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## A matter of attachment? How adoptive parents foster post-institutionalized children's social and emotional adjustment

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### ABSTRACT

The current study investigates the contribution of children's age at adoption ( $M = 46.52$  months,  $SD = 11.52$  months) and parents' attachment on post-institutionalized children's attachment and social-emotional adjustment. A total of 132 subjects, 48 post-institutionalized children aged 3–5 years, and their adoptive parents, took part in the study. One year from adoption, children's attachment distribution was as follows: 31% secure, 42% disorganized, and 27% insecure. Parents' secure attachment increased children's probability of presenting a secure attachment pattern; specifically, mothers' attachment patterns were most strongly associated with those of their adopted children, with fathers' making an additional contribution. Two years from adoption, secure children showed more adequate social competences than their insecure and disorganized peers and presented better emotional comprehension. The effect of age at adoption was delimited to a marginal association with behavioral problems. This pattern of associations suggests that attachment – both of adoptive parents and of children – substantially fosters social-emotional adjustment of post-institutionalized children who have experienced a period in emotionally neglecting environments beyond their first year of life, regardless of their age at adoption. Implications for policies and practices are discussed.

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### KEYWORDS

Attachment; adoptive parents; social-emotional development; post-institutionalized children

### Attachment theory: a framework for studying post-institutionalized children's development

Attachment theory underlines the fundamental role of caregivers in providing adequate and consistent care and a sense of safety, and in influencing the healthy social-emotional development of children (Bowlby, 1951). It thus provides a suitable framework for studying the development of post-institutionalized children, whose life experiences are characterized by attachment ruptures and primary caregiver deprivation. According to attachment theory and research (see Cassidy & Shaver, 2016), in family-rearing environments, caregivers' representations of attachment relationships guide parental behaviors

that are, in turn, predictive of the quality of children's attachment, both at the behavioral and at the representational level (Main, Kaplan, & Cassidy, 1985). Earlier and more recent meta-analytic evidences contributed in supporting the association between caregiver attachment representations and child-caregiver attachment, even in at-risk populations (van IJzendoorn, 1995; Verhage et al., 2016). These evidences suggested that, regardless of biological bonds, children are most likely to develop adaptive, revisable attachment working models when parents are able to model an emotionally open and available relationship. A child who develops secure attachment perceives the parent as available and her/himself as worth of care and love; a child with insecure attachment perceives the parent as distant and not emotionally available (if avoidant) or as inconsistently available (if ambivalent/resistant); finally, the disorganized category is associated with the perception of a parent as frightening or frightened and highly unpredictable. In low-risk and normative families, the secure attachment category is the most prevalent, with around 65% of children being classified as secure, 20% as insecure, and 15% disorganized (van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999).

For children who grow up in an institution or who experience neglectful and maltreating environments, developmental opportunities are of course different (Bakermans-Kranenburg, Zeanah, & Muhamedrahimov et al., 2011; Cyr, Euser, Bakermans-Kranenburg, & van IJzendoorn, 2010; Lionetti, Pastore, & Barone, 2015; Zeanah & Sonuga-Barke, 2016). Institutionalization, although it may be better than its alternatives, like abandonment or maltreatment at home, provides an inconsistent caregiving environment due to the turnover of professional caregivers, and to a number of challenging factors for a healthy children's development that possibly impair their social-emotional growth regardless of the quality of institutional care itself (Dozier & Rutter, 2016). Behavioral evidence of the impact that institutionalization has on children's emotional development is found in the high rates (up to 82%) of insecure and disorganized patterns found in a recent meta-analysis of studies on institutionalized children, reporting a high effect size for the difference with the normative population (Cohen's  $d = .76$ , Lionetti et al., 2015).

The data reported begged the question of what the developmental outcomes are for children who move to a family-rearing environment after a neglectful experience as life in institution. Several studies involving adopted children or those in foster care have reported a rapid improvement, following family placement, in children's physical parameters – weight, height, and cranial circumference – together with impressive albeit incomplete social-emotional recovery (Juffer & van IJzendoorn, 2009; Palacios & Brodzinsky, 2010). Specifically, although there is a decrease in the rates of insecure and disorganized attachment, the emotional catch-up is not complete and some children still lag behind (van den Dries, Juffer, Van IJzendoorn, & Bakermans-Kranenburg, 2009). Understanding what enables proper recovery from an impaired social-emotional condition is crucial if we want to promote the well-being of post-institutionalized children and to sustain adoptive and foster-care families in their care-giving role.

