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Early Maltreatment and Current Quality of Relational Care Predict
Social-Emotional Problems Among Institutionalized Infants and Toddlers

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Abstract

The present study is focused on child social-emotional problems six months after institutionalization, by considering the putative predictive role of child maltreatment, of developmental functioning at admission and at the following months, and of the quality of institutional relational care. Fifty institutionalized infants and toddlers participated in this study. Child developmental functioning (i.e., cognitive, language, and motor development) was assessed at admission to the institution (Wave 0), and three (Wave 1) and six months (Wave 2) thereafter. The quality of institutional relational care—operationalized in terms of caregivers' sensitivity and cooperation—was measured at Wave 2. Caregivers reported on the presence of disturbed social-emotional behaviors at Wave 2. Child gestational age, birth weight, age and stunted growth at admission to the institution served as covariates. Results revealed significant associations between social-emotional difficulties and lower levels of motor development at Wave 0 and Wave 1, child maltreatment, and less sensitive caregiving. A logistic regression showed that child maltreatment and caregiver insensitivity were the only significant predictors of disturbed social-emotional functioning by the end of six months of institutionalization.

Keywords: Institutional Rearing, BSID-III, Motor Development, Child Maltreatment, Sensitivity

Early Maltreatment and Current Quality of Relational Care Predict Social-Emotional Problems among Institutionalized Infants and Toddlers

Studies published over the past 50 years have demonstrated that children raised in residential institutions are at higher risk for a variety of mental health problems compared to never-institutionalized peers (Lawler, Koss, Doyle, & Gunnar, 2016; Rutter et al., 2007; Wiik et al., 2011). Research on this topic has documented the early appearing of such difficulties, indicating a high rate of social and emotional difficulties among deprived infants and toddlers (Baptista et al., 2014; Smyke et al., 2007). Disconcerting findings have suggested that the above difficulties tend to persist up to adolescence and young adulthood, even when children have departed the institution often to be adopted (Humphreys, Nelson, Fox, & Zeanah, 2017; Sonuga-Barke et al., 2017).

Nevertheless, the fact remains that there is also considerable heterogeneity in response to early deprivation, suggesting that not all institutionalized children evidence signs of impaired social and emotional development (Cicchetti, 2013; Rutter, Kreppner, O'Connor, & the English and Romanian Adoptees [ERA] study team, 2001; Van Ijzendoorn et al., 2011). Determining the contributors of normal and impaired functioning among young institutionalized children seems to be, therefore, particularly crucial. This is the subject addressed in the present article that aimed to explore institutional care, early family, and child predictors of social-emotional dysfunction among infants and toddlers residing in Portuguese institutions.

Most studies of children suffering profound institutional deprivation have relied on the contribution of length of institutionalization in order to better understand individual differences in emotional and behavioral development. Results from these studies carried out with post-institutionalized children have generally revealed that those who have spent less time in an institution and who were adopted earlier seem to fare better in comparison to

children who have been exposed longer to institutional care (e.g., Rutter & the English and Romanian Adoptees [ERA] study team, 1998). Despite the undoubted importance of this pioneer investigation, findings from other studies conducted with currently institutionalized children have presented a quite different scenario, showing no time effects on child development (Baptista et al., 2013; Soares et al., 2014; Zeanah et al., 2009).

Thereby, authors have recently stressed the key contribution of other institutional factors, namely the quality of proximal social relationships for the social-emotional functioning of such at-risk children. Even though the quality of institutional care seems to vary from country to country, and even within the same country, residential institutions usually involve a set of organizational constraints which prevent children from establishing a stable and long-lasting relationship with a responsive and preferred figure. Those constraints include inappropriate daily caregiver-to-child ratios, frequent changes in caregivers over time, unpredictable caregiving working shifts, and large and heterogeneous groups of children (Bakermans-Kranenburg et al., 2011; The St. Petersburg-USA Orphanage Research Team, 2008). Not surprisingly, scholars have argued that such environmental conditions, contrasting greatly to those observed in an ordinary family, are at the root of a variety of long-term negative developmental consequences (The Leiden Conference on the Development and Care of Children without Permanent Parents, 2012).

