, p = .04$ , meaning that children with higher levels of indiscriminate behavior, according to caregiver's report, tend to be placed in institutions with overall lower levels of quality of care.

**Table 25**

*Correlations between reported indiscriminate behavior and institutional quality of care*

N = 85	Reported indiscriminate behavior
<b>IRR: Human resources</b>	.16
<b>IRR: Equipment and material resources</b>	-.26*
<b>IRR: Basic needs routines</b>	-.06
<b>IRR: Total score</b>	-.25*
<b>IRC: Developmental activities</b>	-.07
<b>IRC: Stability and consistency of caregiving</b>	-.00
<b>IRC: Responsiveness to children's distress signals</b>	-.14
<b>IRC: Total score</b>	-.05
<b>Quality of institutional care: AQIC Total score</b>	-.23*

*Note.* Point-Biserial correlations; \* $p < .05$ .

Significant associations between reported indiscriminate behavior and individualized care were found and are listed in Table 26: Knowledge about the child,  $r_{pb}(85) = -.26, p = .02$ , and Total score of Individualized Care,  $r_{pb}(85) = -.23, p = .03$ . Marginal significant

correlations were also found with the sub-dimension of Availability,  $r_{pb}(85) = -.21, p = .06$ , Sensitivity,  $r_{pb}(85) = -.21, p = .05$ , and Acceptance,  $r_{pb}(85) = -.20, p = .07$ .

**Table 26**

*Correlations between reported indiscriminate behavior and individualized care*

N = 85	Reported indiscriminate behavior
<b>IC: Knowledge about the child</b>	-.26*
<b>IC: Availability</b>	-.21 <sup>+</sup>
<b>IC: Sensitivity</b>	-.21 <sup>+</sup>
<b>IC: Acceptance</b>	-.20 <sup>+</sup>
<b>IC: Total score</b>	-.23*

*Note.* IC - Individualized Care; Point-Biserial correlations; <sup>+</sup> $p < .10$ , \* $p < .05$ .

Following analysis focused on the association between reported indiscriminate behavior and assigned caregiver and preferred caregiver variables (Table 27). Results revealed an association between indiscriminate behavior and the existence of a preferred caregiver,  $\chi^2(1) = 5.09, p = .02$ , indicating that 87% ( $n = 20$ ) of the children with a preferred caregiver at the institutional setting revealed lower levels of indiscriminate behavior, a significantly higher rate as compared with the children than did not have a preferred caregiver and still revealed lower levels of indiscriminate behavior (61.3%,  $n = 38$ ). In contrast, no association was found between reported indiscriminate behavior and the existence of an assigned caregiver for the child at the institution,  $\chi^2(1) = 1.12, p = .21$ .

Furthermore, a positive significant association was found between reported indiscriminate behavior and the total score of children's observed attachment behaviors towards the caregiver,  $r_{pb}(85) = -.34, p < .001$ , meaning that children reported as more

indiscriminate by the caregiver's displayed significantly less attachment behaviors towards the caregiver.

**Table 27**

*Correlations between reported indiscriminate behavior and preferred caregiver and assigned caregiver variables*

N = 85	Reported indiscriminate behavior
<b>Existence of preferred caregiver<sup>a</sup></b>	5.09*
<b>Existence of an assigned caregiver<sup>a</sup></b>	1.12
<b>Total score of children's attachment behaviors towards the caregiver<sup>b</sup></b>	-.34***

*Note.* <sup>a</sup>Chi-square associations; <sup>b</sup>Point-Biserial correlations; \* $p < .05$ , \*\*\* $p < .001$ .

Results of the associations between reported indiscriminate behavior and the quality of the caregiver's behavior in play interaction with the child are displayed in Table 28. Reported indiscriminate behavior was only marginally correlated with caregiver's mean cooperation behavior,  $r_{pb}(85) = -.21$ ,  $p = .06$ , meaning that the caregivers of children reported as more indiscriminate, tend to have less cooperative behaviors when interacting with the child.

The associations between children's reported indiscriminate behavior and caregiver's script-like attachment representation (dimensional scores) were the last topic of institutional care to be examined (Table 28). No significant associations were found between children's indiscriminate behavior and the caregiver's composite narrative score in child-adult interaction stories,  $r_{pb}(85) = -.01$ ,  $p = .96$ , or adult-adult interaction stories,  $r_{pb}(85) = -.13$ ,  $p = .25$ . Accordingly, the correlation between indiscriminate behavior and secure base scriptedness score revealed not significant,  $r_{pb}(85) = -.11$ ,  $p = .33$ .

**Table 28**

*Correlations between reported indiscriminate behavior and caregiver's interactive behavior and script-like attachment representations*

	<i>n</i>	<b>Reported indiscriminate behavior</b>
<b>Caregiver's interactive behavior</b>		
Cooperation	85	-.21 <sup>+</sup>
Sensitivity	85	-.15
<b>Caregiver's script-like attachment representation</b>		
Composite narrative score in child-adult stories	85	-.01
Composite narrative score in adult-adult stories	76	-.13
Secure base scriptedness score	76	-.11

*Note.* Point-Biserial correlations; <sup>+</sup> $p < .10$ .

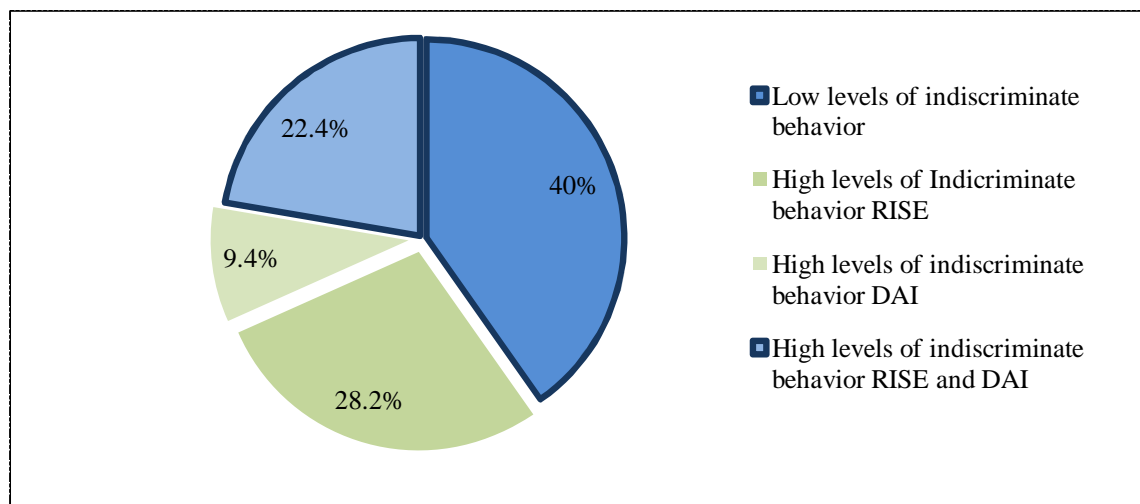
### **3.1.3. Convergence between report and observational measures of indiscriminate behavior**

One of the research questions formulated for indiscriminate behavior was the convergence between the report and observational measures of this disordered attachment behavior used in the present study.

In Figure 1 the percentages of children assessed as indiscriminate according to dichotomous measures of RISE, DAI or both are described. More than half of the children in the sample (60%,  $n = 51$ ) were identified by at least one of the measures as being more indiscriminate and 22.4% ( $n = 19$ ) were consistently identified by observational and report measures as being more disturbed regarding their attachment behaviors, indiscriminate type.

In the same line, 40% ( $n = 34$ ) of the children were assessed as engaging in lower levels of indiscriminate behavior, both using DAI, and RISE. Only 9.4% ( $n = 8$ ) of the children rated as more indiscriminate according to the caregiver's report were not also rated as more indiscriminate based on the researcher's observation. However, this percentage is a little higher regarding children classified as more indiscriminate in RISE but not in DAI (28.2%,  $n = 24$ ).

In sum, convergence between both measures of indiscriminate behavior was found in 62.4% ( $n = 53$ ) of the cases.



**FIGURE 1. Frequency of indiscriminate behavior according to RISE (observed) and DAI (reported).**

Accordingly, RISE and DAI scores proved to be significantly and positively associated in the present sample; and this was true when the two measures were treated as dimensionally continuous scores,  $r_{sp}(85) = .38$ ,  $p < .001$ , or categorically as high and low scores,  $\chi^2(1) = 6.19$ ,  $p = .01$ . These results suggest that these observational and report measures of indiscriminate behavior are capturing the same construct of attachment disorder behavior.

### 3.1.4. Predictors of indiscriminate behavior

Given the convergence found between observational and report measures of indiscriminate behavior, for purposes of the prediction analysis both forms of assessment were combined into a single measure of indiscriminate behavior. Children were classified as displaying indiscriminate attachment behavior if they met categorical criteria for such using either the RISE (i.e., score  $\geq 5$ ) or the DAI (i.e., score  $\geq 2$ ).

The logic used in the selection of the variables to include in the final prediction model of indiscriminate behavior was the same used for attachment disorganization (see section 2.4). Thus, a set of multivariate logistic regression analysis carried out independently, for the eight groups of theoretically oriented predictors of indiscriminate behavior: Child demographic variables, early family risk composites, children's developmental status, children's psychological functioning, institutional placement, institutional quality of care, relationship with institutional caregiver's, caregiver's behavior and script-like attachment representation. Once again, the plan of analysis was to retain the significant individual predictors from each of these exploratory models, i.e., those whose p value was below .1, and combine them into a final prediction model of indiscriminate behavior (Table 32).

The binary logistic regression for the prediction of indiscriminate behavior, using age and sex as predictor variables yielded no significant results either in terms of individual variables or final model,  $\chi^2(2) = .07, p = .97$ . Consequently, children's age and sex were not included as predictors in the final prediction model of indiscriminate behavior (Table 32).

The logistic regression model using early family risk composites as predictors also proved to be non significant for the prediction of indiscriminate behavior,  $\chi^2(3) = 1.33, p = .72$ . Furthermore, none of the early risk factors individually predicted indiscriminate behavior and were thus excluded from the final multivariate logistic model of indiscriminate behavior (Table 32).

Additionally, the regression model using children's developmental status variables as predictors was once again not significant for the prediction of indiscriminate behavior,  $\chi^2(3) = 2.16, p = .54$ . Moreover, since no individual predictors of indiscriminate behavior came out as significant in this model, children's developmental status variables were not included into the final multivariate logistic model of indiscriminate behavior (Table 32).



The regression model using children's psychological functioning variables as predictors of indiscriminate behavior also proved to be non significant,  $\chi^2(3) = 4.39$ ,  $p = .22$  (Table 29). However, social emotional difficulties came out as a significant predictor of indiscriminate behavior ( $p = .04$ ). Thus, this variable was included as a predictor in the final multivariate logistic model of indiscriminate behavior (Table 32).

**Table 29**

*Binary logistic regression for indiscriminate behavior using children's psychological functioning predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	Social withdrawal behavior	-.07	.90	$\chi^2(3) = 4.39$
	<i>Social-emotional difficulties</i>	1.10	.04	
	Difficult temperament	-.13	.49	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of indiscriminate behavior, i.e., predictors whose  $p < .10$ .

The exploratory regression model using institutional placement variables as predictors proved to be non significant for the prediction of indiscriminate behavior,  $\chi^2(2) = .14$ ,  $p = .93$ . In addition, there were no significant predictors of indiscriminate behavior within this model. Thus, institutional placement variables were not included in the final multivariate logistic model (Table 32).

Moving on to the regression model using institutional quality of care variables as predictors of indiscriminate behavior there were yet again no significant results neither regarding the model,  $\chi^2(3) = 1.73$ ,  $p = .63$ , nor in terms of individual predictors of indiscriminate behavior. Consequently, institutional quality of care variables were excluded as predictors to the final multivariate logistic model of indiscriminate behavior (Table 32).

Results of the exploratory prediction model of indiscriminate behavior, using the existence of a preferred caregiver and an assigned caregiver as predictor variables are described in Table 30. Although the model revealed was not significant,  $\chi^2(2) = 3.60$ ,  $p = .17$ , results indicate that children without a preferred caregiver at the institutional setting were, to some extent, more likely to show indiscriminate behavior ( $p = .09$ ). Therefore, the variable concerning the existence of preferred caregiver was selected to the final multivariate logistic model of indiscriminate behavior (Table 32).

**Table 30**

*Binary logistic regression for indiscriminate behavior using children's relationship with the caregiver predictors*

Step		B	p value	Model
1	Existence of an assigned caregiver	.14	.79	$\chi^2(2) = 3.60$
	<i>Existence of a preferred caregiver</i>	-1.02	.09	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of indiscriminate behavior, i.e., predictors whose  $p < .10$ .

The last group of variables examined as predictors of indiscriminate behavior was the one of caregiver's behavior in interactive situations and script-like attachment representation (Table 31). This model was found to predict indiscriminate behavior,  $\chi^2(3) = 9.61$ ,  $p = .02$ . However, caregiver's cooperation ( $p = .06$ ) revealed to be the only significant predictor of indiscriminate behavior within this model. Results suggest that children with less cooperative caregivers are more likely to be classified as indiscriminate. Thus, caregiver's cooperation was retained as a prediction variable to include the final multivariate logistic model of indiscriminate behavior (Table 32).

**Table 31**

*Binary logistic regression for indiscriminate behavior using caregiver's behavior and script-like attachment representation predictors*

Step		<i>B</i>	<i>p</i> value	Model
<b>1</b>	<i>C cooperation (mean score)</i>	-.53	.06	$\chi^2(3) = 9.61^*$
	C sensitivity	.09	.71	
	C Secure base scriptedness score	-.19	.63	

*Note.* C - Caregivers; Italics represent the predictors to be carried forward to the final prediction model of attachment indiscriminate behavior, i.e., predictors whose  $p < .10$ ; \* $p < .05$ .

In conclusion, a final multivariate logistic regression was carried out (Table 32), using as predictors of indiscriminate behavior the variables that revealed significant in the previous exploratory regression analysis. Thus, the variable accounting for children's social-emotional difficulties was inserted at step 1, the existence of a preferred caregiver at step 2, and caregiver's cooperation behavior was inserted at step 3.

This final model of prediction for indiscriminate behavior was highly significant,  $\chi^2(3) = 16.61$ ,  $p = .001$  and all of the variables included proved to be, to some extent, significantly related with indiscriminate behavior. The presence of other forms of social-emotional difficulties increased the odds of a child being classified as engaging in indiscriminate behavior by 2.92 times. On the other hand, the existence of a preferred caregiver to the child at the institutional setting reduced the odds of a child being classified as engaging in indiscriminate behavior by .36 times. Accordingly, children with more cooperative caregiver's were less likely to be classified as indiscriminate regarding attachment.

**Table 32*****Final multivariate logistic model for indiscriminate behavior***

Step		<i>B</i>	Wald's	Odds ratio	Model
1	SE difficulties	1.08	4.18*	2.93	$\chi^2(1) = 4.29^*$
2	SE difficulties	1.44	6.45*	4.22	$\chi^2(2) = 10.33^{**}$
	Existence of a PC	-1.29	5.79*	.27	
3	SE difficulties	1.07	3.25 <sup>+</sup>	2.92	$\chi^2(3) = 16.61^{**}$
	Existence of a PC	-1.03	3.39 <sup>+</sup>	.36	
	C cooperation	-.39	5.77*	.67	

*Note.* SE - Social-emotional; PC - Preferred Caregiver; C - Caregivers; <sup>+</sup> $p < .10$ ; \* $p < .05$ , \*\* $p < .01$ .

### 3.2. Reported Inhibited Behavior

#### 3.2.1. Association with early family context

Reported inhibited behavior was not associated with children's prenatal risk,  $r_{pb}(79) = -.02$ ,  $p = .87$ , family-relational risk,  $r_{pb}(83) = -.06$ ,  $p = .61$ , or emotional-neglect risk composites,  $r_{pb}(81) = -.09$ ,  $p = .45$ .

#### 3.2.2. Association with child individual variables

##### *Developmental status and physical growth*

No associations were found between reported inhibited behavior and motor,  $r_{pb}(85) = .17$ ,  $p = .13$ , cognitive,  $r_{pb}(85) = .04$ ,  $p = .69$ , and language,  $r_{pb}(85) = -.07$ ,  $p = .54$ , development percentiles. Inhibited behavior was also not related with children's growth percentiles at the time of assessment, either considering height,  $r_{pb}(84) = -.08$ ,  $p = .48$ , weight,  $r_{pb}(84) = -.11$ ,  $p = .33$ , or head-circumference,  $r_{pb}(84) = .11$ ,  $p = .32$ .