### **What promotes secure attachment in post-institutionalized children?**

The variables that have been analyzed as candidate predictors of attachment in post- and currently institutionalized children can be grouped into two main areas: one

pertaining to distal variables, i.e. those related to the objective data of institutionalization such as duration of institutionalization and/or children's age at institution entry, and country of origin; and one pertaining to proximal variables related to the care-giving environment, such as foster or adoptive parents' sensitivity in care-giving and parental mental representations of attachment. Only some studies have supported a differential role for distal variables, with effects ranging from moderate to trivial (Barone, Dellagiulia, & Lionetti, 2016; Niemann & Weiss, 2012; O' Connor & Rutter, & the ERA Study Team, 2000; van den Dries et al., 2009), suggesting that other variables affect children's social-emotional recovery after the family placement. The mixed findings on the degree to which distal variables impact on attachment patterns have contributed to moving the focus of research even toward proximal variables which, in family-reared children, typically predict attachment and emotional development.

Investigations on proximal variables, involving children adopted within their first year of life, have shown that parents' attachment states of mind and parental sensitivity are associated with children's attachment patterns, to a degree comparable with that reported for biological dyads (Lionetti, 2014; Schoenmaker et al., 2015). Data on late-adopted children, who have experienced neglect for a longer period of time, are less univocal, and not all studies have found that parents' attachment makes a significant contribution to the child's attachment (Barone & Lionetti, 2012; Dozier & Rutter, 2016; Pace, Zavattini, & D'Alessio, 2012; Steele et al., 2008). Furthermore, attachment in early and middle childhood appears to have specific features and methods of assessment; starting from the second and third year of age, there is a clear improvement in several cognitive skills – e.g. verbal language, pretend play, symbolic play, mentalization, narrative coherence – and these must therefore be included in the constellation of factors affecting the representational level of attachment, which is one of the targets of assessment in early childhood and at older ages (see Solomon & George, 2016 for an updated overview of available measures). The few studies that have investigated paternal contribution suggest that fathers have a supportive role in protecting against mothers' feelings of stress in care-giving and that they increase the chance of a child being secure (Lionetti, Pastore, & Barone, 2015a; Steele et al., 2008), thus contributing to children's healthy emotional development

### **Is attachment fostering post-institutionalized children's social-emotional development?**

A noteworthy issue related to those already outlined concerns the quality of the social-emotional domain. Having identified candidate moderators for secure attachment in post-institutionalized children, it needs to be ascertained whether this recovery sustains subsequent development. So far, data are sparse. We know, from studies involving biological children and their parents, that secure attachment fosters current and subsequent social-emotional development (Kobak, Cassidy, Lyons Ruth, & Ziv, 2005). For example, security has been found to promote social competences, effortful control, and sharing behaviors (Barone & Lionetti, 2012a; Groh et al., 2014; Paulus, Becker, Scheub, & König, 2015; Viddal et al., 2015); also meta-analytical findings confirm the association between nonsecure patterns (i.e. insecure and disorganized) and both internalizing and externalizing behavioral

problems (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Fearon & Belsky, 2011; Groh, Roisman, van IJzendoorn, Bakermans-Kranenburg, & Fearon, 2012). Most of the data available thus far pertain to children adopted within the first year of life (see for an updated review, Dozier & Rutter, 2016), hence failing to address the more challenging issue of children who have experienced a longer period of life in emotionally neglecting environments.

## The current study

According to the aforementioned considerations, the current study had two main aims:

- (1) At 1 year after adoption, to investigate the role of children's age at adoption and mothers' and fathers' attachment on children's secure attachment.
- (2) At 2 years after adoption placement, to investigate the contribution of the aforementioned variables, and of children's attachment, on their social-emotional adjustment.