In line with this premise, the work of Smyke and collaborators (2007) is worth mentioning. These investigators measured the quality of the institutional environment, finding that caregiver unavailability, intrusiveness, and less frequent stimulation of development was related to infants' and toddlers' lower developmental quotient, lower competence, and more negative affect. Likewise, Baptista and collaborators (2013), and Soares and colleagues (2014), concluded that the absence of a preferred caregiver at the institution was related to a

higher incidence of social withdrawal and indiscriminate social behaviors among 12-30-month-old children living in Portuguese residential care centers, respectively.

Despite the results of the investigations just cited, it would likely be misleading, however, to presume that all variations in the social-emotional development of these children are the result of the institutional care experience itself. Indeed, even if evidence indicates that lower quality of institutional caregiving is associated with child social-emotional malfunctioning, it remains likely that non-institutional factors also play a role. After all, at least some apparent effects of institutional care could result from the adverse experiences within the biological family prior to institutionalization. It could even be the result of individual factors, such as the child previous developmental status.

On this topic, research has underscored the importance of early pre-institutional family adversities in molding problematic social-emotional trajectories among young children still institutionalized. In fact, it is expected that many of these at-risk children have been exposed to early pre-placement adversities in the family, such as poor nutrition and health care, and lack of an early responsive family environment (Merz & McCall, 2010; The St. Petersburg-USA Orphanage Research Team, 2005; Vorria, Rutter, Pickles, Wolkind, & Hobsbaum, 1998). Consider, in this regard, evidence indicating that early child maltreatment in the family predicted higher rates of behavioral disturbances among 18-30-month-old children residing in institutions characterized by unstable caregiving practices (Baptista et al., 2014). Also of note is the research revealing that the exposure to maternal emotional neglect was related to indiscriminate attachment behaviors among toddlers residing in institutions (Oliveira et al., 2012).

Although research has already begun to explore the contribution of previous adverse experiences in the family to the social-emotional functioning of institutionalized children, fewer studies have assessed the role of child early developmental status when it comes to

understand later mental health. This is quite surprising given the findings from a range of longitudinal studies with non-deprived samples showing that cognitive, language and motor impairments are related to social-emotional disorders, from infancy onward (e.g., Beitchman et al., 2001). In fact, it is recognized that cognitive, language, motor and social-emotional domains of development are strongly intercorrelated, influencing each other. For example, children with cognitive, language and motor delays have been described as being less competent in engaging in play activities and in opportunities to socialize with other children and adults, as well as being less able in increasing caregivers' engagement, which in turn may compromise their social-emotional development (Hestenes & Carroll, 2000; Horn & Kang, 2012). Authors have, in fact, reported that young children with developmental disabilities are 4 to 5 times more likely to have social and emotional problems than their typically developing peers (Merrell & Holland, 1997).

We argue herein that such early delays may be particularly devastating to the social-emotional development of children living in an institutional setting. After all, institutions are often characterized by a small number of caregivers who care for large and heterogeneous groups of children, having little (or even no) time for individualized care and stimulation of child development (Bakermans-Kranenburg et al., 2011; The St. Petersburg-USA Orphanage Research Team, 2008). Growing up in an institution is, therefore, particularly challenging for young children, and may be especially so for those with previous developmental delays.

Despite this possibility, studies focused on the links between early cognitive, language and motor development and later social-emotional functioning are lacking among children with a history of institutional care. The only existing exception has been focused on already adopted children. On this matter, investigators found that better language skills at time of adoption was strongly related to the absence of multiple emotional and behavioral impairments years after (Croft et al., 2007; Kreppner et al., 2007). Despite these innovative

results, yet to be explored is whether a similar pattern of results occurs for currently institutionalized infants and toddlers. More precisely, can child early developmental status, including at time of admission to the institution, be linked to subsequent social-emotional functioning? This is an issue addressed in the present article. In doing so, we aim to deepen the knowledge about non-institutional factors putatively linked to the emergence of social-emotional difficulties among deprived children.

The Current Study

In Portugal, the locale where the present study was conducted, institutional care remains the major form of alternative care for children who were abandoned by or withdrawn from their families. Reasons for children being withdrawn from their families and placed in institutions are diverse in this country, and usually includes physical and emotional neglect, parental psychopathology and substance abuse, family violence, and lack of parental skills. In 2016, around 8,000 children younger than 18 years of age were living in Portuguese residential institutions. The vast majority remained institutionalized for more than one year, with some children experiencing as much as eight years of institutionalization (Instituto de Segurança Social, 2017).