***Psychopathology, temperament and social-emotional functioning***

Results of the associations between reported inhibited behavior and psychopathology, temperament and social-emotional functioning are described in Table 33.

**Table 33**

***Correlations between reported inhibited behavior and psychopathology, temperament and social-emotional functioning***

	<i>n</i>	Reported Inhibited Behavior
<b>Difficult temperament<sup>a</sup></b>	85	.10
<b>Social-emotional difficulties<sup>a</sup></b>	85	4.75*
<b>Social withdrawal behavior<sup>a</sup></b>	85	3.19 <sup>+</sup>
<b>Internalizing problems<sup>b</sup></b>	43	.11
<b>Externalizing problems<sup>b</sup></b>	43	.41**
<b>Total score of behavioral problems<sup>b</sup></b>	43	.28 <sup>+</sup>

*Note.* <sup>a</sup>Chi-square associations; <sup>b</sup>Point-Biserial correlations; <sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ .

No associations were found between reported inhibited behavior and children's difficult temperament,  $\chi^2(1) = .10$ ,  $p = .47$ .

In contrast, inhibited behavior was significantly associated with social-emotional functioning,  $\chi^2(1) = 4.75$ ,  $p = .02$ . Results indicate that 90% ( $n = 18$ ) of the children reported by the caregivers as not having social-emotional difficulties were also reported as displaying low levels of inhibited behavior whereas 35.4% ( $n = 23$ ) of the children signaled by the caregivers as having difficulties in social-emotional domain were also reported to have high levels of inhibited type of attachment disordered behaviors.

A marginal significant association was additionally found between inhibited behavior and social withdrawal behavior,  $\chi^2(1) = 3.19, p = .07$ , revealing that 75% ( $n = 51$ ) of the children rated as not socially withdrawn were also reported by the caregivers as displaying low levels of inhibited behavior whereas 47.1% ( $n = 8$ ) of the children rated as socially withdrawn were also reported as more inhibited.

Focusing on the association between inhibited behavior and reported behavioral problems, there was a significant correlation with externalizing behavioral problems,  $r_{pb}(43) = .41, p = .00$ , and a marginal significant correlation with the total score of behavioral problems,  $r_{pb}(43) = .28, p = .07$ . Thus, children rated with high levels of inhibited behavior tended to be rated with higher scores of behavioral problems, particularly the externalizing type.

### **3.2.3. Association with institutional context variables**

#### ***Institutional placement***

Analysis of the point-biserial correlations between reported inhibited behavior and institutional placement variables revealed no significant results, both for age of admission,  $r_{pb}(85) = .08, p = .48$ , and length of institutionalization,  $r_{pb}(85) = -.02, p = .86$ .

#### ***Institutional care***

The associations between reported inhibited behavior and the more distal variables of institutional quality of care were once again the first focus of examination. Results revealed no significant associations between inhibited behavior and Institutional Resources and Routines - Human resources,  $r_{pb}(85) = .02, p = .89$ , Equipment and material resources,  $r_{pb}(85) = -.00, p = .99$ , Basic needs routines,  $r_{pb}(85) = -.14, p = .20$ , Total score,  $r_{pb}(85) = -.03, p = .81$  - Institutional Relational Care - Developmental activities,  $r_{pb}(85) = -.08, p = .45$ , Stability and consistency of caregiving,  $r_{pb}(85) = .06, p = .58$ , Responsiveness to children's distress signals,  $r_{pb}(85) = -.09, p = .41$ , Total score,  $r_{pb}(85) = .01, p = .96$  - or with the Total score of the quality of institutional care,  $r_{pb}(85) = -.02, p = .85$ .

The analysis of the association between reported inhibited behavior and individualized care also revealed nonsignificant results regarding the dimensions of Knowledge about the child,  $r_{pb}(85) = -.05, p = .64$ , Availability,  $r_{pb}(85) = -.09, p = .39$ , Sensitivity,  $r_{pb}(85) = -$

.05,  $p = .68$ , Acceptance,  $r_{pb} (85) = .03$ ,  $p = .82$ , or Total score of individualized care,  $r_{pb} (85) = -.04$ ,  $p = .71$ .

Results of the association between inhibited behavior and preferred caregiver and assigned caregiver variables are listed in Table 34.

Reported inhibited behavior was unrelated with the existence of a preferred caregiver,  $\chi^2(1) = 2.19$ ,  $p = .11$ , or with the existence of an assigned caregiver for the child at the institution,  $\chi^2(1) = 2.24$ ,  $p = .11$ .

In contrast, a significant association was found between reported inhibited behavior and the total score of children's observed attachment behaviors towards the caregiver,  $r_{pb} (85) = -.25$ ,  $p = .02$ , indicating that children rated as more inhibited tended to display less attachment behaviors towards the caregiver.

**Table 34**

*Correlations between reported inhibited behavior and preferred and assigned caregiver variables*

N = 85	Reported inhibited behavior
Existence of preferred caregiver <sup>a</sup>	2.19
Existence of an assigned caregiver <sup>a</sup>	2.24
Total score of children's attachment behaviors towards the caregiver <sup>b</sup>	-.25*

*Note.* <sup>a</sup>Chi-square associations; <sup>b</sup>Point-Biserial correlations; \* $p < .05$ .

Results of the associations between reported inhibited behavior and the quality of the caregiver's behavior in play interaction with the child are displayed in Table 35. A single marginal correlation was found between reported inhibited behavior and caregiver's mean cooperation behavior,  $r_{pb} (85) = -.21$ ,  $p = .06$ , suggesting that children rated as more inhibited, tended to have less cooperative caregivers in interactive situations.

The associations between children's reported inhibited behavior and caregiver's script-like attachment representation are also described in Table 34 and revealed not significant: caregiver's composite narrative score in child-adult interaction stories,  $r_{pb}(85) = .01$ ,  $p = .96$ , caregiver's composite narrative score in adult-adult interaction stories,  $r_{pb}(85) = .04$ ,  $p = .71$ , caregiver's secure base scriptedness score,  $r_{pb}(85) = .04$ ,  $p = .75$ .

**Table 35**

*Correlations between reported inhibited behavior and caregiver's interactive behavior and script-like attachment representations*

	<i>n</i>	Reported inhibited behavior
<b>Caregiver's interactive behavior</b>		
Cooperation	85	-.21 <sup>+</sup>
Sensitivity	85	-.13
<b>Caregiver's script-like attachment representation</b>		
Composite narrative score in child-adult stories	85	.01
Composite narrative score in adult-adult stories	76	.04
Secure base scriptedness score	76	.04

*Note.* Point-Biserial correlations; <sup>+</sup> $p < .10$ .

### 3.2.4. Prediction of reported inhibited behavior

The logic used in the selection of the variables to include in the final prediction model of inhibited behavior was the same used for attachment disorganization (see 2.4) and indiscriminate behavior (see 3.1.4). Thus, a set of multivariate logistic regression analysis carried out independently, for the eight groups of predictors of inhibited behavior: Child demographic variables, early family risk composites, children's developmental status,



children's psychological functioning, institutional placement, institutional quality of care, relationship with institutional caregiver's, caregiver's behavior and script-like attachment representation. Once again, the plan of analysis was to retain the significant individual predictors from each of these exploratory models, i.e., those whose  $p$  value was below .10, and combine them into a final prediction model of inhibited behavior (Table 38).

The binary logistic regression for the prediction of inhibited behavior, using age and sex as predictor variables yielded no significant results either in terms of individual variables or final model,  $\chi^2(2) = 1.62, p = .45$ . Consequently, children's age and sex were not included as predictors into the final prediction model of inhibited behavior (Table 38).

The logistic regression model using early family risk composites as predictors of inhibited behavior was also non significant,  $\chi^2(3) = 1.78, p = .62$ . Given that none of the early risk factors individually predicted indiscriminate behavior, these were excluded from the final multivariate logistic model of inhibited behavior (Table 38).

Furthermore, the binary logistic regression for the prediction of inhibited behavior, using children's developmental status variables as predictors yielded no significant results either in terms of individual variables or final model,  $\chi^2(3) = 2.43, p = .49$ . Consequently, children's developmental status variables were not included into the final multivariate logistic model of inhibited behavior (Table 38).

The regression model using children's psychological functioning variables as predictors of inhibited behavior revealed to be significant,  $\chi^2(3) = 9.09, p = .03$  (Table 36). Moreover, social emotional difficulties and social withdrawal behavior emerged as significant predictors of inhibited behavior, meaning that children presenting difficulties in terms of social withdrawal and social-emotional behavior were more likely to be rated as engaging in high levels of inhibited behavior. Thus, these variables were retained as predictors to the final multivariate logistic model of inhibited behavior (Table 38).

**Table 36**

*Binary logistic regression for inhibited behavior using children's psychological functioning predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	<i>Social withdrawal behavior</i>	1.04	.08	$\chi^2(3) = 9.09^*$
	<i>Social-emotional difficulties</i>	1.71	.03	
	Difficult temperament	-.31	.54	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of inhibited behavior, i.e., predictors whose  $p < .10$ .

The exploratory regression model using institutional placement variables as predictors was not significant for the prediction of inhibited behavior,  $\chi^2(2) = 1.03$ ,  $p = .59$ . In addition, there were no significant predictors of inhibited behavior within this model. Thus, institutional placement variables were not included into the final multivariate logistic model for inhibited behavior (Table 38).

Additionally, the regression model using institutional quality of care variables as predictors of inhibited behavior revealed non significant,  $\chi^2(3) = .23$ ,  $p = .97$ . Moreover, no individual variables within this model emerged as significant for the prediction of inhibited behavior which led to the exclusion of institutional quality of care variables to the final multivariate logistic model of inhibited behavior (Table 38).

The exploratory prediction model of inhibited behavior, using the existence of a preferred caregiver and assigned caregiver as predictor variables revealed non significant,  $\chi^2(2) = 3.00$ ,  $p = .22$ . Accordingly, there were no significant associations between the individual predictors within this model and inhibited behavior. Therefore, these variables were not retained to the final multivariate logistic model of inhibited behavior (Table 38).

Finally, the predictive value of caregiver's behavior in interactive situations and script-like attachment representation for inhibited behavior were examined (Table 37). This model revealed non significant to the prediction of inhibited behavior,  $\chi^2(3) = 4.12, p = .25$ . Nevertheless, caregiver's cooperation ( $p = .09$ ) was found to predict, to some extent, inhibited behavior. Results suggest that children with less cooperative caregiver's were more likely to be classified as highly inhibited. Thus, caregiver's cooperation was retained as a prediction variable to include the final multivariate logistic model of inhibited behavior (Table 38).

**Table 37**

*Binary logistic regression for inhibited behavior using caregiver's behavior and script-like attachment representation predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	<i>C cooperation</i>	-.51	.09	$\chi^2(3) = 4.12$
	C sensitivity	.25	.36	
	C Secure base scriptedness score	.26	.56	

*Note.* C - Caregivers; Italics represent the predictors to be carried forward to the final prediction model of attachment disorganization, i.e., predictors whose  $p < .10$ .

In conclusion, a final multivariate logistic regression was carried out (Table 38), using as predictors of inhibited behavior the variables that revealed significant in the previous exploratory regression analysis. Thus, children's social withdrawal behavior and social emotional difficulties were inserted at step1 and caregiver's cooperation behavior was inserted at step 2.

**Table 38*****Final multivariate logistic model for inhibited behavior***

Step		<i>B</i>	Wald's	Odds ratio	Model
<b>1</b>	SW behavior	1.06	3.22 <sup>+</sup>	2.88	$\chi^2(2) = 8.72^*$
	SE difficulties	1.66	4.25*	5.24	
<b>2</b>	SW behavior	1.04	2.96 <sup>+</sup>	2.82	$\chi^2(3) = 10.55^*$
	SE difficulties	1.43	3.10 <sup>+</sup>	4.19	
	C cooperation	-.21	1.77	.81	

*Note.* SW - Social Withdrawal; SE - Social Emotional; C - Caregivers; <sup>+</sup> $p < .10$ , \* $p < .05$ .

This final model of prediction for inhibited behavior proved to be significant,  $\chi^2(3) = 10.55$ ,  $p = .01$ . However, only the variables related with children's psychological functioning seemed to contribute to the significance of the model. Socially withdrawn children were 2.82 times more likely to be reported as displaying high levels of inhibited behavior. Accordingly, the presence of other forms of social-emotional difficulties increased the odds of a child being classified as engaging in high levels of inhibited behavior by 4.19 times.

### **3.3. Reported Secure Base Distortions Behavior**

#### **3.3.1. Association with early family context**

There were no associations between reported secure base distortions behavior and children's prenatal risk,  $r_{pb}(79) = -.04$ ,  $p = .75$ , family-relational risk,  $r_{pb}(83) = -.02$ ,  $p = .87$ , or emotional-neglect risk composites,  $r_{pb}(81) = -.13$ ,  $p = .24$ .

### 3.3.2. Association with child individual variables

#### *Developmental status and physical growth*

Results of the associations between reported secure base distortions behavior and children's motor, cognitive and language developmental percentiles are described in Table 39. A single significant association was found between secure base distortions behavior and children's motor development,  $r_{pb}(85) = .23, p = .03$ . This result suggests that children reported by the caregivers as displaying higher levels of secure base distortions behavior also tended to exhibit better motor development in BSID-III (Bayley, 2006).

**Table 39**

*Correlations between secure base distortions behavior and development percentiles*

N = 85	Reported secure base distortions behavior
Motor development percentile	.23*
Cognitive development percentile	.02
Language development percentile	-.01

*Note.* Point-Biserial correlations; \* $p < .05$ .

On the other hand, secure base distortions behavior was not related with children's growth percentiles at the time of assessment, either considering height,  $r_{pb}(84) = -.16, p = .14$ , weight,  $r_{pb}(84) = -.14, p = .21$ , or head-circumference,  $r_{pb}(84) = -.07, p = .52$ .

#### *Psychopathology, temperament and social-emotional functioning*

No associations were found between reported secure base distortions behavior and children's difficult temperament,  $\chi^2(1) = 1.59, p = .15$ .

Accordingly, secure base distortions behavior was not significantly associated with reported social-emotional functioning,  $\chi^2(1) = 1.12, p = .22$ , or with observed social withdrawal behavior,  $\chi^2(1) = .35, p = .38$ .

The association between secure base distortions behavior and behavioral problems also revealed non significant: internalizing sub-scale,  $r_{pb} (43) = -.03, p = .85$ , externalizing sub-scale,  $r_{pb} (43) = .13, p = .41$ , total score of behavioral problems,  $r_{pb} (43) = .02, p = .89$ .

### 3.3.3. Association with institutional context variables

#### *Institutional placement*

Analysis of the point-biserial correlations between secure base distortions behavior and institutional placement variables are described in Table 40. A significant result was found between secure base distortions behavior and children’s age of admission at the institutional setting,  $r_{pb} (85) = .08, p = .03$ , indicating children who were older at admission tended to be rated as engaging in higher levels of indiscriminate behavior.

**Table 40**

*Correlations between reported secure base distortions behavior and institutional placement indicators*

N = 85	Reported secure base distortions behavior
<b>Age of admission (months)</b>	.23*
<b>Length of institutionalization (months)</b>	-.03

Note. Point-Biserial correlations; \* $p < .05$ .

#### *Institutional care*

Analysis focusing on the major structural and dynamic variables of institutional care revealed no significant associations between secure base distortions behavior and Institutional Resources and Routines - Human resources,  $r_{pb} (85) = -.01, p = .97$ , Equipment and material resources,  $r_{pb} (85) = -.01, p = .93$ , Basic needs routines,  $r_{pb} (85) = -.08, p = .46$ , Total score,  $r_{pb} (85) = -.02, p = .85$  - Institutional Relational Care - Developmental activities,  $r_{pb} (85) = -.11, p = .32$ , Stability and consistency of caregiving,  $r_{pb} (85) = .03, p = .78$ , Responsiveness to children’s distress signals,  $r_{pb} (85) = -.09, p = .41$ , Total score,  $r_{pb}$

(85) = -.03,  $p = .78$  - or with the Total score of the quality of institutional care,  $r_{pb}$  (85) = -.03,  $p = .80$ .

Furthermore, no significant associations were found between reported secure base distortions behavior and individualized care: Knowledge about the child,  $r_{pb}$  (85) = .02,  $p = .88$ , Availability,  $r_{pb}$  (85) = -.02,  $p = .86$ , Sensitivity,  $r_{pb}$  (85) = -.01,  $p = .96$ , Acceptance,  $r_{pb}$  (85) = .03,  $p = .82$ , Total score of individualized care,  $r_{pb}$  (85) = .01,  $p = .82$ .