We hypothesized that

- (1) Having a secure mother and a secure father would increase post-institutionalized children's probability of developing a secure attachment, regardless their age at adoption placement.
- (2) Secure attachment in children, and secure mental representations in parents, would be positively associated with the quality of children's social-emotional adjustment.

## Method

### Study design

Data collection was carried out individually at three time points following the admission of children to National Adoption Services. These services are clinical facilities with a preventive focus; they have the task of monitoring the social-emotional adjustment of the child up to the whole first year after the adoption placement (usually, it takes no more than three at-home visits by social workers checking the main developmental issues of the child). The study time points, covering a period of 2 years, were (T1) assessment of parents' attachment state of mind within the first semester of the adoption placement, (T2) assessment of children's attachment 1 year after adoption, (T3) assessment of children's social-emotional adjustment 2 years after adoption. Social-emotional adjustment was operationalized as emotional comprehension,<sup>1</sup> social competence in interaction with peers, and teachers' reports of internalizing and externalizing behavioral problems. Data collection was implemented through a multi-method, multi-informant approach using observational measures, interviews, and questionnaires and involved children, parents, teachers, and trained observers.

## Participants

Institutionalized children entering an adoptive family in preschool years, and their adoptive mothers and fathers, were involved. Families were contacted through National Adoption Services and recruited as study participants after their signing an informed consent form; 72% of them accepted to participate. Reasons for declining participation at the project were being too busy (20%) and unwillingness to consent to the video-recording (8%). Given the presence of adopted siblings (specifically, some families had adopted more than one child), this resulted in a group of 48 adopted children, with their 42 adoptive mothers and 42 adoptive fathers. Age at placement ranged from 3 to 5 years of age ( $M = 46.52$  months,  $SD = 11.52$  months). Ninety percent of children, i.e.  $n = 43$  (46% girls), were from intercountry adoptions ( $n = 7$  Asia;  $n = 10$  East Europe;  $n = 20$  South America;  $n = 6$  South Africa) and had experienced life in a residential care context at least once. One child came from a foster family before adoption but was included anyway because prior to foster placement, he had experienced life in an institution and the rupture of more than one attachment bond. Ten percent were domestic adoptions. Institutionalization length ranged from 9 to 68 months and showed a medium correlation with age at adoption ( $r(46) = .44$ ). A percentage of 58 adopted children ( $n = 28$ ) had entered an institution before their first birthday. According to parents' and adoption services' reports, the reasons for institutionalization were abandonment due to poverty and neglect; the caregiver–child ratio in institutional settings ranged from 1:4 to 1:6. The adoptive mothers' mean age was 40.39 years ( $SD = 3.4$ ) and the adoptive fathers' mean age was 42.10 years ( $SD = 3.1$ ). Parents' educational level (considering the overall distribution of both mothers and fathers averaged level) was distributed as follows: junior high school = 3%, high school = 56%, university college = 41%.

## Procedure

First, parents' attachment state of mind was assessed at home using a semi-structured interview in a quiet, individual at-home setting within the first semester of adoption. All interviews were audio-recorded and then transcribed verbatim for coding. Second, about 1 year after the adoption placement, children's attachment was assessed at home using a story-stem technique suitable for the age range of the current sample. Trained, independent coders blind to the parent–child match scored parents and children's attachment; specifically, a coder assessed half of parents and the other coder assessed half of children and then the order of the coders was reversed in order to keep blindness of the parent–child match. All coders were certified for reliability (LB was certified by E. Hesse and M. Main and FL was trained by N. Dazzi and D. Jacobvitz and certified by M. Main and E. Hesse for Adult Attachment Interview (AAI) reliability; both were certified by J. Green for Manchester Child Attachment Story Task [MCAST] reliability). Inter-coder agreement was computed on a random selection of 25% of cases by a third trained coder, certified as reliable in both the attachment procedures used. Third, about 2 years from adoption, children were assessed on the following variables in order to evaluate their social–emotional adjustment: emotional comprehension (using a cartoon-scenario test, administered in quiet and individual setting) and, for those

attending kindergarten, social competence with peers (observed at kindergarten by two trained coders) and behavioral problems (reported by kindergarten teachers). We limited data collection for social competence with peers to the preschool adoptees, leaving out those who were not attending preschool or who were already in primary school. We thus collected data at T3 from 27 out of our population of 48 late-adopted children. The preschool period is a favorable one for the assessment of social–emotional changes, as it is free of other variables such as the potentially stressful transition to formal schooling.