The study reported herein, based on the above body of research, aims to examine the contribution of 1) child maltreatment prior to institutionalization, 2) child developmental functioning (i.e., cognitive, language and motor development) at admission to the institution and at the following months, and 3) the quality of caregiver-child interaction to the presence of social-emotional disturbances after six months of institutionalization. In doing so, the current research is the first to analyze the contribution of previous child developmental status to the later social-emotional functioning of institutionalized infants and toddlers, alongside with pre-institutional and institutional factors. In line with previous empirical evidence, we

hypothesize that individual, family, and institutional factors will all significantly predict child social-emotional functioning.

Method

Participants and Procedure

Fifty infants and toddlers (26 boys, 52.0%), institutionalized in 16 Portuguese Temporary Care Centers, were recruited for a broader prospective longitudinal study about the effects of institutional-rearing on the developmental trajectories of children up to 30 months of age. This research project was approved by the Portuguese Social Services, which is the entity responsible for managing the institutions and is the legal guardian of children while they remain there, and by the Portuguese National Commission for Data Protection, which is responsible for ensuring the ethical requirements in relation to human research carried out in Portugal. Written informed consents were obtained from the biological parents, from the institution directors, and from the participating caregivers. All assessments were conducted at the institutional setting by trained research assistants.

The first assessment (Wave 0) occurred when children arrived at the institution ($M = 7.46$ months old, $SD = 6.73$, range 0–26). Children were reassessed three (Wave 1, $M = 9.82$ months old, $SD = 6.78$, range 2–27) and six months thereafter (Wave 2, $M = 12.64$ months old, $SD = 6.70$, range 5–30). Thirty-seven children (74%) were no older than one year when institutionalized. The reasons for being withdrawn from their biological families were diverse, including child abandonment, neglect, and severely limited socioeconomic resources, parental psychopathology or intellectual disability. Fourteen children (28%) were admitted in the institution directly from the maternity ward.

The primary institutional caregiver of each participating child was also included in this study. These caregivers were selected by asking the staff who was the key staff member who the child showed preference for and/or who knew the child best. Eight participating care

providers were caregivers for more than one child in this study. Caregivers (33 females, 97.1%) were between 20 and 60 years of age ($M = 37.06$, $SD = 11.24$), and were each responsible, on average, for 9.47 children ($SD = 3.36$, range 4–19) when on duty. The majority (73.5%) had irregular shifts, as opposed to the minority with regular schedules. Caregivers dedicated, on average, 22.50 minutes of individual attention per day to each child ($SD=22.67$, range = 0–120).

Measures

Child assessments.

Child developmental functioning at Wave 0, Wave 1 and Wave 2. Child development was assessed at admission to the institution (Wave 0) and again three (Wave 1) and six months (Wave 2) thereafter, using the Bayley Scales of Infant and Toddler Development, Third Edition (BSID-III; Bayley, 2006). The BSID-III is a measure of development for children up to 42 months, has been extensively used, and has excellent reliability and validity. This measure comprises three sub-scales for the assessment of child cognitive, language, and motor development. The cognitive sub-scale is comprised by 91 items, assessing exploration and manipulation, sensorimotor development, and object relatedness, among other areas. The language sub-scale is composed by 97 items, divided in two areas of functioning, namely receptive (49 items; e.g., pre-verbal behaviors, vocabulary), and expressive communication (48 items; e.g., babbling, gesturing, joint referencing). Finally, the motor sub-scale is composed by two areas of functioning, one pertaining to fine-motor skills (66 items; e.g., prehension, visual tracking, object manipulation), and the other to gross-motor capabilities (72 items; e.g., movements of limb and torso, sitting, standing, locomotor). For each sub-scale, items are scored “1” if successfully completed by the child and “0” if not shown to be accomplished. The administration ends when the child has received a score of zero for five consecutive items. A summed raw score is computed and composite scores are

determined for each sub-scale. BSID-III composite score < 85 are considered the most adequate for the classification of children with developmental disorders (Johnson, Moore, & Marlow, 2014). The BSID-III was administered by highly trained psychologists.