In contrast, there was a significant marginal association between secure base distortions behavior and the existence of a preferred caregiver at the institution,  $\chi^2(1) = 3.01$ ,  $p = .07$  (Table 41). This association revealed that the majority of the children without a preferred caregiver (75.8%,  $n = 47$ ) were signaled by the caregivers as displaying lower levels of secure base distortions behaviors whereas almost half of the children with a preferred caregiver (43.5%,  $n = 10$ ) were reported as engaging in higher levels of secure base distortions behavior. Accordingly, a marginal significant association was also found between reported secure base distortions behavior and the existence of an assigned caregiver for the child at the institution,  $\chi^2(1) = 3.48$ ,  $p = .05$ . This association revealed that most of the children without an assigned caregiver (81.1%,  $n = 30$ ) were reported as displaying less secure base distortions behavior whereas 37.5% ( $n = 18$ ) of the children with an assigned caregiver were reported to exhibit higher levels of secure base distortions behavior.

**Table 41**

*Correlations between reported secure base distortions behavior and preferred caregiver and assigned caregiver variables*

N = 85	Reported secure base distortions behavior
<b>Existence of preferred caregiver<sup>a</sup></b>	3.01 <sup>+</sup>
<b>Existence of an assigned caregiver<sup>a</sup></b>	3.48 <sup>+</sup>
<b>Total score of children's attachment behaviors towards the caregiver<sup>b</sup></b>	.13

*Note.* <sup>a</sup>Chi-square associations; <sup>b</sup>Point-Biserial correlations; <sup>+</sup> $p < .10$ .

On the other hand, no association was found between reported secure base distortions behavior and the total score of children's observed attachment behaviors towards the caregiver,  $r_{pb} (85) = .13, p = .23$ .

Associations between reported secure base distortions behavior and the quality of the caregiver's behavior in play interaction with the child revealed non significant, both regarding the caregiver's mean cooperation behavior,  $r_{pb} (85) = .08, p = .47$ , and the caregiver's sensitivity behavior,  $r_{pb} (85) = -.02, p = .86$ .

Finally, the associations between secure base distortions behavior and caregiver's script-like attachment representation were also not significant: caregiver's composite narrative score in child-adult interaction stories,  $r_{pb} (85) = .03, p = .82$ , caregiver's composite narrative score in adult-adult interaction stories,  $r_{pb} (76) = -.09, p = .46$ , caregiver's secure base scriptedness score,  $r_{pb} (76) = -.07, p = .56$ .

### **3.3.4. Predictors of reported secure base distortions behavior**

The logic used in the selection of variables to include in the final prediction model of secure base distortions behavior was the same used for attachment disorganization (see 2.4), indiscriminate behavior (see 3.1.4) and inhibited behavior (see 3.2.4). Thus, a set of multivariate logistic regression analysis were carried out independently, for the eight groups of predictors of secure base distortions behavior: Child demographic variables, early family risk composites, children's developmental status, children's psychological functioning, institutional placement, institutional quality of care, relationship with institutional caregiver's, caregiver's behavior and script-like attachment representation. Again, the plan of analysis was to retain the significant individual predictors from each of these exploratory models, i.e., those whose  $p$  value was below .10, and combine them into a final prediction model of secure base distortions behavior (Table 46).

Table 42 presents the logistic model for the prediction of secure base distortions behavior, using age and sex as predictors. This model revealed to be significant,  $\chi^2(2) = 8.32, p = .02$ . However, age seemed to be the only predictor contributing to the significance of the model ( $p = .04$ ), suggesting that older children were more likely to be classified as engaging in high levels of secure base distortions behavior. For this reason, this variable was retained to use in the final prediction model of secure base distortions behavior (Table



46). Furthermore, the following exploratory prediction models of secure base distortions behavior were conducted as controlling for age, inserted in step 1.

**Table 42**

*Binary logistic regression for secure base distortions behavior using child demographic variables predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	<i>Age</i>	.08	.04	$\chi^2(2) = 8.32^*$
	<i>Sex</i>	.82	.11	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of secure base distortions behavior, i.e., predictors whose  $p < .10$ ;  $*p < .05$ .

The regression model using children's age at step 1, followed by early family risk composites as predictors at step 2 was non significant for the prediction of secure base distortions behavior,  $\chi^2(4) = 6.27$ ,  $p = .18$ . Again, only age at assessment emerged as a significant individual predictor of secure base distortions behavior ( $p = .03$ ). Thus, early family relational risk indicators were excluded as predictors to the final model of secure base distortions behavior (Table 46).

The regression model using children's age at step 1, followed by children's developmental status variables as predictors at step 2 (Table 43) turned out marginally significant for the prediction of secure base distortions behavior,  $\chi^2(4) = 9.07$ ,  $p = .06$ . However the only individual predictors of secure base distortions behavior that came out as significant, to some extent, in this model were age ( $p = .08$ ) and motor development percentile ( $p = .08$ ). Consequently, motor development percentile was retained as a predictor to the final multivariate logistic model of secure base distortions behavior (Table 46).

**Table 43**

*Binary logistic regression for secure base distortions behavior using children's age and developmental status predictors*

<b>Step</b>		<b>B</b>	<b>p value</b>	<b>Model</b>
<b>1</b>	Age	.09	.02	$\chi^2(1) = 5.69^*$
<b>2</b>	Age	.07	.08	$\chi^2(4) = 9.07^+$
	Cognitive development percentile	-.01	.43	
	Language development percentile	-.01	.66	
	<i>Motor development percentile</i>	.02	.08	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of secure base distortions behavior, i.e., predictors whose  $p < .10$ ;  $^+ p < .10$ ;  $^* p < .05$ .

The regression model using age at step 1, followed by children's psychological functioning variables as predictors at step 2 proved to be significant, to some extent, for the prediction of secure base distortions behavior,  $\chi^2(4) = 8.51$ ,  $p = .08$  (Table 44). However, age seemed to be the only predictor accounting for the significance of the model ( $p = .03$ ). Thus, temperament, social emotional difficulties and social withdrawal behavior indicators were not retained to the final multivariate logistic model of secure base distortions behavior (Table 46).

**Table 44**

*Binary logistic regression for secure base distortions behavior using children's age and psychological functioning predictors*

Step		<i>B</i>	<i>p</i> value	Model
<b>1</b>	Age	.09	.02	$\chi^2(1) = 5.69^*$
<b>2</b>	Age	.09	.03	$\chi^2(4) = 8.51^+$
	Social withdrawal behavior	.87	.19	
	Social-emotional difficulties	-.56	.28	
	Difficult temperament	.24	.70	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of secure base distortions behavior, i.e., predictors whose  $p < .10$ . <sup>+</sup> $p < .10$ , \* $p < .05$

The exploratory regression model for secure base distortions behavior, controlling for children's age at step 1 and with institutional placement variables inserted at step 2 revealed no significance,  $\chi^2(3) = 5.89$ ,  $p = .12$ . Moreover, there were no significant individual predictors of secure base distortions behavior within this model. Thus, institutional placement variables were excluded as predictors to the final multivariate logistic model of secure base distortions behavior (Table 46).

The regression model using children's age at step 1, followed by institutional quality of care variables as predictors at step 2 was not significant for the prediction of secure base distortions behavior,  $\chi^2(4) = 6.28$ ,  $p = .18$ . Age emerged as the only significant predictor of secure base distortions behavior within this model ( $p = .02$ ). Consequently, institutional quality of care variables were excluded as predictors to the final multivariate logistic model of secure base distortions behavior (Table 46).

The exploratory model for the predictors of secure base distortions behavior using children's age at step 1 and the existence of a preferred caregiver or an assigned caregiver at step 2, proved to be significant,  $\chi^2(3) = 8.89$ ,  $p = .03$  (Table 45). Nevertheless, age seemed to be the single predictor accounting for the significance of the model ( $p = .07$ ). Therefore, the variables related with the existence of a particular relationship with the institutional caregiver were not retained to the final multivariate logistic model of secure base distortions behavior (Table 46).

**Table 45**

*Binary logistic regression for secure base distortions behavior using children's relationship with the caregiver predictors*

Step		<i>B</i>	<i>p</i> value	Model
1	Age	.09	.02	$\chi^2(1) = 5.69^*$
2	Age	.09	.03	$\chi^2(3) = 8.89^*$
	Existence of an assigned caregiver	.58	.35	
	Existence of a preferred caregiver	.50	.42	

*Note.* Italics represent the predictors to be carried forward to the final prediction model of secure base distortions behavior, i.e., predictors whose  $p < .10$ ;  $*p < .05$ .

The last group of variables examined as predictors of attachment disorganization was the one of caregiver's behavior in interactive situations and script-like attachment representation. This model, with children's age inserted at step 1 and caregiver's variables inserted at step 2 of the regression, revealed non significant to the prediction of secure base distortions,  $\chi^2(4) = 4.71$ ,  $p = .32$ . Furthermore there were no significant individual predictors of secure base distortions behavior within this model. Thus, caregiver's behavior and script-like attachment representation variables were not retained as predictors to the final multivariate logistic model of secure base distortions behavior (Table 46).

Finally, a final multivariate logistic regression was carried out (Table 46), using as predictors of secure base distortions the variables that revealed significant in the previous exploratory regression analysis. Thus, children’s age at assessment was inserted at step1, and children’s motor development percentile was inserted at step 2.

**Table 46**

*Final multivariate logistic model of secure base distortions behavior*

Step		<i>B</i>	Wald’s	Odds ratio	Model
1	Age	.09	5.48*	1.09	$\chi^2(1) = 5.69^*$
2	Age	.08	3.29 <sup>+</sup>	1.08	$\chi^2(2) = 8.06^*$
	Motor development percentile	.02	2.29	1.02	

Note. <sup>+</sup> $p < .10$ , \* $p < .05$ .

This final model of prediction for secure base distortions behavior was significant,  $\chi^2(2) = 8.06$ ,  $p = .02$ , but children’s age at assessment seemed to be the only predictor accounting for the significance of the model. Thus, the increase of 1 month in children’s age increases the odds of children being classified as engaging in secure base distortions behavior by 1.08 times.

#### 4. COMORBIDITY OF ATTACHMENT DISORGANIZATION AND ATTACHMENT DISORDERED BEHAVIORS IN PORTUGUESE INSTITUTIONALIZED CHILDREN

In this section of results, the last two research questions will be analyzed. First, the association between disorganization and attachment disordered behaviors will be examined, focusing on the early risk, individual and institutional care correlates of the comorbidity of these two forms of atypical attachment behavior. In the following, the convergence between

the different sub-types of attachment disordered behaviors will be assessed and the early risk, individual and institutional care correlates of these different patterns of attachment disturbance will be considered.

#### 4.1. Association between Attachment Disorganization and Attachment Disordered Behaviors

The 8<sup>th</sup> research question concerned the association between disorganization at SSP and indiscriminate behavior (composite measure of observed and reported assessment), reported inhibited behavior and reported secure base distortions behavior (Table 47).

No significant association was found between indiscriminate behavior and disorganized classification of attachment at SSP,  $\chi^2(1) = .12$ ,  $p = .46$ . Likewise, the association between disorganized attachment and reported inhibited behavior proved to be non significant,  $\chi^2(1) = 1.74$ ,  $p = .15$ . In contrast, a marginal significant association was found between disorganization and secure base distortions behavior,  $\chi^2(1) = 3.43$ ,  $p = .06$ . Results indicate that only 22% ( $n = 11$ ) of the children with an organized classification at SSP were reported by the caregivers as displaying high levels of secure base distortions behavior whereas 42.3% ( $n = 11$ ) of the disorganized children were rated as displaying high levels of this sub-type of disordered attachment behavior.

**Table 47**

*Associations between disorganization at SSP and attachment disordered behaviors*

N = 76	Disorganized
<b>Indiscriminate behavior</b>	.12
<b>Reported Inhibited behavior</b>	1.74
<b>Reported Secure base distortions behavior</b>	3.42 <sup>+</sup>

*Note.* Chi-square associations <sup>+</sup> $p < .10$ .

Furthermore, one-way ANOVA tests were conducted to check for group differences in early family, child and institutional care risk factors for children rated as Not Disorganized and Not engaging in high levels of Indiscriminate Behavior (NDNIB), children rated as Disorganized Or engaging in high levels of Indiscriminate Behavior (DOIB) and children rated as Disorganized and engaging in high levels of Indiscriminate Behavior (DIB).

No group differences were found regarding children's exposition to early prenatal risk,  $F(2, 76) = .61, p = .55$ , family-relational risk,  $F(2, 80) = .59, p = .56$ , or emotional-neglect risk,  $F(2, 78) = 1.23, p = .29$ . Differences among NDNIB, DOIB and DIB groups were also undistinguishable regarding children's dimensional scores of difficult temperament,  $F(2, 82) = .11, p = .89$ , social-emotional difficulties,  $F(2, 82) = 1.14, p = .33$ , or social withdrawal behavior,  $F(2, 82) = .02, p = .98$ . Focusing on the differences among groups in terms of the quality of care, no significant differences were once again found in terms of IRR total score,  $F(2, 82) = .16, p = .85$ , IRC total score,  $F(2, 82) = 1.45, p = .24$ , or IC total score,  $F(2, 82) = 2.32, p = .11$ . Differences among groups in terms of the caregiver's secure base scriptedness score revealed non significant,  $F(2, 73) = .10, p = .90$ . The analysis of the differences among NDNIB, DOIB and DIB groups in terms of caregiver's behavior revealed significant for caregiver's cooperation,  $F(2, 82) = 2.73, p = .07$ , and sensitivity behavior,  $F(2, 82) = 3.15, p = .048$  (Table 48).

**Table 48**

*Differences in caregiver's behavior and script-like attachment representations among NDNIB, DOIB and DIB groups*

	<b>NDNIB</b> ( <i>n</i> = 22) <i>M</i> ( <i>SD</i> )	<b>DOIB</b> ( <i>n</i> = 49) <i>M</i> ( <i>SD</i> )	<b>DIB</b> ( <i>n</i> = 14) <i>M</i> ( <i>SD</i> )	<i>F</i>
<b>C cooperation behavior</b>	5.06 (1.79)	4.64 (1.56)	3.76 (1.65)	2.73 <sup>+</sup>
<b>C sensitivity behavior</b>	4.63 (1.92)	4.27 (1.73)	3.14 (1.75)	3.15*

*Note.* C - Caregivers; One-way ANOVA; <sup>+</sup> $p < .10$ ; \* $p < .05$ .

Scheffé Post Hoc Tests revealed that the only significant differences in terms of the caregivers' cooperation and sensitivity behavior occurred between the NDNIB and the DIB groups, in which the first had more cooperative and sensitive caregivers than the second.

In addition, the group differences in early family, child and institutional care risk factors were examined for children rated as Not Disorganized and Not engaging in high levels of Inhibited Behavior (NDNInB), children rated as Disorganized Or engaging in high levels of Inhibited Behavior (DOInB) and children rated as Disorganized and engaging in high levels of Inhibited Behavior (DInB).

No group differences were found regarding children's exposition to early prenatal risk,  $F(2, 76) = 1.28, p = .28$ , family-relational risk,  $F(2, 80) = .53, p = .59$ , or emotional-neglect risk,  $F(2, 78) = .80, p = .45$ . Differences among NDNInB, DOInB and DInB groups were also not significant regarding children's dimensional scores of difficult temperament,  $F(2, 82) = 1.58, p = .21$ , social-emotional difficulties,  $F(2, 82) = 1.19, p = .31$ , or social withdrawal behavior,  $F(2, 82) = .92, p = .40$ . Focusing on the differences between groups in terms of the quality of care, no significant differences were once again found in terms of IRR total score,  $F(2, 82) = .12, p = .89$ , IRC total score,  $F(2, 82) = .62, p = .54$ , or IC total score,  $F(2, 82) = 1.02, p = .37$ . The differences among NDNInB, DOInB and DInB groups in terms of caregiver's behavior and script-like attachment representation also revealed non significant: caregiver's cooperation,  $F(2, 82) = .50, p = .61$ , sensitivity behavior,  $F(2, 82) = .74, p = .48$ , caregiver's secure base scriptedness score,  $F(2, 73) = .48, p = .62$ .

Finally, the group differences in early family, child and institutional care risk factors were examined for children rated as Not Disorganized and Not engaging in high levels of Secure base Distortions behavior (NDNSD), children rated as Disorganized Or engaging in high levels of Secure base Distortions behavior (DOSD) and children rated as Disorganized and engaging in high levels of Secure base Distortions behavior (DSD).