## Measures

### *Parents' attachment states of mind*

Measured at T1. The AAI (George, Kaplan, & Main, 1985; Main, Goldwyn, & Hesse, 2002) was used to investigate mental representations of attachment, as it represents one of the most widely used measures for studying attachment in adulthood within an intergenerational transmission approach (Verhage et al., 2016). The AAI is a semi-structured interview investigating the quality of past experiences with primary caregivers and how these experiences are internalized in the current attachment state of mind. It is the gold standard for detecting attachment states of mind in adulthood. The coding is based on a complex system of scales that yields three organized attachment pattern classifications: secure autonomous (F), insecure dismissing (Ds), and insecure enmeshed (E). An additional primary disorganized/unresolved category (U) is given to transcripts presenting lapses in monitoring of reasoning or discourse or reports of extreme behavioral reactions during trauma or loss discussion. The inter-rater agreement computed on 30% of the overall attachment classifications was 86% (Cohen's  $k = .79$ ) for secure versus other patterns distinction. For cases rated differently, the classification was negotiated.

### *Children's attachment patterns*

Measured at T2. The Manchester Child Attachment Story Task (MCAST, Green, Stanley, Smith, & Goldwyn, 2000), a story stem technique, was used to investigate attachment in preschool-aged children. The MCAST is a doll-play vignette completion method, developed to elicit children's narrative in response to four attachment-related themes. The child is asked to select a doll representing him/herself and a doll representing his/her primary caregiver. All mothers involved in the study reported to have took the maternity leave and to spend, compared to fathers, a longer amount of time daily with children. Thus, the doll representing the mother was proposed as the primary caregiver doll. The coding is based on narrative and behavioral content and style obtained from the video-recording of the whole procedure and it is organized into the following categories: secure (B), insecure avoidant (A), and insecure ambivalent (C). An additionally primarily disorganized category (D) is given when play totally lacks organized strategy, presenting internal contradiction, bizarre themes, or episodic disoriented phenomena. The inter-rater agreement computed on 30% of the overall attachment classification was 89% (Cohen's  $k = .87$ ) for secure versus other patterns distinction. For cases rated differently, the classification was negotiated. The measure has been extensively used for children coming from different cultures and of different ethnicities (Matias, O'Connor, Futh, & Scott, 2014).

### *Emotional comprehension*

Measured at T3. Emotional comprehension was evaluated through the ability to recognize emotional expressions and feelings shown in pictures of children's faces and stories, by means of the Test of Emotion Comprehension – suitable for children aged 3–10 years (Pons & Harris, 2000). Age-standardized scores were used to allow comparison of data from children of different ages at the assessment (Albanese & Molina, 2008).

### *Social competence*

Measured at T3. Children's social competence was assessed using a Q-Sort observational procedure, i.e. the California Child Q-Sort (CCQ by Block & Block, 1969; Coppola & Camodeca, 2010). Each child attending kindergarten at the third assessment phase was observed over several different days and in a variety of activity settings at kindergarten (e.g. mealtimes, small groups, free-play indoors and outdoors, and transition activities such as standing in lines and teacher-supervised toy cleaning-up) by two trained observers. Correlational score between the two independent coders was  $r = .62$ , and it was considered adequate as in line with what reported in other multisite studies (i.e.  $r = .59$ , Vaughn et al., 2009). The Q-Sort description for a child provided by a given observer was correlated with the profile of a hypothetically socially competent child (Coppola & Camodeca, 2010), leading to a composite score of social competence for each child. The correlation between USA and Italian criterion was .89, thus allowing to consider as equivalent the two of them.