Disturbed socio-emotional functioning at Wave 2. The Ages and Stages Questionnaires: Social-Emotional (ASQ:SE; Squires, Bricker, & Twombly, 2002) was completed by the assigned caregiver after six months of institutionalization, to assess children's difficulties regarding social and emotional functioning. The ASQ:SE is a set of eight validated and age-appropriate questionnaires that focus on specific behavioral domains, including self-regulation, compliance, communication, adaptive behaviors, autonomy, affect, and interaction with people. The ASQ:SE has been extensively used, and shown to have good internal consistency (McCrae & Brown, 2017; Squires, Bricker, Heo, & Twombly, 2001). For the present study, five age-appropriate versions were administered for use at six, 12, 18, 24 and 30 interval months, containing between 19 (6 months) to 29 (30 months) scored questions. Scores are totaled and compared with empirically-derived cutoff points, allowing the comparison of children of different ages. Higher scores falling above the cutoff points are indicative of significant disturbed social-emotional problems.

Family and institutional assessments.

Child maltreatment. The Modified Maltreatment Classification System (MMCS; Barnett, Manly, & Cicchetti, 1993; English & the LONGSCAN Investigators, 1997) was used to determine the presence of physical abuse, physical and emotional neglect, and/or sexual abuse in the family of origin prior to institutionalization, based on the official records of each child reviewed at the institution. The physical abuse was classified when non-accidental physical injury was inflicted upon the child (e.g., bruises, burns). Physical neglect classification was identified when the physical needs of the child, including adequate food and medical care, were not met. Emotional neglect involved persistent or extreme thwarting

of the basic emotional needs of the child, including failure to provide for psychological safety and security. The sexual abuse classification was identified when an attempted or actual sexual contact between the child and a family member or responsible adult has occurred. All specialized raters had a Ph.D. in clinical psychology, had experience in working in health and care settings with young children and families at risk, and were unaware of other data included in this inquiry. Inter-rated agreement was calculated for each specific form of abuse based on 15 cases and proved to be more than adequate before consensus scoring of disagreements on ratings (ICC mean $r_{ic} = .88$, range .77–1.00). In this study, 24 children were classified as having experienced early maltreatment in the family, of which all experienced physical and emotional neglect. Beyond this, two children experienced physical abuse and other two sexual abuse. Considering the limited number of children who had experienced any particular type or more than one type of maltreatment, the only distinction made in the analyses to be reported was presence *versus* absence of maltreatment (of any type).

Quality of caregiver-child interaction at Wave 2. To assess caregiver's interactive behaviors with the child, the Ainsworth's 9-point Insensitivity-Sensitivity and Cooperation-Intrusiveness subscales (Ainsworth, Blehar, Waters, & Wall, 1978) were coded by highly trained observers with extensive experience with the Ainsworth' sensitivity and cooperation subscales. Observers were unaware of other data included in this inquiry, and the coding was carried out based on a 15-minutes videotaped caregiver-child task, divided in three episodes: first, the dyads were asked to play with a set of appropriate toys in the way they usually did (5 minutes); then, to play without toys (following caregiver's departure, stranger entry, stranger departure, caregiver entry) (5 minutes); and, finally, to play with a "difficult-to-use" toy for the child (5 minutes). The ratings for the three episodes were average into one composite score. While the Sensitivity-Insensitivity subscale aims to assess the caregiver's ability to perceive and interpret the child's signals and communications accurately, and to respond to

them promptly and appropriately, the Cooperation-Intrusiveness subscale aims to assess the extent to which the caregiver's interventions break into or interrupt the children's ongoing activity rather than being geared in time and quality to children's interests and mood. Higher scores in each sub-scale reflect a more sensitive and cooperative caregiver, respectively. Intraclass correlation for intercoder reliability ranged from .73 to .93 for sensitivity, and from .97 to .98 for cooperation, calculated based on 24% of the videotapes. Disagreements were discussed to obtain a consensus.

Potential covariates.

Serving as potential covariates were child gestational age and birth weight obtained from children's medical records, as well as child stunted growth at enrollment, as all of these factors have been linked to social-emotional problems in young children (e.g., Henninger & Luze, 2010; Montagna & Nosarti, 2016). Stunted growth served as a proxy for undernutrition and was defined as height-for-age less than -2 SD. Height (supine length < 24 months or standing height \geq 24 months) was measured at admission to the institutions (Wave 0) and converted into z-scores using WHO Anthro Statistical Software (World Health Organization, 2009), affording unbiased comparison of children of different ages. In the present sample, 28% ($n = 14$) of children were stunted at Wave 0. Child age at admission in the institution was accounted for in the statistical analyses, also serving as a covariate.