No group differences were found regarding children's exposition to early prenatal risk,  $F(2, 76) = .55, p = .58$ , family-relational risk,  $F(2, 80) = 2.25, p = .11$ , or emotional-neglect risk,  $F(2, 78) = .38, p = .69$ . Differences among NDNSD, DOSD and DSD groups were also not significant regarding children's dimensional scores of difficult temperament,  $F(2, 82) = .22, p = .80$ , social-emotional difficulties,  $F(2, 82) = .06, p = .94$ , or social withdrawal behavior,  $F(2, 82) = .04, p = .96$ . Moving on the differences between groups in



terms of the quality of care, no significant differences were once again found in terms of IRR total score,  $F(2, 82) = 2.02, p = .14$ , IRC total score,  $F(2, 82) = .69, p = .50$ , or IC total score,  $F(2, 82) = .43, p = .65$ . The analysis of the differences among NDNSD, DOSD and DSD groups in terms of caregiver's behavior and script-like attachment representation also revealed non significant: caregiver's cooperation,  $F(2, 82) = 1.14, p = .32$ , sensitivity behavior,  $F(2, 82) = .25, p = .78$ , caregiver's secure base scriptedness score,  $F(2, 73) = .19, p = .83$ .

#### 4.2. Convergence among the Different Sub-types of Attachment Disordered Behaviors

Aiming to answer the last research question, regarding the comorbidity among the different sub-types of attachment disordered behaviors, the association between indiscriminate (composite measure), inhibited and secure base distortions behavior was analyzed (table 49).

A significant association was found between indiscriminate and inhibited behavior,  $\chi^2(1) = 5.90, p = .01$ . Results indicate that 85.3% ( $n = 29$ ) of the highly indiscriminate children have also received higher rates of inhibited behavior. In addition, 39.2% ( $n = 20$ ) of the children that received lower rates of indiscriminate behavior have also received lower rates of inhibited behavior. Thus, there seems to be some comorbidity between indiscriminate and inhibited behavior.

**Table 49**

*Associations between attachment disordered behaviors*

<b>N = 85</b>	<b>IB</b>	<b>InB</b>	<b>SBD</b>
<b>IB</b>	-	5.90*	.24
<b>InB</b>	5.90*	-	1.91
<b>SBD</b>	.24	1.91	-

*Note.* IB - Indiscriminate behavior; InB - Inhibited behavior; SBD - Secure Base Distortions behavior; Chi-square associations  $*p < .05$ .

In contrast, the association between indiscriminate behavior and secure base distortions behavior was non significant,  $\chi^2(1) = .24, p = .40$ .

The association between inhibited behavior and secure base distortions behavior also revealed non significant,  $\chi^2(1) = 1.91, p = .13$ .

In addition, the group differences in early family, child and institutional care risk factors were examined for children rated as Not engaging in high levels of Indiscriminate Behavior and Not engaging in high levels of Inhibited Behavior (NIBInB), children rated as engaging in high levels of Indiscriminate Behavior Or Inhibited Behavior (IBOInB) and children rated as engaging in high levels of Indiscriminate Behavior and Inhibited Behavior (IBInB).

No group differences were found regarding children's exposition to early prenatal risk,  $F(2, 76) = .19, p = .82$ , family-relational risk,  $F(2, 80) = .65, p = .52$ , or emotional-neglect risk,  $F(2, 78) = .09, p = .92$ . Differences among NIBInB, IBOInB and IBInB groups were also undistinguishable regarding children's dimensional scores of difficult temperament,  $F(2, 82) = .59, p = .56$ , social-emotional difficulties,  $F(2, 82) = .89, p = .41$ , or social withdrawal behavior,  $F(2, 82) = .59, p = .56$ . Regarding quality of care, no significant differences among groups were once again found in terms of IRR total score,  $F(2, 82) = .55, p = .58$ , IRC total score,  $F(2, 82) = .13, p = .88$ , or IC total score,  $F(2, 82) = .31, p = .74$ . The groups revealed no differences in terms of the caregiver's secure base scriptedness score,  $F(2, 73) = .19, p = .82$ . The analysis of the differences among NIBInB, IBOInB and IBInB groups in terms of caregiver's behavior revealed significant for caregiver's cooperation,  $F(2, 82) = 8.02, p = .001$ , and sensitivity behavior,  $F(2, 82) = 4.45, p = .02$  (Table 50). Scheffé Post Hoc Tests revealed that the NIBInB group had more cooperative and sensitive caregivers than the IBOInB group and the IBInB group. However, the IBOInB group did not significantly differ from the IBInB group in terms of the caregiver's sensitivity and cooperation.

**Table 50**

*Differences in caregiver's behavior and script-like attachment representations among NIBnB, IBOnB and IBnB groups*

	<b>NIBnB</b> ( <i>n</i> = 29) <i>M</i> ( <i>SD</i> )	<b>IBOnB</b> ( <i>n</i> = 36) <i>M</i> ( <i>SD</i> )	<b>IBnB</b> ( <i>n</i> = 20) <i>M</i> ( <i>SD</i> )	<i>F</i>
<b>C cooperation behavior</b>	5.53 (1.54)	4.15 (1.58)	4.07 (1.46)	8.02**
<b>C sensitivity behavior</b>	4.97 (1.64)	3.75 (1.76)	3.80 (1.91)	4.45*

*Note.* C - Caregivers; One-way ANOVA; \* $p < .05$ , \*\* $p < .01$ .

Furthermore, the group differences in early family, child and institutional care risk factors were examined for children rated as Not engaging in high levels of Indiscriminate Behavior and Not engaging in high levels of Secure base Distortions behavior (NIBNSD), children rated as engaging in high levels of Indiscriminate Behavior Or Secure base Distortions behavior (IBOSD) and children rated as engaging in high levels of Indiscriminate Behavior and Secure base Distortions behavior (IBSD).

No group differences were found regarding children's exposition to early prenatal risk,  $F(2, 76) = .03$ ,  $p = .97$ , family-relational risk,  $F(2, 80) = .23$ ,  $p = .79$ , or emotional-neglect risk,  $F(2, 78) = .01$ ,  $p = .99$ . Differences among NIBNSD, IBOSD and IBSD groups were also undistinguishable regarding children's dimensional scores of difficult temperament,  $F(2, 82) = .67$ ,  $p = .51$ , social-emotional difficulties,  $F(2, 82) = .31$ ,  $p = .73$ , or social withdrawal behavior,  $F(2, 82) = .04$ ,  $p = .96$ . Focusing on the differences between groups in terms of the quality of care, no significant differences were once again found in terms of IRR total score,  $F(2, 82) = .20$ ,  $p = .82$ , IRC total score,  $F(2, 82) = 1.25$ ,  $p = .29$ , or IC total score,  $F(2, 82) = .57$ ,  $p = .57$ . The analysis of the differences among NIBNSD, IBOSD and IBSD groups in terms of caregiver's script-like attachment representation also revealed not significant  $F(2, 73) = .63$ ,  $p = .54$ . In terms of caregiver's behavior, differences among groups were not found for caregiver's cooperation,  $F(2, 82) = 1.97$ ,  $p = .15$ , but existed for caregiver's sensitivity behavior,  $F(2, 82) = 2.91$ ,  $p = .06$  (Table 51). Scheffé Post Hoc Tests

revealed that caregiver's sensitivity was only significantly different between the NIBNSD group and the IBSD group, in which the first had more sensitive caregivers than the second.

**Table 51**

*Differences in caregiver's behavior among NIBNSD, IBOSD and IBSD groups*

	<b>NIBNSD</b>	<b>IBOSD</b>	<b>IBSD</b>	
	<i>(n = 23)</i>	<i>(n = 48)</i>	<i>(n = 14)</i>	<i>F</i>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	
<b>C cooperation behavior</b>	5.14(1.51)	4.49 (1.65)	4.09 (1.67)	1.97
<b>C sensitivity behavior</b>	4.52 (1.78)	4.31 (1.75)	3.14 (1.92)	2.91 <sup>+</sup>

*Note.* C-Caregivers; One-way ANOVA; \* $p < .05$ , \*\* $p < .01$ .

A last set of analysis were conducted in order to check for the group differences in early family, child and institutional care risk factors for children rated as Not engaging in high levels of Inhibited Behavior and Not engaging in high levels of Secure base Distortions behavior (NInBNSD), children rated as engaging in high levels of Inhibited Behavior or Secure base Distortions behavior (InBOSD) and children rated as engaging in high levels of Inhibited Behavior and Secure base Distortions behavior (InBSD).

No group differences were found regarding children's exposition to early prenatal risk,  $F(2, 76) = .36$ ,  $p = .70$ , family-relational risk,  $F(2, 80) = .14$ ,  $p = .87$ , or emotional-neglect risk,  $F(2, 78) = .88$ ,  $p = .42$ . Differences among NInBNSD, InBOSD and InBSD groups were also not significant regarding children's dimensional scores of difficult temperament,  $F(2, 82) = 2.37$ ,  $p = .1$ , social-emotional difficulties,  $F(2, 82) = 2.13$ ,  $p = .13$ , or social withdrawal behavior,  $F(2, 82) = .40$ ,  $p = .62$ . Focusing on the differences between groups in terms of the quality of care, no significant differences were once again found in terms of IRR total score,  $F(2, 82) = .53$ ,  $p = .59$ , IRC total score,  $F(2, 82) = .25$ ,  $p = .78$ , or IC total score,  $F(2, 82) = .76$ ,  $p = .47$ . The analysis of the differences among NInBNSD, InBOSD and InBSD groups in terms of caregiver's behavior or script-like attachment representation also revealed not significant, regarding the caregiver's secure base

scriptedness score  $F(2, 73) = .41, p = .67$ , caregiver's cooperation,  $F(2, 82) = .51, p = .60$ , or sensitivity behavior,  $F(2, 82) = .58, p = .56$ .



## Chapter 5

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### *Discussion and Conclusion*

#### **1. DISCUSSION**

Results presented in Chapter 4 will be next discussed. The frequency of attachment disorganization and attachment disordered behaviors will be the first focus of this Chapter. Afterwards, results regarding attachment disorganization, indiscriminate behavior, inhibited behavior and secure base distortions behavior will be analyzed. The last targets of examination, within the discussion, will be the association between disorganization and attachment disorder behaviors and the convergence between the different sub-types of attachment disorder behavior.

After discussion, limitations of the current study, suggestions for future research and clinical implications of the current study will be addressed.

### 1.1. Quality of Attachment: Frequencies

One of the major goals of the current study was to examine the frequency of attachment disorganization and attachment disordered behaviors in a group of Portuguese institutionalized children.

Results revealed that 30.6% ( $n = 26$ ) of the children were disorganized regarding the attachment relationship with their primary caregivers. This percentage seems considerably high in absolute terms, especially as compared to the disorganization rates found in low risk samples (van IJzendoorn et al., 1999). However, when data from research with institutionalized children is considered, the frequency of disorganized children found in the current study is much lower. Vorria and colleagues (2003) have found 65.8% of disorganized children in their sample of Greek institutionalized children and Zeanah and colleagues (2005) have found 65.3% of disorganized children in their sample of Romanian institutionalized children.

This difference may reflect methodological issues associated with the assessment of disorganization in this sample. First, the fact that a considerable part of the children were older than 20 months, the age usually placed as the limit to assess attachment according to Ainsworth and colleagues' SSP (1978) may have created some obstacles to their attachment classification. Second, several constraints within the present study led to the impossibility to conduct the SSP in a standardized laboratory setting. Third, as previously discussed in Chapter 2, the SSP was designed to assess the individual differences in infants' attachment quality and not to determine whether or not an attachment relationship exists (MacLean, 2003). As reported by Zeanah and colleagues (2005), only 3% of the institutionalized children within their study revealed a fully developed attachment relationship with the institutional caregiver's.

Thus, although these questions were considered during the classification of children's attachment quality within the present study, they also may have created additional difficulties to the assessment of disorganization, particularly since all of these methodological aspects may have lowered the amount of stress generated by the procedure, thus creating fewer opportunities for clear disorganized behaviors to emerge. This is probably associated with the fact that 10.6% ( $n = 9$ ) of the children were not disorganized but also could not be considered to be organized regarding attachment. Similarly to what has



been described in previous studies with institutional reared children (O'Connor et al., 2003) there were a few cases of atypical behavioral manifestations across SSP that could not be accounted by disorganization indices but also could not be integrated into the A, B, and C attachment patterns. Following the work the ERA study team (Kreppner et al., 2011; O'Connor, 2003) the term of "insecure-other" was used to describe this group of children. However, unlike the O'Connor and colleagues (2003) insecure-other category, the most salient characteristic in this group of children within the present study was not their behavior towards the stranger but the relative absence or unusual combination of attachment related behaviors across SSP. This may be one of the factors accounting for the higher rate of insecure-other children found in O'Connor and colleagues (2003) sample of Romanian institutionally reared children.

In sum, 41.1% of the children in this group of Portuguese institutionalized children were classified with atypical classifications regarding attachment, which is still a high and concerning percentage.

In terms of disordered attachment, indiscriminate behavior was the sub-type most frequently found among this group of children. Observational data pointed 50.6% of the children as indiscriminate whereas the caregiver's indicated that 31.6% of the children engaged in high levels of indiscriminate behavior. In contrast, only 29.4% of the children received high rates of inhibited behavior. Most research focused on disturbed attachment in institutionally reared children (Chisholm, 1998; O'Connor et al., 1999, 2003; Rutter et al., 2001; Zeanah et al., 2002) has reported similar results, namely regarding the high frequency of disordered attachment behaviors with a preponderance of the disinhibited sub-type. Secure base distortions behavior is clearly less studied among research. Nevertheless, a recent study with foster children (Oosterman & Schuengel, 2008) has found 13.1% of children with signs of secure base distortions behavior, which is a significantly lower rate than the one found in the current study (29.4%). Differences in the categorization of the variable and in the quality of care experienced by the children may substantiate this difference.

## **1.2. Attachment Disorganization**

Regarding attachment disorganization, first the associations with children's, early family risk factors, children's individual variables and institutional quality of care will be

reviewed. Afterwards, the focus will be placed on the results for the prediction analysis of disorganization.

### **1.2.1. Relations with the quality of early family context, child developmental characteristics, and institutional context**

#### *Early family context*

The current study is one of the few studies focusing on the association between disorganized attachment and early family risk factors in institutionalized children. Results revealed that children exposed to higher levels of family-relational risk before their admission at the institution, were more likely to be disorganized regarding attachment to their primary caregivers. Thus, although no specific hypothesis was formulated, results revealed consistent with attachment research. Increased levels of disorganization have been found in risk samples (see Lyons-Ruth et al., 1991) which is consistent with meta-analytic data suggesting that the presence of multiple family risk factors seems to increase children's likelihood of developing a disorganized attachment (van IJzendoorn et al., 1999). In this sense, it is not surprising that this family risk factor, characterized by multiple and pervasive relational, social and economical difficulties within the family is associated with higher rates of disorganized attachment later in children's lives.

The family-relational risk composite used in the current study describes families characterized by a vast array of social and economic problems, frequently extended to previous generations, i.e., most of these families were already referred by social services, having other adopted or institutionalized children other than the target children in this study. Furthermore, most of these families were also characterized by violent relationships within the family nucleus. These parents may have experienced early adverse caregiving themselves, and these unresolved experiences of trauma or fear may have led to their construction of unresolved representations of attachment (Main & Hesse, 1990; Main & Hesse, 1992). Also, this chaotic family functioning, that for most of these families has run throughout generations, may have led these parents to develop hostile-helpless states of mind regarding their own attachment experiences (Lyons-Ruth & Jacobvitz, 2008). Both of these parental states of mind regarding attachment seem to constitute as important risk factors for infants' attachment disorganization (Lyons-Ruth et al., 2005; Madigan et al., 2006). Moreover, this association may be mediated by parental manifestations of

frightening/frightened behavior or disrupted caregiving behaviors. Thus, and since domestic violence is a criterion of this category of family risk, it is plausible that these children have experienced some form of frightening/frightened behavior by the caregiver (Main & Hesse, 1992; Schuengel et al., 1999), even that indirectly through the exposure to frequent violent interactions within the family. Zeanah and colleagues (1999) have demonstrated the negative impact of family violence in children's attachment quality, revealing that it significantly increased the risk for disorganized attachment.