### *Emotional and behavioral problems*

Measured at T3. Finally, children's emotional and behavioral problems in the kindergarten context were assessed using the Teacher-Report Form of the Achenbach Child Behavior Checklist (CBCL) (Achenbach & Rescorla, 2000). The questionnaire allows assessing the level of behavioral problems along two broad dimensions: internalizing problems and externalizing, as observed by teachers in the kindergarten context. Cronbach's alpha values for the current sample were adequate; respectively,  $\alpha = .82$  for the internalizing behavioral problems scale and  $\alpha = .93$  for the externalizing behavioral problems scale.

### *Analytic plan*

In line with aim 1, in order to identify what promotes secure attachment in children, the variables age at adoption and parents' secure attachment patterns were included as predictors of children's secure attachment in a logistic regression model. The secure versus other attachment patterns distinction was used to prevent small subsamples and because of the protective role that secure attachment has if compared with insecure or disorganized attachment patterns (Fearon & Belsky, 2011; Groh et al., 2014, 2012). For the comparison of logistic regression models, we calculated the approximate Bayes Factor (BF) derived from the Bayesian Information Criterion (BIC; see Raftery, 1995).

In line with aim 2, again regression models were performed and compared for testing the contribution of each variable and therefore estimate what counted at



most. Specifically, the following variables were tested as predictors of emotional comprehension, social competences, and behavioral problems: age at adoption, parents' mental representations of attachment, children's attachment.

For the comparison of regression models, we used the BIC (the lower, the better) and  $p$ -value associated with each effect. Given the nonindependence of observations, we employed a multilevel regression analysis approach with the children nested within families. Analyses were computed with the statistical software R and with the lmerTEST package (Brockhoff, 2016) for estimating multilevel regression models.

## Results

### *Descriptive statistics for children and parents' attachment and attachment dyadic concordance*

One year after adoption, 31% ( $n = 15$ ) of children were secure, 27% were insecure (either avoidant,  $n = 9$ , or preoccupied), and 42% presented a primarily disorganized attachment pattern.

Distribution of adoptive mothers' attachment was as follows: 41% secure ( $n = 17$ ), 41% were insecure (either dismissing,  $n = 10$ , or enmeshed,  $n = 7$ ), and 19% unresolved in respect to loss ( $n = 8$ ). Distribution of adoptive fathers' attachment was as follows: 50% secure ( $n = 21$ ), 35% were insecure (either dismissing,  $n = 14$ , or enmeshed,  $n = 1$ ), and 14% unresolved in respect to loss ( $n = 6$ ).

The parent-child attachment concordance is reported in Table 1.

### *Logistic regression: what promotes secure attachment*

Logistic regression models were computed and compared to identify which factor best predicted the probability of developing a secure attachment. Age at adoption did not play a relevant role; conversely, the best model selected suggested that both mothers and fathers contributed to promote children's security, with a stronger and more decisive contribution for the maternal figure (Table 2). The same central role of mother's attachment was identified when security in parents was considered as a predictor of a non-disorganized attachment pattern in children; no significant additive contribution of fathers' security was identified (Table 3).

**Table 1.** Parent-child attachment concordance.

Mothers [fathers]	Children			
	Secure	Insecure avoidant	Insecure ambivalent	Disorganized
Secure	10 (11)	4 (1)	1 (4)	4 (10)
Insecure dismissing	1 (3)	3 (6)	1 (0)	5 (5)
Insecure enmeshed	1 (1)	0 (1)	2 (0)	4 (0)
Unresolved	3 (0)	2 (1)	0 (0)	7 (5)

**Table 2.** Logistic regression and models comparison on children's secure (B) attachment (1 = B,  $n = 48$ ): Age at adoption (in months, residualized for age at assessment scores) and parents' attachment (1 = secure, F).

Predictors	B	SE	<i>p</i>	BIC <sup>b</sup>
Age at adoption <sup>a</sup>	.01	.71	.970	70.52
Secure mother	18.55	4.84	<.001	58.09
Secure mother+	21.62	6.75	.001	49.35
Secure father	21.03	6.76	.002	

<sup>a</sup>Age at adoption scores was residualized for age at assessment scores.

<sup>b</sup>BIC: Bayesian information criterion.