Data Analyses

Data analyses proceeded in a series of steps. First, descriptive statistics and the prevalence of disturbed social-emotional behaviors were examined. Then, the associations between social-emotional problems and the other study variables were tested. Finally, a logistic regression was computed to examine the contribution of child, family and institutional factors to the presence (vs. absence) of social-emotional problems after six months of institutionalization.

Results

Descriptive statistics and bivariate correlations

Descriptive statistics and bivariate correlations between the presence (vs. absence) of social-emotional problems and the other study variables are displayed in Tables 1 and 2. The prevalence of disturbed social-emotional behaviors was 60% ($n = 30$). Mean ratings of caregiving sensitivity and cooperation were 3.86 and 4.03, respectively. At admission to the institutions (Wave 0), 22%, 38%, and 42% of children had a BSID-III cognitive, language and motor score <85 , respectively. At Wave 1, 14%, 36%, and 30% of children scored <85 on the respective cognitive, language and motor sub-scales. Finally, by the end of six months of institutionalization (Wave 2), 18%, 38%, and 36% of children had, respectively, cognitive, language and motor scores <85 , respectively. Cognitive, language and motor scores at the three-time points were all intercorrelated (all $r > .33$, all $p < .05$), suggesting developmental stability over time.

Correlational analyses revealed no significant associations between social-emotional functioning and child age at enrollment, child sex, gestational age, birth weight, or stunted growth (see Table 2). With respect to child developmental functioning, a significant association was observed between the presence of disturbed social-emotional behaviors at Wave 2 and a lower motor functioning at enrollment, $r_{pb} = -.30$, $p = .034$. Further inspection of Table 2 revealed that the presence of social-emotional problems was also significantly linked to lower motor functioning at Wave 1, $r_{pb} = -.36$, $p = .010$. No other significant associations were found between child developmental functioning and social-emotional problems.

With regard to early family experiences, further inspection of Table 2 revealed a significant association between child maltreatment and social-emotional functioning, $\chi^2(1) = 4.33$, $p = .036$, such that a higher percentage of infants and toddlers who had been maltreated

prior to institutionalization displayed social-emotional problems when compared with those that had not been exposed to such early adversity in the family. Moving on to the relations with the quality of institutional caregiving, results showed that infants and toddlers who had more disturbed social-emotional behaviors at Wave 2 were more likely to have a less sensitive institutional caregiver, $r_{pb} = -.39, p = .005$. No significant bivariate correlations were observed between social-emotional functioning and caregivers' cooperation.

Predicting the presence (vs. absence) of disturbed social-emotional behaviors

A logistic regression was then performed in order to investigate the predictors of the presence of significant social-emotional problems. Because motor development at Wave 0 and motor development at Wave 1 were significantly related to each other, tests for multicollinearity were performed before the main regression analysis. Results indicated a very low level of multicollinearity (all VIF < 1.40; Piegorisch, 2015). Thus, motor development at Wave 0, motor development at Wave 1, child maltreatment and caregiver sensitivity were all included in the regression model. According to Table 3, child maltreatment (odds ratio [OR] = 6.05) was a significant predictor of social-emotional disturbances after six months of institutionalization. The odds of displaying social-emotional difficulties was more than six times higher among maltreatment infants and toddlers. Caregiver insensitivity (OR = .44) was also found to predict the presence of social-emotional disturbances. A bootstrapping methodology on 5.000 bootstrap resamples was then carried out, confirming the previous pattern of results. The 95% confidence interval ranged from .27 to 6.99, regarding child maltreatment, and from -2.87 to -.27, with respect to caregiver sensitivity. Because zero was not in any of the confidence intervals, results support child maltreatment and caregiver insensitivity as predictors of the presence of disturbed social-emotional behaviors. Motor development at admission and at Wave 1 were not significant predictors of social-emotional problems.

Discussion

The main goal of the current study was to evaluate the potential influence of early child maltreatment, developmental functioning (i.e., cognitive, language and motor development), and of the quality of caregiver-child interaction on child social-emotional functioning after six months of institutionalization. Before proceeding to discuss the primary findings, it is important to note that we detected higher levels of disturbed social-emotional behaviors when compared to what has typically been found in community samples (Bricker, Davis, & Squires, 2004). In this sense, our results are in line with the findings from previous studies with institutionalized young children; and are thus consistent with the premise that early deprivation of parental care is associated with mental health difficulties. In this regard, consider the work of Zeanah and colleagues (2009), who found that 53.2% of children with a history of institutional rearing had mental health problems during the preschool period.