On the other hand, the possibility of maltreatment among these children cannot be excluded and is, in fact, very likely. Thus, this association between disorganization and family-relational risk is also consistent with empirical findings showing that maltreated children are at greater risk for attachment disorganization (Cicchetti et al., 2006; Cyr et al., 2010). The role of this early risk factor is even more significant given the meta-analytic suggestion that maltreated children are at major risk for developing disorganized attachments, even when compared with children exposed to several kinds of socioeconomic risk factors (Cyr et al., 2010).

In sum, children's early exposition to extremely adverse family environments seems to impact the development of a disorganized attachment with the institutional caregivers later on. This assumption is further validated by the marginal positive association found between disorganization and children's age admission of the institution. Thus, children that are exposed to higher levels of family risk for longer periods of time seem to be at greater risk for the development of a disorganized attachment.

#### *Child individual variables*

In terms of child's individual variables, there was no association between disorganization and children's gender which is consistent with other studies with institutionalized children (e.g. Vorria et al., 2003).

On the other hand, the findings also pointed that older children tended to be less disorganized regarding attachment. This is an intriguing and unexpected result. First, since it contradicts the assumption that children with a more prolonged exposition to caregiving deprivation (before and after institutionalization) would be at increased risk for disorganized attachment. Secondly, given that this association contrasts with the positive correlation

found between children's age at admission and disorganization. Thus, this result may be interpreted as a confirmation of the methodological limitations of SSP in assessing disorganization of attachment among the older children within this sample.

Regarding the association between disorganization and children's growth measures, a marginal and unexpected positive association was found between disorganization and children's head circumference percentile. For one hand, this result contrasts with data from other studies with institutionalized children, where no association was found between children developmental status and children's attachment quality (Vorria et al., 2003). On the other hand, this association is somewhat counterintuitive since usually disorganization has been associated with a less adaptive functioning across several developmental areas in pre-school and school age children (Lyons-Ruth et al., 1993; Lyons-Ruth et al., 1997; Munson et al., 2001; Shaw et al., 1996). Furthermore, given that this association is only marginally significant, results should be cautiously interpreted and thoroughly analyzed in future studies.

Regarding the association between disorganization and children's psychological functioning variables, results were partially consistent with the hypothesis formulated, based on data of previous studies with institutionalized children: no association was found between difficult temperament and disorganized attachment. However, although an association was expected between disorganization and children's poorer social and emotional functioning, such an association was not found. Thus, this result contrasts with the findings of Vorria and colleagues (2003) that pointed to a more adaptive social and emotional functioning of organized children.

#### *Institutional context variables*

Several hypotheses were formulated regarding the association between disorganization and institutional quality of care. However, the general expectation that institutional differences in terms of structural aspects, health and safety routines would not be associated with disorganization was confirmed by results of the current study.

On the contrary, it was anticipated that disorganization would be associated with specific variables concerning the quality of relational caregiving.

The first hypothesis expected an association between disorganization and the caregivers' cooperation behavior and overall quality of relational care provided at the institution. Although disorganization was not associated with caregiver's cooperation behavior, it was significantly associated with the institutional responsiveness to children's distress signals and marginally associated with availability and sensitivity dimensions of individualized care. Thus, these results contradict data from Dobrova-Krol and colleagues study (2010) where no relationship was found between the quality of relational caregiving provided by the institutional setting and children's disorganized attachment. Instead, the associations found are consonant with the study of Zeanah and colleagues (2005) suggesting that disorganized children tend to have caregivers that are less responsive, available and sensitive to their needs and communication cues.

The second hypothesis relied on attachment disorganization studies (van IJzendoorn et al., 1999) and institutionalized children's research (Vorria et al., 2003) and it expected no association between individual differences in caregiver's sensitivity behavior and children's attachment disorganization. Results met this expectation since no significant relationship was found between caregiver's behavior in interaction situations and disorganized attachment.

The third hypothesis predicted that children with a more personalized relationship with the caregiver, i.e., children with an assigned or preferred caregiver, would be less disorganized regarding attachment. Results invalidated this hypothesis revealing no association between the variables of assigned or preferred caregiver and attachment disorganization.

However, in general terms, the existence of a relationship between individualized care and disorganization provides partial support for the formulated expectation that a more personalized relationship with a caregiver would reduce the risk of attachment disorganization. The sub-dimensions of sensitivity and availability of individualized care used in the current study aim to capture the caregiver's psychological and physical availability towards the child as well as their overall sensitivity and appropriateness of response to the child's cues. The provision of individualized care in institutional settings is often almost impossible, given the high child-caregiver ratios, elevated inconsistency and rotativity of caregivers that are usually part of pool far more extensive than what would be acceptable. Nonetheless, these results suggest that individual differences in the

individualization of care provided by the institutions can make a difference in terms of children's quality of attachment. This is actually not surprising, considering the attachment theory's assumption that the emotional investment and availability from a consistent caregiver are crucial ingredients for children's development of an attachment relationship. This result is also consistent with empirical findings, showing that when the caregiver is more responsive to children's affective and attachment cues there will be less "disruptions" in child-caregiver's affective communications, thus reducing the risk for children's disorganized attachment (Lyons-Ruth & Jacobvitz, 1999). In fact, Lyons-Ruth and colleagues (1999) have proposed that beyond "frightening or frightened" behavior, serious deficiencies in the caregiver's capability of communicating and responding in an adequate and consistent way to the child's cues could also be associated with infants' disorganized attachment. Therefore, these results suggest institutional settings that reveal higher difficulties in responding in consistent and sensitive ways to children's signals may lead these children to chronically experience what Lyons Ruth and colleagues (1999) termed as "*failure to repair*" and/or "*competing strategies*" in caregiving, which results in higher rates of children's disorganized attachment. There is considerable data supporting the association found in this study between lack of responsiveness and consistency, in caregiving and children's disorganized attachment (Lyons-Ruth et al., 1999; Madigan et al., 2006; Vondra et al., 1999).

### **1.2.2. Predictors of attachment disorganization**

Data from studies with institutionalized children (Zeanah et al., 2005) underlined the association between institutional quality of care and children's disorganized attachment. On the other hand, classic studies on the effects of institutionalization (Provence & Lipton, 1962) and more recent developmental research on attachment disorganization (e.g. Lyons-Ruth et al., 1991) have called attention to the importance of early risk factors in explaining the impact of deprivation experiences in child's developmental pathways.

Thus, when formulating a hypothesis for the predictors of disorganization in the current study with institutionalized children, both past and concurrent risk factors were expected to be important in accounting for this atypical form of attachment. Results confirmed this initial hypothesis. The final model of prediction for attachment disorganization included children's age, family-relational risk, children's age at admission

and caregiver's sensitivity and cooperation behavior in interactive situations. This model was significant for the prediction of disorganization, but only family-relational risk and caregiver's sensitivity emerged as significant predictors. Therefore, children exposed to higher levels of family-relational risk and whose institutional caregiver's were less sensitive in interactive situations were the ones with increased odds of developing a disorganized attachment.

However, two surprising findings emerged from the analysis of disorganization predictors. First, the exploratory logistic regression using caregiver's behavior as a predictor of attachment disorganization revealed that both sensitivity and cooperation were significant predictor variables. This result was surprising giving that this relationship was not found in the previous bivariate association analysis. Second, the most unexpected result was the marginal significance of caregiver's cooperation behavior in predicting children's attachment disorganization. This result indicated that children whose caregiver's were more cooperative in child-caregiver interactions were more likely to develop a disorganized attachment with these same institutional caregivers. Thus, this finding is dissonant with empirical data suggesting that more adequate caregiving is associated with less disorganization regarding attachment (Lyons-Ruth et al., 1999; Zeanah et al., 2005) and should be further explored in future research.

In sum, results from this prediction analysis of attachment disorganization may help understand the fact that similar disorganization rates have been found in Vorria and colleagues (2003) and Zeanah and colleagues (2005) studies with institutionalized children, regardless of the great differences in the quality of institutional care. Although most children in both studies have spent most of their lives at the institutional setting, some of them have experienced some time living with their biological families and the quality of this experience should be considered, when attempting to explain their subsequent development. The positive associations found in the current study between disorganization and children's age at admission and exposition to family-relational risk, corroborate the assumption that when it comes to understand disorganization of attachment in institutionalized children, institutional quality of care should not be the only variable of caregiving taking part in the equation. Early family risk factors also seem to play a role in disorganization etiology. In fact, family-relational risk emerged as the most powerful predictor of attachment disorganization in this group of institutionalized children, even after considering the quality

of current relational care experienced by the children at the institutional setting. So, the multiple social and economical risks within the biological family may impact children's subsequent attachment development, probably through the association between dysfunctional familial dynamics and disturbed patterns of caregiving.

Moreover, the fact that a group of these children has not experienced family care for significant periods of time calls attention to the possible indirect influence of this constellation of family risk factors through children's pre or peri-natal experiences. Although the present results are consonant with Vorria and colleagues study (2003), revealing no association between children's pre-natal risk variables and disorganization in institutionalized children, this question should be thoroughly analyzed by future research. Also, one cannot exclude the possibility that the impact of family risk on disorganization is operated through more biological or even genetic based factors similar to the ones that have been described through research (Gervai et al., 2005; Lakatos et al., 2000, 2002) or of a different kind and nature that still wait to be uncovered.

Nevertheless, results of the current study are in the same line of research assuming that disorganization is a relationship disturbance (Sroufe et al., 2005a), being therefore more strongly associated with caregiving variables. Furthermore it should be noticed that these findings support the developmental model of cumulative risk (Sameroff & Chandler, 1975). On one hand, early family risk factors only emerged as statistically significant for the prediction of attachment outcomes when added into theoretically driven composites of risk. On the other hand, children with increased of disorganization were the ones who experienced higher levels of past and present caregiving deprivation. Thus, this study adds to research data supporting the more powerful impact of multiple risks as compared to individual risk factors (e.g Lyons Ruth et al., 2009). Accordingly, these findings may be framed into a cumulative effects model perspective, suggesting that the dynamic interplay between past and present environmental risk factors must be considered when attempting to understand children's more or less adaptive developmental outcomes.

### **1.3. Disordered Attachment Behaviors**

Findings regarding disordered attachment behaviors will be discussed in the following. First, the specific associations between each of the measures of disordered behavior and early risk factors, children's individual variables and institutional quality of



care will be described. This examination will be followed by the discussion of results from the prediction analysis of each sub-type of disordered attachment. In the case of indiscriminate behavior, the convergence between the report and observational measures used in the present study will be focused after reviewing the early family, individual and institutional care correlates of each.

### **1.3.1. Indiscriminate behavior**

#### **1.3.1.1. *Relations with the quality of early family context, child developmental characteristics, and institutional context***

##### *Early family context*

Results revealed no associations between indiscriminate behavior and early family risk factors, thus contradicting the hypothesis initially formulated for this research question. This finding is particularly important given the relative lack of studies with institutionalized children focusing on the developmental impact of these pre-institutionalization experiences. Moreover, the present study overcomes some of the methodological limitations in the assessment of early risk factors found in previous studies with institutionally reared children (Bruce et al., 2009). Nonetheless, results were consistent with the existent research data, while pointing for the absence of a significant association between these early family risk indicators and indiscriminate behavior in this group of Portuguese institutionalized children.

Based on empirical research it was particularly surprising that no association was found between indiscriminate behavior and emotional-neglect risk. This early risk composite comprises several risk factors like maternal substance abuse, psychopathology, mental retardation, prostitution or the presence of children's negligence as the motive for their admission at the institution. Parental substance or psychopathology may be particularly important risk factors for children's development of attachment disorders due to these parents' extreme unavailability to attend to children's needs and attachment signals (Minnis et al., 2006). Zeanah and colleagues (2004) have supported this postulation, revealing that mother's psychiatric problems and substance abuse seem to act as predictors of disinhibited signs of attachment disorder. A study of Lyons Ruth and colleagues (2009), with high risk children, also showed that children whose mothers' had a psychiatric history revealed an increased likelihood to develop indiscriminate behavior. However, empirical data just

presented is drawn from studies of children that although exposed to significant caregiving risk factors, were still living with their families. Thus, it might be that regarding indiscriminate behavior, children's immediate caregiving environment assumes more relevance than children's exposition to adverse experiences at a very early period of their lives.

#### *Child individual variables*

In terms of the association between indiscriminate behaviour and child individual variables, one of the most striking results was the relation found between this sub-type of disordered attachment behaviour and children's sex. Specifically, and contrary to what happened for girls, most boys were indiscriminate which contrasts with previous research data (Lyons-Ruth et al., 2009). This association was only found for observed indiscriminate behavior. Furthermore, and given that validated observational measures of indiscriminate behavior have only recently arisen, it would be important to see if this result finds replication in future studies using observational measures of indiscriminate behavior.

The lack of an association between children's age at assessment and observed or reported indiscriminate behaviors is consistent with research data revealing an absence of such relationship between children's age and reported indiscriminate behavior (Smyke et al., 2002; Zeanah et al., 2005).

In addition, regarding children's developmental status or physical growth variables no associations were found with indiscriminate behavior. This result is globally consistent with previous research (O'Connor et al., 1999), but contrasts with the hypothesis formulated for this research question in which, accordingly to Smyke and colleagues data (2002), an association between indiscriminate behavior and children's language development was expected.

Moving on to children's psychological functioning variables, no association was found between children's reported difficult temperament and indiscriminate behavior. Thus, the current study's hypothesis, supported on Zeanah and Fox (2004) assumption that children with a more difficult temperament would be reported by the caregivers as engaging in higher levels of attachment disordered behaviors, was not validated for indiscriminate behavior.

Accordingly, and contrary to what was expected, internalizing, externalizing or total behavior problem scores were not associated with observed or reported indiscriminate behavior. This finding contrasts with research data with post-institutionalized children (O'Connor et al., 1999, 2000, 2003).

In reverse, although no relationship between children's emotional functioning and indiscriminate behavior was anticipated (O'Connor et al., 1999), results suggest that indiscriminate children, according to observers ratings, also revealed higher levels of social-emotional difficulties.

This result is particularly interesting given the reflection from Rutter and colleagues (2007) on the importance of assessing the convergence of indiscriminate behavior and other manifestations of child malfunctioning and psychopathology. There has been a lot of discussion regarding the inclusion of indiscriminate behavior into the group of attachment disorders (Chisholm, 1998; Zeanah, 2000; Zeanah & Smyke, 2008). According to Rutter and colleagues (2007) for this form of disordered attachment behavior to be conceptualized as a disorder, a co-occurrence between indiscriminate behavior and other signs of psychological malfunction would be expected. Thus, according to this perspective, results of the present study support the conceptualization of indiscriminate behavior as a clinical relevant disorder.

Moreover, this association between social-emotional difficulties and indiscriminate behavior underlines the importance of addressing these issues in samples of institutionalized children, given the current lack of studies focused on this matter.

#### *Institutional context variables*

Regarding institutional context variables, results of the current study revealed no association between the duration of children's institutionalization experience and children's ratings of indiscriminate behavior. Consequently, this finding opposes to data from studies with post-institutionalized children where institutionalization length has proved to be linked with the disinhibited form of attachment disordered behavior (O'Connor et al., 1999, 2000; Rutter et al., 2004, 2007; Smyke et al., 2010). In contrast, this finding is consistent with Zeanah and colleagues study (2005) conducted with Romanian children while they were still at the institutional setting. Thus, and as suggested by Zeanah and colleagues (2005), it

seems like the discrepancy in the findings of institutionalized and post-institutionalized children might be explained by the fact that in the first kind of studies children are still under the influence of adverse caregiving experience, whereas in the second there has been a radical change in caregiving circumstances.

Focusing on the quality of care, results were inconsistent with the expectation that no significant associations would be found between indiscriminate behavior and more distal variables of institutional care like structural resources and basic caregiving routines. In fact, these findings suggest that children living in institutional settings with a higher overall quality of care and, in particular, with more adequate infra-structures and material resources, were less likely to be reported by the caregivers as engaging in high levels of indiscriminate behavior. Thus, this finding partially contrasts with research data pointing to similar high levels of indiscriminate behavior among children that have experienced significant differences of institutional deprivation in terms of global stimulation, nutrition and hygiene (O'Connor et al., 1999; Tizard & Rees, 1975; Zeanah et al., 2005). Although no association was found between indiscriminate behavior and basic needs routines, a significant link emerged between this sub-type of attachment disordered behavior and institutional infra-structures and material resources available for children's global stimulation.