**Table 3.** Logistic regression and models comparison on children's disorganized (D) attachment (1 = D,  $n = 48$ ): Age at adoption (in months, residualized for age at assessment scores) and parents' attachment (1 = secure, F).

Predictors	B	SE	<i>p</i>	BIC <sup>b</sup>
Age at adoption <sup>a</sup>	-.234	.234	.319	74.48
Secure mother	1.78	.96	.065	70.57
Secure mother+	2.05	1.09	.061	73.24
Secure father	.88	.89	.312	

<sup>a</sup>Age at adoption scores was residualized for age at assessment scores.

<sup>b</sup>BIC: Bayesian information criterion.

### **Descriptive statistics for emotional comprehension, social competence, and behavioral problems at school**

Data for the Test of Emotional Comprehension were available for 46 of the 48 late-adopted children, as 2 of them (both primarily disorganized) refused to participate. Age-standardized scores ranged from  $-2.55$  to  $1.31$  with a negative mean value and a high standard deviation ( $M = -.40$ ,  $SD = .90$ ). Late adoptees thus scored lower than the normative population, though scores varied widely. For the social competence and behavioral problem domains, data were available for the 27/48 late adoptees ( $n = 17$  boys) that were attending kindergarten at the time point set for data collection. Of these, 33.3% were secure, 18.5% were insecure avoidant, 3.7% were insecure ambivalent, and 45% were primarily disorganized, with a distribution of attachment patterns comparable to that reported for the whole sample (see Table 2). The CCQ-Sort composite score (obtained by correlating test data of each child with those in the test manual for the socially competent child, see the Italian validation of Coppola & Camodeca, 2010; or Vaughn, Santos, & Coppola, 2015; for a comparison between American and Italian criterion) ranged from  $-.47$  to  $.66$  ( $M = .12$ ,  $SD = .33$ ), suggesting that children were at risk for poor social competences, though, again, variability was high. Concerning emotional and behavioral problems as rated by teachers, raw CBCL scores ranged from 34 to 65 ( $M = 49.52$ ,  $SD = 7.37$ ) for the internalizing domain and from 38 to 81 ( $M = 55.07$ ,  $SD = 7.95$ ) for the externalizing domain. About a third of children were in the manual guidelines at-risk range. Specifically, nine children (33%) scored above the 60th percentile in one or more dimension in the externalizing ( $n = 7$ ) or both internalizing and externalizing ( $n = 2$ ) behavioral problem domains. Observed social competence in interactions with peers correlated negatively with internalizing ( $r(25) = -.33$ ), externalizing ( $r(25) = -.37$ ), and total ( $r(25) = -.42$ ) behavioral problems reported by teachers. Also, age at adoption was negatively associated with social competences and positively associated with behavioral problems ( $r = -.36$  for social competence,  $.56$  for

**Table 4.** Age at adoption (in months, residualized for age at assessment scores), attachment in parents, and children predicting children's emotional comprehension (TEC).

	TEC		
	<i>B</i> (SE)	<i>p</i>	BIC <sup>b</sup>
Age at adoption <sup>a</sup>	−.00 (.21)	.970	139.26
Secure attachment in children	.71 (.25)	.006	126.69
Non-disorganized attachment in children	.61 (.25)	.020	130.12
Secure attachment in mothers	.03 (.29)	.922	133.99
Secure attachment in fathers	.72 (.26)	.010	127.36

<sup>a</sup>Age at adoption scores were residualized for age at assessment scores.<sup>b</sup>BIC: Bayesian information criterion.*n* = 42.

externalizing behavioral problems, and  $r = .50$  internalizing behavioral problems). The role of age at adoption, as reported in Table 4 and in the analysis below, was estimated by residualizing the age at adoption variable for the age at assessment variable.

### *Linear regression: what promotes children's social and emotional adjustment*

Linear regression models were compared in order to identify what at best predicted children's social-emotional adjustment. Results are reported in Tables 4 and 5. For what pertains to children's emotional comprehension, comparable protective roles were identified for secure and non-disorganized attachment in children and secure attachment in father, with BF greater than 5 against the null model. The same protective role of secure and non-disorganized attachment in children was identified for what pertains to positive social competence, where no relevant role of parents' attachment was identified. Conversely, it was mainly age at adoption that positively increased the risk of externalizing behavioral problems, whereas, again, a protective role against children's internalizing behavioral problems was identified for the non-disorganized attachment category.