In this study, social-emotional problems after six months of institutionalization was found to be associated with motor delays at Wave 0 and Wave 1. Consistently, authors have argued that motor development can have an impact on the quality of early interactions, and thus on child social-emotional development (e.g., Biringen, Emde, Campos, & Appelbaum, 1995). Studies have shown that young children with better motor skills are more competent in initiating and maintaining social interactions, as they are more capable of reaching out with their arms or crawling towards their caregivers (Karasik, Tamis-LeMonda, & Adolph, 2011). It is not surprising, then, that motor ability has emerged, in the present study, as the domain of development associated with the social-emotional abilities. In fact, the role of motor functioning may be even more prominent in an institutional setting. To the extent that this sort of environment is characterized by few opportunities for individualized care and one-to-one interactions with a special and consistent caregiver, motor skills may provide such young

children with better opportunities for them to explore and interact with their often overwhelmed, overloaded, caregivers and the surrounding chaotic environment.

However, and despite those significant associations, it should be noted that child motor development at Wave 0 and Wave 1 failed to predict social-emotional functioning after six months of institutionalization in the subsequent regression analysis. It may well be the case that other factors are more important in determining the presence of social-emotional problems in such deprived environments; and this may become more evident as time of institutionalization increases, which would also explain the absence of a concurrent association between motor development at Wave 2 and socio-emotional functioning.

Such possibility is in line with other findings from the present study. Recall that child maltreatment and caregivers' insensitivity have emerged as the only significant predictors of social-emotional difficulties. More precisely, children who were institutionalized due to neglect and/or abuse in the family of origin and exposed to less sensitive care in the institution were found to have more social-emotional problems after six months of institutionalization. The results under consideration are in accordance with a vast amount of research demonstrating the negative impact of maltreatment during infancy and inadequate caregiver-child interactions on child social-emotional functioning (Ainsworth, Blehar, Waters, & Wall, 1978; Cicchetti et al., 2016; De Wolff & Van Ijzendoorn, 1997; Doyle & Cicchetti, 2017; Dvir, Ford, Hill, & Frazier, 2014). Results are consistent with previous cross-sectional studies from our team, showing that early child maltreatment coupled with unstable institutional caregiving arrangements predict especially elevated levels of externalizing problems in toddlers (Baptista et al., 2014), and that both previous and current relational experiences impact child physical growth and attachment disturbed behaviors in institutionalized toddlers (Martins et al., 2013; Soares et al., 2014).

In line with an attachment theory perspective, authors have suggested that attachment insecurity and disorganization may be involved in the mechanisms linking child maltreatment and social-emotional difficulties (Alink, Cicchetti, Kim, & Rogosch, 2009; Beaudoin, Hébert, & Bernier, 2013; Cicchetti, 1995). According to such perspective, the type of disrupted, frightened and frightening parenting behaviors, to which maltreated children are often exposed, results in insecure and, in particular, disorganized attachment relationships (Madigan et al., 2006; Hesse & Main, 2006; Main & Solomon, 1990); which, in turn, have been found to predict later social-emotional impairments (Van Ijzendoorn, Schuengel, Bakermans- Kranenburg, 1999). Indeed, multiple investigations indicate that child maltreatment and institutional care are associated with high rates of insecure and disorganized attachment patterns (Bakermans-Kranenburg et al., 2011; Cyr, Euser, Bakermans-Kranenburg, & Van Ijzendoorn, 2010). However, yet to be explored is whether similar processes are implicated in the development of social-emotional abilities among still institutionalized (maltreated) infants and toddlers. This is something that should be addressed in future research.