On the other hand, it was hypothesized that other aspects, more associated with institutional relational care like caregiving stability or the provision of more individualized care would be associated with lower levels of indiscriminate behavior, as it has been suggested by previous studies with institutionalized children (Smyke et al., 2002). This hypothesis was confirmed. Children who received more individualized care were the ones reported to display lower levels of indiscriminate behavior. This is consistent with BEIP research data pointing to lower levels of indiscriminate behavior in children placed in "pilot units", with more stable and consistent caregivers (Smyke et al., 2002), or in children randomly placed in foster care (Smyke et al., 2010), as compared with children that remained in "standard" institutional units. In particular, one of the dimensions of individualized care that revealed to be more associated with indiscriminate behavior was the caregiver's knowledge about the child. This sub-dimension of individualized care aims to capture the caregiver's knowledge about the child's preferences and interests, as well as their ability to act with that particular child in a unique and personalized way. In institutional settings, child's caregiving is assured by professional caretakers that often

willingly avoid or are simply prevented to develop a deep emotional tie with each one of the children under their care (Smyke et al., 2002; The St. Petersburg - USA Orphanage Research Team, 2008; Tizard & Rees, 1975; Vorria et al., 2003). This fact, added to the multiplicity of caregivers that usually go in and out of the children's life while they are living at an institutional setting, is predicted by attachment theory (Bowlby, 1969/1982) to present insurmountable obstacles for children's development of a selective attachment relationship. Results of the present study add to the already existent research data supporting these theoretical assumptions.

When considering the variables related with the existence of a particular relationship between the child and a specific caregiver at the institutional setting, a few significant associations deserve consideration.

First, as hypothesized, the existence of a preferred caregiver at the institutional setting seems to act as a protective factor in terms of children's engagement in high levels of indiscriminate behavior. This finding is consistent with Smyke and colleagues data (2002), suggesting that having an attachment figure reduces the likelihood of children's displaying marked indices of indiscriminate behavior. On the other hand, this finding contrasts with Zeanah and colleagues study (2002), where most children with a preferred caregiver at a "standard" Romanian institutional setting were found to display high levels of indiscriminate behavior. Methodological differences can explain this discrepancy of results. Zeanah and colleagues (2002) have relied on report measures for the assessment of the existence of a preferred caregiver, whereas in the present study an observational attachment based measure was used to assess if a preferred institutional caregiver existed for each child. This explanation is corroborated by the fact that no association was found between the existence of an assigned caregiver (where no attachment based criteria were used) and children's indiscriminate behavior. Additionally, it seems important to acknowledge that although the existence of a preferred caregiver seems to significantly decline children's ratings of indiscriminate behavior, it does not preclude some children to be rated as engaging in high levels of indiscriminate behavior, which contrasts with the assumption of DSM-IV-TR criteria for disinhibited attachment disorder (APA, 2000). Thus, support is added to research with institutional reared children revealing the co-existence of indiscriminate behavior with a selective attachment relationship (Chisholm, 1998; O'Connor et al., 2003; Tizard & Rees, 1975).

The second interesting finding concerns the association between lower ratings of indiscriminate behavior and higher scores of children's observed attachment behaviors towards the caregiver, that led to the determination of each caregiver as being or not preferred by each child. This result contrasts with Zeanah and colleagues findings (2005), where no association was found between caregiver's ratings of children indiscriminate behavior and the observed qualitative ratings of children's degree of attachment towards the caregiver. Methodological differences may account for this inconsistency since that in Zeanah and colleagues' study the assessment of children's ratings of attachment behaviors towards the caregiver's was circumscribed to SSP whereas in the current study this assessment was conducted through an extensive period of naturalistic observation.

Nonetheless, what should be retained from this finding is that when the assessment of indiscriminate behavior is on the line, the quality of children's behavior towards unfamiliar people should not be the only indicator considered. The present study findings add to Zeanah and colleagues data (2005) in supporting the need to consider the quality of children's relationship with the caregiver in the assessment of disinhibited type of attachment disorders.

In terms of the quality of caregiver's behavior, findings of the current study imply that children displaying higher levels of indiscriminate behavior, according to observational ratings, have institutional caregivers that reveal less cooperative and sensitive behavior in child-caregiver interaction situations. Thus, this result partially contradicts existent research data from studies with institutionalized children. Some studies have failed to find an association between indiscriminate behavior and similar indicators of the quality of caregiver's behavior (Zeanah et al., 2005) whereas others have inclusively found a counter-intuitive positive association between caregiver's sensitivity in dyadic situations and children's indiscriminate behavior (Dobrova-Krol et al., 2010). On the other hand, Lyons-Ruth and colleagues study (2009), with a sample of high-risk children, have found that indiscriminate behavior was predicted by severity of caregiving risk, being this relationship mediated by maternal disrupted communication. As a consequence, in the present study an association was expected between higher levels of indiscriminate behavior and lower levels of caregiver's cooperative behavior in interaction situations. Interestingly, results have confirmed this hypothesis and supported empirical studies with high risk, not institutionalized, children indicating that the quality of caregiving, in terms of affective and

significant interactions with the child, may be an extremely powerful variable in predicting the emergence of indiscriminate behavior (Lyons Ruth et al., 2009).

Finally, the association found between observed indiscriminate behavior and caregiver's script-like attachment representations is worth noticing. To our knowledge, there are virtually no studies focusing on the association between caregiver's attachment representation and children's attachment disorders in institutionalized children. In part, this result is not surprising giving the empirically supported assumption that parents' state of mind regarding attachment may influence their patterns of caregiving, leading to the intergenerational transmission of attachment (Main et al., 1985). Furthermore, the fact that this association has been found among foster and adoptive children (Dozier et al., 2001; Dozier et al., 2005) implies that the process through which this intergenerational transmission of attachment operates is not merely genetic based and thus was possible to be found among institutionalized children and their surrogate caregivers'. However, the study of Sagi and colleagues (1997) revealed that the impact of parental representations of attachment was moderated by the specific patterns of caregiving experienced by the children since that intergenerational transmission of attachment was more common among Kibbutz Israeli children who usually slept with the family, as compared with children who were usually cared by the Kibbutz caregivers during the night. This data suggested that probably an association between caregivers' state of mind and children's attachment would not be found in the current study given that these caregivers are not consistently present in children's caregiving routines, being children's daily needs assured by multiple caregivers, either during day or night time.

Nonetheless, some important differences can be identified between the above described studies and the current study.

First, most of these studies have assessed the associations between children's attachment and parental attachment representations. Secondly and equally important, parental attachment representations were assessed through the AAI (George et al., 1996). Meanwhile, Waters and Rodrigues-Doolabh (2004) have presented an alternative procedure to assess the representation of attachment in adults based on the assumption that subjects tend to build "scripts" of a given experience that occurs repeatedly in their lives (Oppenheim & Waters, 1995) as it is the case of early infant-caregiver interactions. Thus, it is assumed that these "attachment based scripts" would allow researchers with a new

perspective and deep understanding over Bowlby's (1973) concept of internal working models (Waters, Rodrigues, & Ridgeway, 1998). In the same line to what was described regarding internal working models in Chapter 1, these "attachment based scripts" would allow individuals to anticipate the future and help them to decide about "*which specific attachment behavior(s) to use in a specific situation with a specific person*" (Cassidy, 2008, p. 7). The validity of this measure of attachment script representations has been widely shown, namely in Portuguese samples. Veríssimo and colleagues (2005) have shown the association between the quality of maternal secure base scripts and the quality of children's attachment behavior, measured through the AQS (Waters, 1995). In fact, a study of Veríssimo and Salvaterra (2006), with adopted Portuguese children aged between 10 and 69 months, revealed that children's attachment security was associated with the adoptive mothers' script-like attachment representations, both with the composite scores of child-adult interaction stories and adult-adult interaction stories and with the total secure base scriptedness score.

Thus, attachment research data has been showing the association between parental representation of attachment (either assessed through the AAI or secure base scripts) and the children's attachment quality in terms of the traditional classifications derived from attachment theory and research.

However, in this case, an association was found between institutional caregiver's secure base scripts and institutionalized children's disordered attachment behaviors and this question is far less explored. It may be assumed that similarly to what happens regarding children's quality of attachment, the caregiver's attachment representations influence their caregiving behavior thus influencing children's development of attachment disorders. This would be consistent with the association found in the current study between the quality of relational caregiving and attachment disordered behaviors. Accordingly, it would be consistent with attachment research (Aviezer et al., 1999; Oyen et al., 2000 van IJzendoorn, 1995) supporting the link between parental attachment representation and the quality of their caregiving practices. Nonetheless, it can not be assumed that the process of intergenerational transmission of attachment that has been demonstrated for children's organized or disorganized patterns of attachment is necessarily the same as the one operating for children's development of attachment disordered behaviors. In fact, in the case of attachment disorders it is not even assumed that the child has developed a selective



attachment relationship with the caregiver and thus it is unclear whether or not the child has developed an internal working model of the relationship with that caregiver (O'Connor, Spagnola, & Clancy, 2007). This is an important question since that according to attachment theory parental representations of attachment would influence children's attachment quality through the impact of these representations on children's caregiving experiences and consequently on children's internal working models of attachment (see Chapter 1).

Nonetheless, this question does not invalidate the argument that the quality of caregivers' script-like attachment representations influence their sensitivity and responsiveness to the child's attachment cues which would impact the quality of dyadic interactions and determine the child's opportunities to develop a selective and adaptive relationship with the caregiver (O'Connor et al., 2007).

In sum, this result is compelling but more research is needed in order to understand its meaning and implications for attachment disorders conceptualization and intervention.

#### **1.3.1.2. *Convergence between report and observational measures***

The question of convergence between the observational and report measures of indiscriminate behavior used in the present study is characterized by extreme methodological relevance for research focusing on attachment disorders. There has been a lot of discussion regarding the best way to assess indiscriminate behavior given that empirically validated measures of attachment disorders have only recently emerged. Nevertheless, considering that some studies have found a convergence between different report measures of indiscriminate behavior (Zeanah et al., 2002) and between report measures and observational indicators of indiscriminate behavior (O'Connor et al., 2003; Rutter et al., 2007), similar results were expected in the current study. Accordingly, a convergence between observational and report measures of indiscriminate behavior used in this study was found in 62% of the cases. Furthermore, these measures revealed to be highly associated, thus adding support to their concurrent validity.

This result suggests that although some inconsistent findings have been found across studies, regarding the correlates of indiscriminate behavior, these studies seem to be capturing the same phenomenon. This knowledge increases the confidence in the validity of the results.

Nonetheless, the fact that 38% of the children in the current study were only identified by one of the measures as engaging in high levels of indiscriminate behavior reveals that only moderate convergence existed between observational and report measures. This supports the assumption of Rutter and colleagues (2007) that a multi-method assessment should be used in the identification of clinical patterns of indiscriminate behavior.

### **1.3.1.3. Predictors of indiscriminate behavior**

The final model of prediction for indiscriminate behavior was highly significant, and all individual predictors within the model, i.e., social-emotional difficulties, the existence of a preferred caregiver and caregiver's cooperation behavior, seemed to account, to some extent, for this result. Thus, children with better social emotional functioning that had a preferred and highly cooperative caregiver at the institutional setting were the ones with the lowest odds of engaging in more severe forms of indiscriminate behavior.

In fact, the quality of caregiver's behavior in interactive situations stood out as the most powerful predictor of indiscriminate behavior which is consistent with research data indicating the quality of relational caregiving as one of the most important factors in the etiology of attachment disorders in institutionalized children (Smyke et al., 2002; Zeanah et al., 2005). Furthermore, the parallelism between this finding and data from studies with high risk children, that have not experienced the kind of deprivation usually found in institutionalized children, must be underlined. The importance of these studies with high risk samples relies on the fact that although not having experienced multiplicity and inconsistency in caregiving, these children still exhibited high levels of indiscriminate behavior. Apparently, indiscriminate behavior among these children seemed to be related to the "awkward", "uncomfortable" and "quick to disengage" nature of these mother's behavior in dyadic interactions. Thus, and given that in the current study the quality of caregiver's behavior in interaction situations also emerged as the most powerful predictor of indiscriminate behavior, it may be suggested that it is not the rotation and multiplicity of caregivers in itself that may work as a risk for the development of indiscriminate behavior. Rather, the problem may rely on the implications of these caregiving conditions. Institutional dynamics and routines may impede the caregivers to develop a personalized emotional investment on the children, thus preventing their deep engagement in daily dyadic interactions and an adequate responsiveness to the children's signals. Consistently, the

lower levels of caregiver's cooperative behavior in dyadic interactions may be just one of the visible implications of the lack of individualization in caregiving frequently associated with institutional settings.

Furthermore it may be assumed that the chronic absence of responsiveness, availability and sensitivity to the child's cues inevitably impact his/her ability to develop an adaptive and selective attachment relationship with an institutional caregiver. Results from the current study support this assumption revealing that the absence of a preferred caregiver, characterized by the child's clear manifestation of attachment behavior towards the institutional caretaker, predicted, to some extent, children's engagement in high levels of indiscriminate behavior.

On the other hand, it is important to notice that the current study's expectation that both past and concurrent caregiving risk factors would be important in the prediction of indiscriminate behavior was not met, given the lack of predictive value of early risk factors for this sub-type of attachment disorder behavior. This result was somewhat surprising considering that research data has consistently suggested that institutional caregiving variables are probably not the only explicative factors for the intra-group variability found in institutional reared children's attachment outcomes (Bruce et al., 2009; O'Connor et. al, 1999; Zeanah et al., 2005). However, what the present study findings suggests is that according to the assumption of Zeanah and Fox (2004), children's individual variables may help explain this intra-group variability. In particular, social-emotional malfunctioning seems to predict, to some extent, children's manifestation of more severe levels of indiscriminate behavior.

### **1.3.2. Inhibited behavior**

#### **1.3.2.1. *Relations with the quality of early family context, child developmental characteristics, and institutional context***

##### *Early family context*

The discussion of the correlates of inhibited behavior is a difficult task given that there are very few studies addressing this specific sub-type of attachment disorders. Most of the evidence for this attachment disorder behavior comes from studies with severely maltreated (Boris et al., 2004) or institutionally reared children (Smyke et al., 2002).

The fact that studies with post-institutionalized children have found almost no expression of inhibited behavior in the assessments conducted several years post-adoption (Chisholm, 1998; O'Connor et al., 1999, 2003; Rutter et al., 2001) has pointed to a conceptualization of the inhibited type as more dependent of current attachment relationships, and the indiscriminate type as a more pervasive disorder (Chisholm, 1998; Smyke et al., 2009).

Thus, it was not surprising that no association was found between early family risk factors and children's ratings of inhibited behavior. Nevertheless, these results should be cautiously interpreted giving the relative lack of similar studies with institutionalized children addressing the impact if early risk factors on children's attachment outcomes. Further research is needed in order to look for the replication of these results.

#### *Child individual variables*

Focusing on the associations between inhibited behavior and child individual variables, no differences emerged regarding children's age and sex. This result is consistent with research data from other studies focusing on this sub-type of attachment disorders in institutionalized or foster children (Oosterman & Schuengel, 2008; Smyke et al., 2002).

Moreover, results of the current study confirmed the initial expectation for the association between inhibited behavior and children's developmental status and physical growth variables. Thus, no associations were found between individual differences in growth, cognitive, motor or language development and children's ratings of inhibited behavior. Although there are nearly no studies addressing the association between children's developmental variables and inhibited behavior, this result is consistent with research data pointing to a lack of association between children's developmental status and attachment disorder behavior (O'Connor et al., 1999).

In terms of the association between inhibited behavior and children's psychological variables, current study's findings revealed a lack of association between inhibited behavior and children's difficult temperament. This result partially invalidates Zeanah and Fox (2004) suggestion that children's negative temperamental characteristics might contribute to the extension of the negative affectivity and socially withdrawn behavior typical of the inhibited type of attachment disorders. Difficult temperament might turn these children less

competent to attract the caregivers' attention and nurturance, thus reducing the opportunities for social stimulating interactions which would lead to the increase of children's behavioral inhibition. Thus, despite the relevance of this theoretical assumption, results from the present study do not account for its validation. Furthermore, given that there are not a lot of studies focusing on the correlates of inhibited behavior, the initial expectation of the current study was to find an association between this form of attachment disordered behavior and children's internalization problems, based on the similarities of social and emotional functioning described by these two patterns of clinical disturbance. Accordingly, given that Smyke and colleagues (2002) have found no association between aggression and inhibited behavior, no relationship between this sub-type of attachment disordered behavior and externalizing problems was expected. However, results did not support these hypotheses and, in fact, the exact opposite findings were revealed. A possible explanation for these results is that inhibited children's difficulties in emotional regulation can trigger a pattern of affective behavior susceptible to be interpreted by the caregivers as some of the externalizing behaviors described in CBCL 1 ½ - 5 (Achenbach, REF & Rescorla, 2000). In support of this reasoning, research has described a pattern of anger and irritability, especially in response to comforting attempts by the caregivers, in children displaying inhibited attachment disorder behavior (Boris et al., 1998; Zeanah et al., 1993).