**Table 5.** Age at adoption (in months, residualized for age at assessment scores), attachment in parents, and children predicting children's internalizing (CBCL – int), externalizing (CBCL – ext) behavioral problems, and social competence (CCQ – sort) at kindergarten.

	CBCL – ext			CBCL – int			CCQ – sort		
	<i>B</i> (SE)	<i>p</i>	BIC <sup>b</sup>	<i>B</i> (SE)	<i>p</i>	BIC <sup>b</sup>	<i>B</i> (SE)	<i>p</i>	BIC <sup>b</sup>
Age at adoption <sup>a</sup>	1.845 (.856)	.041	212.054	.099 (.394)	.804	173.07	.031 (.022)	.197	36.52
Secure attachment in children	−4.44 (4.72)	.360	212.15	−2.83 (1.97)	.162	167.84	.426 (.116)	.001	23.83
Non-disorganized attachment in children	−7.72 (4.34)	.087	210.13	−4.25 (1.75)	.022	164.63	.345(.970)	.005	24.67
Secure attachment in mothers	−4.49 (4.65)	.343	212.13	−2.201(1.95)	.268	168.63	.190 (.138)	.183	32.71
Secure attachment in fathers	1.16 (4.73)	.810	212.99	2.36 (1.94)	.235	168.44	.042 (.144)	.770	34.44

<sup>a</sup>Age at adoption scores was residualized for age at assessment scores.<sup>b</sup>BIC: Bayesian information criterion.*n* = 27.

## Discussion

The life experience of institutionalized children is characterized by emotional neglect and primary caregiver deprivation, factors that seriously hamper healthy emotional development and lead to higher rates of insecure and disorganized attachment patterns (Dozier & Rutter, 2016; Tottenham, 2014; van den Dries et al., 2009). Developmental catch-up following family placements is reported in studies involving foster and adopted children, but with a high degree of variability, pointing to the value of investigating what influences post-institutionalized children's development. Our aim was thus to contribute to the identification of factors able to affect post-institutionalized children's adjustment. To this end, working within an attachment framework, we analyzed the degree of association of a set of variables with children's security and subsequent social-emotional development, considering as predictors children's age at adoption and parents' attachment and, as outcomes, children's attachment, emotional comprehension ability, social competences, and externalizing and internalizing behavioral problems over a period of 2 years.

One year after adoption, rates of insecure and disorganized attachment patterns were higher than those reported for the normative population or for children adopted within the first year of life (Dozier, Stovall, Albus, & Bates, 2001; Lionetti, 2014), but still lower than those reported in studies on children currently in institutions (Zeanah, Smyke, Koga, & Carlson, 2005), suggesting partial recovery. In terms of their value as possible factors affecting children's catch-up, age at adoption – in our sample always corresponding to ages older than 1 year – did not predict differences in attachment status 1 year after adoption, whereas security in mothers and in fathers (an additive protective effect) did. The positive role of fathers is consistent with results for pre-school children from both adoptive and normative contexts (Lamb, 2010; Steele et al., 2008; Verissimo et al., 2011).

Our results support the evidence that parental attachment is a key factor in children's attachment development and extend it to a population characterized by poor, neglectful emotional resources throughout the critical period of their early life. Our data also indicate that developmental pathways after institutionalization vary quite a lot between children and that recovery remains incomplete for a number of them. Worth noting that studies showed that this recovery doesn't stop but continues during middle childhood up to adolescence (e.g. the seminal ERA adoption study by Rutter and colleagues, 2010). It appears that good parental resources are imperative to optimize the social-emotional adjustment of these children. In other words, even if adoption is a key intervention (van IJzendoorn & Juffer, 2006), nonetheless support parenting programs may be needed to further foster children's recovery (Juffer et al., 2008).