In fact, attachment theory constitutes an important guide to understand the social-emotional development of institutionalized children deprived from parental care. Attachment theory poses that experiences of separation, loss or being threatened with separation or abandonment from an attachment figure constitutes a risk factor for problematic social-emotional development (Bowlby, 1973), especially when an adequate substitute caregiver is not provided after traumatic experiences (Stovall-McClough & Dozier, 2004). The results of our study are consistent with such premise. Recall that child abandonment was one of the main reasons for institutionalization in the present study, and that 28% of children were admitted to the institution directly from the maternity ward, and therefore never lived in a family environment. Moreover, the fact that a large number of infants and toddlers have

shown elevated social-emotional difficulties, six months after being removed from their families, corroborates the theoretical and empirical views that institutional care does not constitute a nurturing and stimulating rearing environment needed for healthy psychological development (e.g., Van Ijzendoorn et al., 2011). Important to appreciate is that the current article pertains to children placed in institutions in Portugal. In this country, institutions are not usually characterized by global deficiencies in health care or nutrition. However, due to organizational constraints (i.e., poor caregiver-to-child ratios, unpredictable caregiving working shifts, and large and heterogeneous groups of children), they often fail in providing social-relational support, including opportunities for the child to establish a special relationship with a specific caregiver (Soares et al., 2014). In fact, according to O'Connor and his colleagues (2000), the emotional and behavior difficulties that plague institutionally reared children result from the lack of a consistent and stable caregiving environment, rather the absence of physical resources.

Our findings pointing to the predictive role of caregivers' sensitivity seem to corroborate the previous claim, as well as the statement that sensitivity is one of the most important aspects of caregiver's behavior linked to infant emotional functioning (Ainsworth et al., 1978). The present results are also in line with previous findings from studies with institutionally reared children. In this matter, recall that Smyke and her colleagues (2007) have found that the institutional microcaregiving environment, measured in terms of responsive caregiving, was linked to child functioning even after controlling for the length of institutional care. Furthermore, higher sensitivity of care was associated with lower indiscriminate behavior among preschoolers with a history of institutionalization (Van Den Dries et al., 2012).

Limitations and future directions

Although there were strengths in this work, such as the focus on child developmental functioning at admission and in the following months, while considering non-institutional and institutional factors, the current work was also limited in a number of ways. Child social-emotional functioning was assessed at Wave 2 (i.e., after six months of institutionalization). The assessment of child social-emotional functioning at admission to the institution and three months thereafter would have allowed to analyze the putative mutual influences between child developmental functioning and social-emotional abilities across time. It would also have allowed to examine the presence of social-emotional difficulties at enrollment and its relation with later functioning. Moreover, it is important to note that, in the present investigation, information regarding the quality of caregiver-child interactions was available at only a single point in time, most notably at Wave 2. Incorporating the assessment of the quality of institutional relational care at Wave 1 could provide a more comprehensive view of the presence of child social-emotional problems. Moreover, the caregiver provided information about child socioemotional functioning, making it impossible to rule out informant bias. Thus, it should not be ruled out that less sensitive caregivers were more likely to classify children more negatively in the ASQ:SE, which may explain the significant association between sensitivity and socioemotional functioning. Another limitation of this inquiry was that information on child maltreatment was based on case reports at the institutions—that routinely lack information about the severity of child abuse/neglect. Thus, the presence-absence of maltreatment was the only distinction made possible in the analyses. Finally, it seems possible that our modest sample size limited the statistical power of this research, calling attention for further studies on the issues at hand with larger samples. Generalization of the results must be made carefully.

Clinical implications

Despite the above limitations, the findings presented have important implications for practice. Most notably, given that a large number of infants and toddlers showed elevated social-emotional difficulties, the early identification of deprived children at-risk for mental health problems becomes urgent. In this study, lower cognitive, language and motor scores were also observed. Thereby, routine screening, as well as access to appropriate services and individualized interventions, are recommended, in order to help these deprived children overcoming their global developmental problems. Moreover, given that there are currently around 8,000 institutionalized children in Portugal (Instituto de Segurança Social, 2017), and that years of research have documented the negative impact of such early-life experiences on child social-emotional functioning (Smyke et al., 2007), the replacement of institutional care for a foster family system is urgent in this country. In fact, there is theoretical and empirical reasons to believe that high quality foster families would better serve the needs of such deprived young children by increasing the stability and consistency of care received (Nelson et al., 2007). Efforts should also be made to rapidly improve the quality of parental care, so that children do not need to be placed in institutions. Interventions should be implemented as soon as possible, having as target the expectant at-risk parents.