Moreover, one of the most compelling results regarding the psychological functioning correlates of inhibited behavior is the association between this type of attachment disorders and social and emotional malfunctioning. This finding adds support to the fact that inhibited children's difficulties in self-regulating and soothing are probably associated with other social-emotional maladaptive outcomes or at least are so perceived by the caregivers. It seems particularly relevant that the children reported by the caregivers as engaging in lower levels of inhibited behavior were also observed to display lower levels of socially withdrawn behavior. This was one of the hypotheses of the current study and its verification empirically validates some of the most characteristic clinical signs of inhibited attachment disorder: constricted affect and little social pleasure or exploration (Boris et al., 1998).

#### *Institutional context variables*

Similarly to what has been found for indiscriminate behavior, results of the current study point to the absence of an association between inhibited behavior and children's age of admission at the institutional setting or length of institutionalization. This finding is

congruent with Zeanah and colleagues' study (2005) and reinforces the suggestion of research data that inhibited behavior is far more dependent on the quality and consistency of caregiving experiences than on the duration of the exposition to deprivation (Chisholm, 1998; O'Connor et al., 2003; Smyke et al., 2009). Nonetheless, there is a significant need of additional studies to explore the association between inhibited behavior and institutional placement variables like children's age of admission at the institution or duration of the institutionalization experience.

Furthermore and contrary to what was found for indiscriminate behavior, results revealed consistent with the expectation that no associations would be found between inhibited behavior and institutional differences in terms of structural aspects and health and safety routines. In contrast, and as hypothesized, other aspects, more associated with institutional relational care, like the quality of the caregivers behavior in play situations were found to be, to some extent, associated with children's ratings of inhibited behavior. This result is consistent with Zeanah and colleagues study (2005) with institutionalized Romanian children where an association was also found between higher quality of relational care and lower levels of inhibited behavior.

Surprisingly, results of the current study revealed no association between the existence of a preferred caregiver and children's inhibited behavior. This finding opposes to the study of Smyke and colleagues (2002). That revealed a link between the existence of personalized relationship with the institutional caregiver and children's engagement in lower levels of inhibited behavior.

On the contrary, a significant association was found between inhibited behavior and the total score of children's attachment behaviors towards the caregiver, indicating that children reported as inhibited by the caregivers' tended to display less attachment behaviors towards this figure. This result is coherent with previous research suggesting that the inhibited sub-type of attachment disorders is intimately associated with "*how fully developed and expressed attachment behaviors are*" (Zeanah et al., 2005, p. 1024). According, although no association was found between the existence of a preferred caregiver and children's inhibited behavior, this result indicates that less inhibited children were able to develop a more personalized and somewhat selective relationship with a caregiver. Children would only be able to organize a set of attachment behaviors oriented

towards the caregiver within the context of a discriminated relationship with this figure. Accordingly, a more personalized relationship with a caregiver could imply that this figure was more consistently available and responsive to children's attachment signals, thus leading to lower levels of inhibited attachment. This reasoning is also in accordance with attachment theory and, in particular, with Bowlby's argument that the inconsistency and multiplicity of caregivers at institutions may lead children to get less emotionally responsive, avoid to get emotionally tied and eventually "*stop altogether attaching himself to anyone*" (1982, pp 28).

### **1.3.2.2. Predictors of inhibited behavior**

The final model of prediction for inhibited behavior included children's social and emotional difficulties, children's social withdrawal behavior and the quality of caregivers' cooperation behavior in play situations with the child. This model proved to be significant for the prediction of inhibited behavior. However, only children's psychological functioning variables emerged as significant predictors regarding this specific sub-type of attachment disorders. Thus, children with overall social-emotional difficulties and in particular the ones revealing higher levels of social withdrawal behavior were the ones more likely to be reported as displaying high levels of inhibited behavior.

In sum, these findings contradict the hypotheses formulated in the current study regarding the predictors of inhibited behavior. Neither variables related with the institutional quality of care nor early family risk indicators came out as significant predictors of the inhibited type of attachment disorders. These results are also inconsistent with research data pointing to the impact of both kinds of caregiving experiences in predicting inhibited behavior. Zeanah and colleagues (2005) have underlined the predictive value of the quality of institutional caregiving whereas Zeanah and colleagues (2004) have pointed to the predictive importance of family risk factors like maternal psychopathology.

In contrast, inhibited behavior prediction results seem to validate the current criteria used in the conceptualization of the inhibited type of attachment disordered behaviors and to support the assumption that an elevated comorbidity exists between inhibited attachment disorder and other social and emotional disturbances. More importantly findings suggest that this maladaptive social and emotional functioning might be implicated in the etiology of

inhibited attachment behavior, probably through the association between children's social-emotional difficulties and lack of skills of emotional regulation.

### **1.3.3. Secure base distortions behavior**

#### **1.3.3.1. *Relations with the quality of early family context, child developmental characteristics, and institutional context***

##### *Early family context*

The analysis of the association between early family risk factors and secure base distortions behavior revealed no significant results. This is partially surprising considering the evidence from developmental attachment research for the importance of early relational and environmental experiences for children's attachment development (e.g. Sroufe et al., 2005a). On the other hand, given that secure base distortions are considered to be relationship-specific disorders of attachment it was reasonable to expect them to be more closely associated with the quality of children's current caregiving experiences than to their past exposition to caregiving risk.

##### *Child individual variables*

Results of the present study suggest that older children tend to engage in higher levels of secure base distortions behaviors. This age difference has not been reported by one of the few studies focusing on the assessment of secure base distortions behavior (Oosterman & Schuengel, 2008). This inconsistency between findings might be explained by differences in the samples used in both studies. Oosterman and Schuengel's study (2008) has used a sample of older children that were not placed in institutions but in foster care. Thus, and considering the characteristics of disordered behaviors included in the assessment of secure base distortions, i.e., self-endangering, clinging, hypervigilant or role-reversal behavior, it might be argued that in the present study, younger children and particularly the ones who revealed a more severe developmental delay were still not able to display a clear manifestation of secure base distortions behavior as to be reported by the caregivers.

In addition to age, sex was also found to be associated with reported secure base distortions behavior, revealing that a higher percentage of girls were rated with lower levels of secure base distortions behavior as compared with boys. This association also has not



been reported by previous studies focusing on this sub-type of attachment disorders behavior (Oosterman & Schuengel, 2008). However, further research is needed in order to understand if this corresponds to a random and/or biased result associated with the current study or if secure base disorders behavior actually seem to be more frequent among boys than girls.

In terms of the relationship between secure base distortions behavior and children's developmental status and physical growth measures, a single significant association was revealed between this sub-type of attachment disorder behavior and children's motor development. This finding was not expected based on the empirical data available that unanimously points to the absence of an association between attachment disordered behavior and children's developmental variables (e.g. O'Connor et al., 1999). Moreover, the current findings suggest that children reported by the caregivers as displaying higher levels of secure base distortions behavior also tended to exhibit better motor development. At the first sight, this result was somewhat counter-intuitive giving that usually attachment disorders are associated with other deleterious developmental outcomes, particularly in social and emotional domain (O'Connor et al., 1999; Smyke et al., 2002). Nevertheless, this result is consistent with the other findings in this study, adding support to the notion that secure base distortions behavior may be less clearly manifested by younger and developmentally delayed children, which leads to the underreport of this kind of disordered behaviors in this group of children.

No associations were found between secure base distortions behavior and children's social and emotional functioning or social withdrawal behavior. This was not unexpected given the existence of previous studies with post-institutionalized children that have also failed to find a link between attachment disordered behaviors and emotional disturbance (O'Connor et al., 1999).

The hypothesis that an association would be found between secure base distortions behavior and internalizing and externalizing behavioral problems was not confirmed. This result contrasts with studies revealing an association between externalizing problems and attachment disorders in institutional reared children (O'Connor et al., 1999) and with research revealing an association between internalizing and externalizing problems and secure base distortions behavior in foster care children (Oosterman & Schuengel, 2008). One possible explanation for this inconsistency is the difference in children's age across

studies. In the present study, children were significantly younger which, as discussed, can undermine the identification of children's secure base distortions behaviors by the caregivers. On the other hand, behavioral problems were only assessed in a small sub-set of the current sample due to the measures' minimum age requisites. Thus, it would be important to see if these results are replicated in a different and more expressive sample of institutionalized children.

#### *Institutional context variables*

Regarding institutional context variables, the significant association found between secure base distortions behavior and children's age of admission at the institutional setting was not surprising given that this variable is positively correlated with children's age at assessment that, as already discussed, is also associated with this sub-type of attachment disordered behavior.

To our knowledge, the association between the quality of care and secure base distortions behavior has not been assessed by previous research with institutionalized children. However, in the same line to what was expected regarding indiscriminate and inhibited behavior, it was hypothesized that more consistent and individualized care would be linked with lower levels of secure base distortions behavior. Nevertheless, results pointed to a quite different reality.

First, no association was found between secure base distortions ratings and the variables assessing the quality of relational and individualized care provided at the institutional setting. Also, the quality of the caregiver's behavior in interactive situations, i.e., cooperation and sensitivity, did not seem to be linked with children's individual difference in secure base distortions behavior. Thus, the current study did not seem to replicate the intriguing result revealed by Oosterman and Schuengel (2008), in that a positive correlation was found between foster parents' sensitivity and these parents' ratings of children's secure base distortions behavior. In this sense, and given the lack of studies focusing on the association between these micro variables of caregiving and the secure base distortions sub-type of attachment disorders, there is a significant need to a further exploration of this issue by future research studies.

On the other hand, the examination of the link between secure base distortions behavior and the existence of a particular relationship with the institutional caregiver revealed interesting results. Most of the children with a preferred and/or assigned caregiver were rated as engaging in higher levels of secure base distortions behavior. Thus, although apparently counter-intuitive, this finding is consistent with the conceptualization of secure base distortions as a clinical manifestation of disturbance(s) *within* the context of an attachment relationship (Zeanah et al., 2000). Accordingly, it seems like contrary to what has been suggested for indiscriminate and inhibited attachment disorders, secure base distortion behaviors are more likely to occur when a discriminated attachment relationship with a caregiver exists. However, this result should not lead to the interpretation of secure base distortions as a less concerning clinical sign of children's disturbance. First, the existence of a selective relationship between the child and the caregiver does not prevent this relationship from being seriously disturbed (Boris et al., 1998). Indusively, results from the current study reveal an association between secure base distortions behavior and children's disorganized attatmtent. Second, research has revealed that secure base distortions behavior can predict other manifestations of psychological malfunctioning like internalizing and externalizing behavior problems (Oosterman & Schuengel, 2008).

### **1.3.3.2. Predictors of secure base distortions behavior**

The final model of prediction for secure base distortions behavior only included children's age at assessment and children's motor development as predictors. This model revealed to be significant for the prediction of secure base distortions behavior but children's age at assessment seemed to be the only predictor accounting for the significance of the model. Therefore, the increase of 1 month in children's age increases the odds of children being classified as engaging in secure base distortions behavior by 1.08 times. Thus, although the present study has gathered some significant results for a deep understanding of secure base distortions conceptualization, it did not seem to yield as much enlightenment regarding the etiological factors in the root of this sub-type of attachment disorders. The impact of children's age as a predictor of secure base distortions should definitely be thoroughly explored in future research in order to understand if the association found in the current study was merely due to children's developmental delays or to the caregiver's difficulties in the identification of this sort of disordered behavior in younger

children or, on the contrary, if the development of this type of attachment disorder is usually not consolidated until a later developmental phase, like preschool age.

#### **1.4. Comorbidity of Attachment Disorganization and Attachment Disordered Behaviors**

When compared with insecure but organized forms of attachment, disorganization seems to be a more powerful predictor for children's subsequent development of psychopathology (Carlson, 1998; van IJzendoorn et al., 1999).

On the other hand, as previously discussed (see section 2.5, Chapter 2) attachment disorders have been conceptualized as a separate clinical entity, with a more severe behavioral manifestation (O'Connor and Zeanah, 2003a) and higher predictive power in terms of children's maladaptive outcomes (Lyons-Ruth et al., 2009). Furthermore whereas disorganized attachment indicates an increased risk to develop later psychopathology, a disordered attachment is by itself pathological (Zeanah & Smyke, 2008).

Thus, although attachment disorganization and attachment disordered behaviors seem to be independent constructs (Boris et al., 2004; Lyons-Ruth et al., 2009), both have been frequently found in high risk samples and particularly in institutionalized children. For this reason, it seemed useful to examine the convergence between these atypical forms in the current sample, and analyze the early risk, individual and institutional care correlates of this convergence. This question is assumed to be of particular clinical relevance given the developmental psychopathology assumption that any given risk factor may be more susceptible of negatively affecting development when combined with other risk factors (Cicchetti, 2006). Enhancing the understanding of how these different perspectives over attachment are combined and to what individual and contextual factors is this combination associated would be of indisputable interest for clinicians and researchers, particularly regarding the development of more adequate assessment measures and intervention strategies to address the difficulties of children with a disorganized or disordered attachment.

Oriented by the same theoretical framework, the current study has also analyzed the convergence between the different sub-types of attachment disorders. This research question was further guided by the postulation that psychopathology should not be seen as being

present or absent in absolute ways but instead should be viewed as dimensional (Cicchetti, 2006). Thus, there could be a difference in the individual and contextual correlates of distinct patterns of attachment disorder behavior.

Given this brief introduction, results regarding the association between disorganization and attachment disordered behaviors as well as the results regarding the convergence among different sub-types of attachment disorders will be discussed in the next paragraphs.

#### **1.4.1. Associations between disorganization and attachment disordered behaviors**

Results of the present study revealed the absence of an association between disorganization and indiscriminate and inhibited forms of attachment behavior. Therefore, this finding validates the hypothesis formulated for this research question. At the same time, it adds support to some of the few studies that have addressed this question in samples of institutionalized (Zeanah et al., 2005) or high risk children (Boris et al., 2004) and have also failed to find a significant link between disorganized SSP classifications and indiscriminate or inhibited behavior as reported by the caregivers. However, this result contrasts with findings of some studies with high risk samples that have found an association between observed indiscriminate behavior and children's disorganized attachment (Lyons-Ruth et al., 2009). In fact, the present study aimed to enlighten this inconsistency of results, assumed to be due to methodological differences, by using a multi-method assessment of indiscriminate behavior. Accordingly, results of the association between this composite measure of indiscriminate behavior and attachment disorganization still revealed not significant. Therefore, there seems to be a need for more research data on this matter, especially coming from studies where indiscriminate behavior is assessed through a multi-method approach integrating more recent observational measures of indiscriminate behavior.

On the other hand, current study's findings revealed a marginal significant association between disorganization and secure base distortions behavior indicating that, as compared with organized children, a considerable higher number of disorganized children were reported by the caregivers' as engaging in high levels of this sub-type of disordered attachment behavior. Although no specific hypothesis was formulated for this question, results are not totally surprising. First, the study of Oosterman and Schuengel (2008) with

foster care children has presented a significant negative correlation between secure base distortions behavior and security of attachment assessed by AQS (Waters, 1995). Second, this finding seems to support the conceptualization of secure base distortions as a clinical disturbance of attachment, given the association found between this sub-type of attachment disorder behavior and another well-known indicator of problematic attachment relationships such as disorganization. Third, this result seems to validate, to some extent, the continuum conceptualization of attachment disorders presented by Boris and Zeanah (1999). According to this conceptualization, secure attachment would be at one of the extreme ends of the continuum, followed by insecure but organized forms of attachment, disorganized attachment, secure base distortions and finally non-attachment disorders at the other extreme end. Some authors have advised for caution when considering this continuum given that the relationship between attachment quality, assessed through traditional methods, and attachment disorders, assessed through the lens of diagnostic manuals or alternative conceptualizations, is still unclear thus making it hard to place both in the same continuum (O'Connor & Zeanah, 2003b). Therefore, findings of the current study partially validate this conceptualization through the indication that no associations existed between the constructs most apart in the continuum (like disorganization and indiscriminate and inhibited behavior), but marginal associations were evident between constructs placed together in the continuum (like disorganization and secure base distortions). However, the fact that the association found between constructs was only marginal, still accounts for the “qualitative” differences between disorganized and disordered attachment behaviors.