Two years after adoption, we investigated whether children and parents' attachment was associated with social-emotional development, operationalized as emotional comprehension, social competence in interaction with peers, and behavioral problems at kindergarten. We found secure representation of attachment, as assessed 1 year after adoption, to be associated with better social relationships with peers and more competences in an emotional comprehension task, suggesting that security was protective for development as assessed 2 years after adoption and supporting results obtained in smaller sample (Barone & Lionetti, 2012). Indeed, the most noteworthy effect of proximal

variables was found specifically for children's interaction with peers, in line, interestingly, with results recently reported in a longitudinal study involving children in foster care (Almas et al., 2015). Regarding emotional comprehension, the child's secure attachment and that of the father jointly accounted for the child's adjustment in this domain, confirming previous results obtained in normative populations (Steele, Steele, & Johansson, 2002). It thus seems that when parents own security, i.e. when they are organized, coherent, and flexible in recognizing and regulating emotions, their children benefit from this condition whether the parents are biological or adoptive and regardless of their previous neglecting experiences. In contrast, no association was found between children's attachment and externalizing behavioral problems where the role of age at adoption was prominent. Other candidate predictors, such as the quality of life in the institution, if available, may also have played a role and needs to be explored in future studies. The presence of an association between social competences and attachment, but not between externalizing behavioral problems and attachment, though the two partially overlap, could be due to the different measures used for its assessment, a questionnaire for behavioral problems and an observational procedure for social competence. This is coherent with meta-analytic data reporting a stronger association of effects when levels of problematic behaviors and positive competences in interactions with peers were observed rather than rated using questionnaires (Fearon et al., 2010).

Summing up, our study seems to confirm a possible chain of factors – from parents' attachment to children's attachment up to children's broader social-emotional development. At the same time, our results suggest that at least some adoptive families may be in need of support, given the high rate of disorganized attachment showed by these children, the most at-risk attachment category for their subsequent social-emotional problems.

### *Limitations, future directions, and implications for practice*

Limitations of the current study, which indicate future directions for further studies, are listed below. First, carrying out repeated measures rather than consecutive evaluations would have allowed the longitudinal development of the variables of attachment and social-emotional development to be delineated, consenting a more detailed and reliable analysis of pathways of adjustment. Second, although the size of our whole sample was big considering the consecutive admission criterion and the fact that it came from a potentially at-risk population, the subgroup of children who were attending kindergarten 2 years after adoption, on whom we assessed competences in interaction with peers, was relatively small, calling for caution in generalizing these results. Also, findings need to be contextualized to the specific population type of adopted, institution-reared children involved, typical to the country in which the study was conducted. Where other forms of adoption exist, such as out-of-family adoption of maltreated children, e.g. in the United Kingdom (Steele et al., 2008), other variables may also be at play. Finally, unfortunately no report was available regarding the variation in degree of insufficient care by adoption services of our country, thus making impossible to check this factor as likely element affecting the study outcomes.

In spite of these limitations, we hope we have moved a step further toward the identification of what counts in the social-emotional adjustment of children who

have experienced emotional neglect and the absence of a stable and continuative parent–child relationship early in life. Though we should be cautious about extending attachment theory to prediction in every domain of development, our data suggest that attachment is a powerful mechanism, able to explain part of the variability in social–emotional developmental pathways in post-institutionalized children. Further studies are needed to investigate the degree of improvement on the long term and to better clarify the precise mechanism that underlies it. The ultimate aim of all such work is to support parents in their care-giving role, in order to promote the care-giver's well-being, and the quality of the child's development. Even if recovery in these children seems to benefit from mechanisms comparable to those already highlighted for children who grow up in low-risk families, it still requires a more substantial amount of parental resources, given the developmental challenges to be coped with due to the high rates of insecurity, disorganization, and behavioral difficulties. The definitive destination of research like ours is the development of reliable programs (Juffer et al., 2008) to support potentially vulnerable children and their parents in order to reduce negative long-term maladaptive outcomes and supports parents in a rewarding but still potentially challenging task. Attachment theory may be a fruitful framework for moving toward research that truly contributes to the applied field and toward an applied field that gains advantages in terms of reliability from the research on neglected children.

## Note

1. Data on a subsample of 20 children have been reported in Barone & Lionetti, 2012.

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