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Table 1

Sample Characteristics

	Social-Emotional Problems					
	Total sample		Above the cutoff point		Below the cutoff point	
	(n=50)		(n=30)		(n=20)	
	M (SD)	Min-Max	M (SD)	Min-Max	M (SD)	Min-Max
Child sex (0=girls, 1=boys) ^a	Boy: n=26 (52%)		Boy: n=18 (36%)		Boy: n=8 (16%)	
Age at Wave 0 (months)	7.46 (6.73)	0-26	8.17 (6.73)	0-26	6.40 (7.06)	0-21
Child gestational weeks	37.94 (2.22)	28-41	37.97 (2.22)	28-41	37.90 (1.77)	35-41
Child birth weight (kg) ^(N=49)	2.92 (.61)	1.12-4.00	2.97 (.69)	1.12-4.53	2.84 (.48)	1.85-3.68
Child stunted growth at Wave 0	Yes: n=25 (51%)		Yes: n=12 (24%)		Yes: n=10 (20%)	
Child Psychological Development Wave 0						
Cognitive development	89.16 (15.85)	55-120	89.27 (14.31)	55-120	89.00 (18.32)	55-115
Language development	87.00 (15.02)	47-115	84.67 (16.77)	47-115	90.50 (11.47)	71-112
Motor development	86.96 (16.02)	55-127	83.07 (15.92)	55-110	92.80 (14.68)	67-127
Child Psychological Development Wave 1						
Cognitive development	92.80 (11.57)	55-120	91.00 (12.83)	55-115	95.50 (9.02)	88-110
Language development	87.74 (12.99)	59-109	85.67 (14.13)	59-106	90.85 (10.65)	68-109
Motor development	91.16 (16.17)	55-130	86.43 (15.21)	55-112	98.25 (15.33)	67-130
Child Psychological Development Wave 2						
Cognitive development	91.50 (9.81)	65-110	90.33 (8.60)	75-110	93.25 (11.39)	65-105
Language development	86.64 (12.09)	56-112	85.00 (12.51)	56-112	89.10 (11.30)	62-106
Motor development	89.62 (15.77)	58-112	88.30 (16.07)	58-112	91.60 (15.51)	64-110
Early Family and Institutional Experiences						
Child maltreatment (0=No, 1=Yes)	Yes: n=24 (48%)		Yes: n=18 (36%)		Yes: n=6 (12%)	
Caregiver sensitivity at Wave 2	3.86 (1.55)	1-8	3.37 (1.50)	1-7	4.60 (1.35)	3-8
Caregiver cooperation at Wave 2	4.03 (1.29)	2-7	3.87 (1.17)	2-7	4.26 (1.45)	2-7

Note. Wave 0=admission to the institution, Wave 1=three months of institutionalization, Wave 2=six months of institutionalization.

Table 2

Associations between the Presence (vs. Absence) of Social-Emotional Problems at Wave 2 and Child Psychological Development, Child Maltreatment and Current Quality of Care

	Social-Emotional Problems
Covariates	
Child sex ^a	1.92
Age at Wave 0	.13
Child gestational age	.02
Birth weight	.11
Stunted growth at Wave 0 ^a	.06
Child Psychological Development: Wave 0	
Cognitive development	.01
Language development	-.19
Motor development	-.30*
Child Psychological Development: Wave 1	
Cognitive development	-.19
Language development	-.20
Motor development	-.36**
Child Psychological Development: Wave 2	
Cognitive development	-.15
Language development	-.17
Motor development	-.10
Early Family and Institutional Experiences	
Child maltreatment ^a	4.33*
Caregiver sensitivity	-.39**
Caregiver cooperation	-.15

Note. Wave 0=admission to the institution, Wave 1=three months of institutionalization, Wave 2=six months of institutionalization.

^a Pearson's chi-square test; all remaining point-biserial correlations.

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

Table 3

Coefficients of the Model Predicting the Presence (vs. Absence) of Disturbed Social-Emotional Behaviors in Institutionalized Infants and Toddlers [95% BCa bootstrap confidence intervals based on 5000 samples]

	<i>b</i>	95% CI for Odds Ratio		
		Lower	Odds	Upper
Motor development at Wave 0	-.02	-.10	.98	.08
Motor development at Wave 1	-.03	-.17	.97	.03
Child maltreatment	1.80*	.27	6.05	6.99
Caregiver sensitivity at Wave 2	-.82*	-2.87	.44	-.25

Note. Wave 0=admission to the institution, Wave 1=three months of institutionalization, Wave 2=six months of institutionalization.

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