The second major question assessed in the current study, in terms of the association between disorganization and attachment disordered behaviors, was whether the groups of children displaying both forms of atypical attachment behaviors would reveal different correlates regarding early family, individual, or institutional caregiving risk factors, as compared with children that revealed only one or even none of these atypical attachment behaviors. This analysis was conducted for the association between disorganization and indiscriminate behavior, disorganization and inhibited behavior as well as for disorganization and secure base distortions behavior. A single significant difference emerged among the groups of children rated as not disorganized and not engaging in high levels of indiscriminate behavior (NDNIB), rated as disorganized or engaging in high levels of indiscriminate behavior (DOIB) and rated as disorganized and engaging in high levels of

indiscriminate behavior (DIB). Children in the NDNIB group had more cooperative and sensitive caregivers than children in the DIB group.

Thus, the quality of the caregiver's behavior appears to be once again significantly different among children with organized and not disordered attachment and children with a disorganized and disordered attachment relationship. Furthermore, this result underlines the importance of these micro variables of caregiving in terms of children's development of comorbid (and probably more severe) difficulties in attachment. This is also consistent with empirical data based on the ecological perspective that parent-infant attachment relationships are multiply determined and that "*are most likely to be adversely affected when multiple vulnerabilities exist*" (Belsky, 2005, p. 81).

#### **1.4.2. Convergence among the different sub-types of attachment disordered behaviors**

Results from the present study revealed that most of the children that received higher rates of indiscriminate behavior, have also received higher rates of inhibited behavior thus suggesting that some comorbidity exists between these two sub-types of attachment disordered behavior. This is an important contribution from the current study since the question of attachment disorder behaviors conceptualization is still a current topic of debate. Furthermore, when taking all of the findings presented for indiscriminate and inhibited behavior, there is considerable data to support the assumption that inhibited and indiscriminate sub-types of attachment disorders tend to co-occur (Smyke et al., 2002; Zeanah, Scheeringa et al., 2004), but seem to be distinct clinical entities, with different associations with individual and caregiving variables (O'Connor et al., 2003; Zeanah et al., 2005). Accordingly, the present study data suggests that indiscriminate and inhibited behaviors have different etiological grounds considering their association with distinct predictors.

Regarding the association between inhibited or indiscriminate behavior and secure base distortions behavior, these findings add to the study of Oosterman and Schuengel (2008), in suggesting the absence of significant comorbidity between this alternative conceptualization of attachment disordered behavior and the more widely used types of indiscriminate and inhibited behavior.

In sum, these results support the initial expectation, supported on empirical data to date, that four different groups of children could be identified based on their patterns of attachment disordered behaviors, namely: a pattern with predominance of indiscriminate behavior, a pattern with predominance of inhibited behavior, a pattern with predominance of secure base distortions behavior and a mixed pattern of attachment disordered behaviors with particular saliency of indiscriminate and inhibited behaviors.

Moreover, and considering the above described results, it was not surprising that the examination of the correlates of the different patterns of convergence of attachment disorder behaviors have revealed the most significant differences among the groups of children rated as engaging in low levels of indiscriminate and inhibited behavior (NIBNInB), rated as engaging in high levels of indiscriminate behavior or inhibited behavior (IBOInB) and rated as engaging in high levels of indiscriminate and inhibited behavior (IBInB). In particular, results suggest that the caregivers from the NIBNInB group were significantly more sensitive and cooperative in dyadic interactions with the children than the caregivers from IBInB group.

However, a marginal significant difference was also found among the groups of children rated as engaging in low levels of indiscriminate and secure base distortions behavior (NIBNSD), rated as engaging in high levels of indiscriminate or secure base distortions behavior (IBOSD) and rated as engaging in high levels of indiscriminate and secure base distortions behavior (IBSD). The caregivers from the NIBNSD were, to some extent, more sensitive than the caregivers from the IBSD group.

Thus, as previously stated (see section 4.1 from the current Chapter), the quality of the caregiver's behavior appears to distinguish the group of most severely disordered children from the one of children exhibiting an absence or only slight levels of disturbance. It is reasonable to assume that these relational indicators of the quality of caregiving are crucial elements for the development of more or less adaptive attachment outcomes. Probably the quality of relational caregiving might act as an important protective factor, buffering the children in terms of the impact of the other sources of environmental or individual risk, or, on the contrary, as an additional source of risk that added to the other individual and contextual risk factors would create an exponential effect.



Moreover, these findings support the hypothesis that the mixed pattern of inhibited and indiscriminate behavior would be associated with more extreme forms of caregiving deprivation.

In sum these results are consistent with other studies suggesting that despite being different, the sub-types of attachment disordered behaviors should not be seen as totally independent clinical entities considering that children often show mixed patterns of these sub-types, particularly of indiscriminate and inhibited behavior (Smyke et al., 2002; Zeanah et al., 2004).

## **2. LIMITATIONS AND FUTURE RESEARCH**

Results of the current study are globally consistent with empirical data showing the negative attachment outcomes associated with institutional rearing as well as the role of early risk factors and quality of institutional care in the etiology of disorganized and disordered attachment behaviors.

However, this study revealed some limitations that should be acknowledged.

The use of a “home” version of the SSP in children older than 20 months may have been problematic. As discussed in Chapter 5, although these questions were considered during the classification of children’s attachment quality, they still may have created additional difficulties to the assessment of disorganization. The fact that a significantly lower percentage of disorganized children was found in the current study, as compared with other studies with institutionalized children, added to the association found between disorganization and age, necessarily implied the question of whether these methodological aspects could have lowered the amount of stress generated by the procedure, thus creating less opportunities for clear disorganized behaviors to emerge. Thus, and since the assessment of disorganization was limited to SSP, as opposed to attachment disorders that are thought to reflect a more “*pervasive disturbance*”, with more severe behavioral manifestations (O’Connor & Zeanah, 2003a) the current study might have been more effective in detecting attachment disturbances than attachment disorganization.

Furthermore there has been significant discussion across literature of whether SSP would be a suitable measure to assess the quality of attachment in institutionalized children, given that due to their extreme caregiving deprivation might not had been provided with the chance to develop a discriminated attachment with an institutional caregiver (O'Connor et al., 2003). Thus, another limitation of the current study was the absence of an empirically validated analysis of the degree of children's attachment formation, similar to what has been accomplished in Zeanah and colleagues study (2005).

All of these methodological considerations are probably associated with the fact that 10.6% the children in the current study revealed atypical behavioral manifestations across SSP being therefore classified as "insecure-other". However, the method used to group these children into this "insecure-other" category is associated with several limitations. First it was merely based on the revision of the ratings assigned to the four interactive behavioral scales by the original coders. Secondly, it was part of a joint decision between two trained researchers, and therefore no interrater reliability could be calculated. In future research, the assessment of children with "insecure-other" classifications of attachment should include other observational indicators, with broader empirical validation like the ones used by the ERA study team studies (Kreppner et al., 2011; O'Connor et al., 2003).

For last, one of the most important limitations of the current study was the quality of its experimental design. Being a cross-sectional study, information regarding children's developmental outcomes and institutional quality of care was only available for a single point in time. This limits the interpretation of results, namely regarding the etiological roots of attachment disordered behaviors. Thus, for instance, it can not be assumed that the differences in the quality of caregiver's behavior are causally linked with the higher levels of attachment disordered behaviors found among this group of institutionalized children. Instead, it may be argued that the differences found in children's manifestation of attachment behaviors were responsible for the differential quality of behavior displayed by the caregiver's in interactive situations.

The only way of overcoming this limitation in future studies is through the use of a longitudinal design. In fact, this design would allow seeing how different protective and risk factors are combined in order to result in more or less adaptive developmental pathways for institutionalized children.

Above all, the questions associated with the onset, developmental course and recovery of maladaptive attachment outcomes in institutionalized children need to be explored.

There are very few studies focusing on the assessment of attachment disorganization in institutionalized children. In particular, the present study has revealed some intriguing results that should deserve future research attention, like the association between this form of atypical attachment and more positive results related with the child (e.g. head-circumference percentile) or the institutional caregiver (e.g. cooperation). Furthermore, the etiological role of biological or genetic factors in the development of attachment disorganization have not been explored in the present study but the importance of its consideration by future research has been described in literature (Gervai et al., 2005; Lakatos et al., 2000, 2002).

Indiscriminate behavior has deserved considerable more attention from empirical studies to date. However, and based on present findings, some questions remain unclear. First, this study has revealed different rates of indiscriminate behavior according to children's sex. Given that this difference was not found when indiscriminate behavior was assessed through report measures it would be important to see if this result finds replication in future studies using observational measures of indiscriminate behavior. Second, the current study suggests that only current caregiving experiences seem to predict indiscriminate behavior thus indicating that children's exposition to adverse experiences at a very early period of their lives may be less important when accounting for this sub-type of attachment disorders. However, considering that there are very few studies examining the impact of early family risk factors in the development of indiscriminate behavior, it will be useful to look for future studies attempting to replicate this finding. Third, the association found between caregiver's script-like attachment representations and indiscriminate behavior is definitely a compelling contribution from the present study, but more research is needed in order to understand its meaning and implications for attachment disorders conceptualization and intervention.

Regarding inhibited behavior, there is a significant need of additional studies to explore its association with early family risk, individual and institutional care variables. Results from the present study suggest that individual variables like social-emotional functioning may be especially relevant for the prediction of attachment disordered behaviors, particularly the inhibited type. Nevertheless, these results should be cautiously

interpreted giving the relative lack of similar studies with institutionalized children addressing the impact of individual risk factors on children's attachment development. Further research is needed in order to check for the replication of these results.

When considering the research focused on attachment disorders, it is clear that secure base distortions are the sub-type far less studied. Thus, although the present study has gathered some significant results for a deep understanding of secure base distortions conceptualization, it did not seem to yield as much enlightenment regarding the etiological factors in the root of this sub-type of attachment disorders. The impact of children's age as a predictor of secure base distortions should definitely be thoroughly explored in future research.

### **3. CLINICAL IMPLICATIONS**

The findings revealed by present study have some important implications. First, the assessment of attachment disorders should not be restricted to the examination of the child's behavior towards unfamiliar people. Even in the case of indiscriminate behavior, it seems crucial to analyze the quality and degree of children's attachment behavior towards their primary caregiver.

Accordingly, and following the assumption of Rutter and colleagues (2007) that a multi-method assessment should be used in the identification of clinical patterns of attachment disorders. The single use of report or observational measures may fail to capture important manifestations of attachment disordered behaviors thus leading to the under identification of this kind of disorders.

The current results also underline the importance of expanding the conceptualization of attachment disorders and assessing other signs of disturbance beyond the scope of inhibited and indiscriminate disordered behavior. Inclusively, the continuum conceptualization of Boris and Zeanah (1999) may be extremely useful to guide the identification of other forms of atypical attachment that seem to co-occur with disordered attachment behaviors and are important indicators of the quality of the attachment relationship between the child and the caregiver. Nonetheless, there is still a lot to clear out

regarding the onset, developmental course and behavioral correlates of secure base distortions behavior and this task is crucial in terms of the design of more effective assessment measures and intervention strategies to address this disordered attachment behavior.

Moreover, the differential diagnosis between attachment disorders and other forms of emotional and behavioral psychopathology should be carefully conducted considering the frequent comorbidity found between attachment disordered behaviors and other signs of psychological malfunctioning.

#### 4. CONCLUSION

*“This little light of mine, I’m gonna let it shine*

*This little light of mine, I’m gonna let it shine*

*Let it shine, let it shine, let it shine”*

(Popular American music, unknown author)

This study involved the most comprehensive analysis of attachment in Portuguese institutionalized children to date. Based on a developmental psychopathology framework, a multi-method and multi-level assessment has been used in order to understand social and emotional development in this particular group of children.

Attachment development was the focus of the present study and the initial prediction of results, based on attachment theory and empirical research with institutionalized children, was confirmed in general terms. Attachment seems to be severely compromised in this group of children and these maladaptive attachment outcomes are likely to be predicted by children’s early experiences within their biological families and by the quality of care provided by the institutional setting. This is consistent with the life course models, assuming that child developmental outcomes can not be explained by any single risk factor, limited in time. Accordingly, children’s disorganized and disordered attachment seem to result from a

cumulative history of risk and protective factors and all of these interactions have to be taken into account when trying to understand it. Furthermore, results of the current study point to the need of considering the influence of these risk and protective factors in a broader picture in which the mutual influences of individual variables as well as the multiple contextual systems in a child's life are taken into account (see Brofenbrenner, 1979), at least in what attachment developmental outcomes are considered.

Given that there are currently 9 563 institutionalized children in Portugal (ISS, 2010), it is urgent for political agenda to reflect on the current welfare policies, namely regarding the support and supervision provided to high risk families and to the quality of care offered to the children that have to be withdrawn from their biological families, due to extremely inadequate social and economic conditions or caregiving practices. In particular, the question of institutional care for very small children should be reconsidered, especially since this is currently the most common welfare response for children at risk situations. Results from the present study add to the considerable body of international research demonstrating the adverse impact of institutional rearing in children's developmental outcomes. Children's social and emotional development seems to be especially vulnerable to the exposition of inconsistency in caregiving, high caregiver-child ratios and lack of individualized care. This study pointed to high levels of attachment disorganization and disordered behaviors in this group of Portuguese institutionalized children, which would be a concerning result in itself but becomes even more significant given the association found between these atypical forms of attachment and other forms of psychological malfunctioning. Furthermore, research has shown that some of these atypical manifestations of attachment like indiscriminate behavior are very difficult to revert. Some institutional reared children still reveal marked signs of disinhibited attachment behaviour after seven years of adoption into a generally well functioning family (Rutter et al., 2007). Thus, taking the evidence of the current study that institutionalized children's attachment seems to be negatively influenced by early family risk, more caution should be taken in the organization of surrogate caregiving for these children, when they are taken out of their families. These children need to be cared by particularly consistent, available and responsive caregivers, allowing them to experience caregiving practices that radically contrast with the dysfunctional dyadic interactions usually experienced in the family environment. The negative representations constructed by these children regarding the self, the others and the

world can only be disconfirmed by extremely well prepared and sensitive caregivers, able to deal with the disturbed attachment manifestations frequently displayed by these children.

In sum, five important considerations need to be drawn from this study.

The first is that welfare system practices should be reviewed, in an attempt to replace institutionalization by more “family like” forms of caregiving that would better suit the needs of children, that for any reason were prevented to be reared within their biological families. Research evidence is available to account for the benefits of foster care as compared to institutional care, regarding children’s developmental outcomes and particularly regarding children’s attachment development (Smyke et al., 2010).

Second, and given the recognition that this is not an easy task, and that there are several constraints to a des-institutionalization movement, efforts should be conducted in order to improve the quality of care provided at the institutional settings. There is consistent empirical data showing that an organized intervention, in terms of the institutional structure and staff training, will probably yield significant progresses in terms of children’s developmental outcomes (Groark et al., 2005; The St. Petersburg - USA Research Team, 2008). In particular, the present study revealed the importance of individualization in care and the quality of the caregiver’s behavior in dyadic interactions to reduce the likelihood of children’s developing a disorganized or disordered attachment.

Third, some children may need specific clinical interventions in order to help them dealing with the social and emotional difficulties that lasted from extremely adverse early caregiving environments and that may pose serious obstacles to the development of a discriminated and organized attachment relationship with their new caregivers. Although specific interventions to address attachment disorders are still scarce and lacking empirical validation (Dozier & Rutter, 2008) there are some well established guidelines to guide an effective work with these children (AACAP, 2005).

Fourth and taking the words of O’Connor and Zeanah (2003a, p. 225), “*there is no intervention more radical than adoption*”. It is crucial that welfare policies and the legal procedures become synchronized in order to accelerate the definition of the child’s life project for the future. Currently, in Portugal, this process is taking a lot more time than it should, considering that 27% of the children under three years of age remain

institutionalized for more than one year and 11.8% can still be found at the institutional setting after a period of two to three years of their admission.

We subscribe Provence and Lipton's (1962, p. 163, 164) assumption that "*Time is of paramount importance in the life of an infant. (...) It represents many lost opportunities for learning, for doing, and for getting to know and becoming attached to another person. There are many points of delay in making plans for babies.*"

The fifth and most positive consideration from this study is that even in the face of so many challenges and adverse circumstances, there are a lot of resilient children that manage to develop selective, organized and even secure attachment relationships with their institutional caregivers when they get the opportunity to do so.

Our expectation is that through different levels of intervention in the way Portuguese formal entities answer to these children's needs, a more significant number of children will be able to develop adaptively and "*let their little light shine*".



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