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Foster children's attachment representations: the role of type of maltreatment and the relationship with the birth family

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Abstract

Children in foster care are at risk of developing insecure and disorganized attachment, which is problematic for establishing new relationships in foster families. However, most previous studies have focused on attachment behaviors in young children rather than on attachment representations. We compared foster children's attachment representations with those of a community group, analyzing also the contribution made by different factors to foster children's attachment representations. We assessed the attachment representations of 109 children aged between 4 and 9 years (51 children in non-kin foster care and 58 community children) in southern Spain, using a narrative story stem measure. Case records information were collected for adversity and child protection variables. Foster children had fewer security and more avoidance indicators than their community counterparts, with those who had suffered more severe maltreatment scoring lower for security and higher for disorganization. Exposure to physical and emotional abuse and birth parents' opposition to the foster placement predicted more disorganized attachment representations**.** Interventions with foster children should consider their heterogeneity in terms of attachment outcomes, and foster caregivers of abused children may need guidance in order to provide therapeutic caregiving.

*Keywords***:** attachment representations; foster care; maltreatment; early adversity; birth family.

Foster Children's Attachment Representations: The Role of Type of Maltreatment and Relationship with Birth Family

Children in foster care face a number of developmental challenges due to their experiences of early adversity and separation from primary caregivers, one of the most difficult being their tendency to develop insecure or disorganized attachment (Cyr et al., 2010). The negative expectations and representations of the self and adult figures associated with insecure attachment may subsequently interfere with children's adaptation to a foster family, which is problematic given the therapeutic potential of developing new attachment relationships in alternative, caring families for children exposed to early adversity (McLaughlin et al., 2012; Stovall-McClough & Dozier, 2004). In this study, we analyze the attachment representations of foster children using a story stem procedure, comparing them with those of a community group of low-risk children and assessing the contributions made by different predictors, including type of maltreatment and other pre-placement, placement and birth family factors.

Attachment in Foster Care

Children in foster care have often previously been exposed to adverse caregiving conditions (including maltreatment and multiple socioeconomic risks) which are predictive of insecure and disorganized attachment patterns (Cyr et al., 2010; van IJzendoorn et al., 1999). They then face the challenge of developing new attachment relationships in their foster families, something rendered more difficult by insecure and disorganized attachment behaviors which tend to alienate caregivers, thereby failing to elicit the nurturing behaviors that children exposed to early adversity so desperately need. Mary Dozier and her team confirmed this in a series of studies with infants in foster care using a parent attachment diary; foster caregivers responded "in-kind" to their foster babies attachment behaviors (not

nurturing them if they did not show overt signs of distress, or getting angry with them if they resisted comforting; Stovall-McClough & Dozier, 2004). The self-perpetuating tendency of attachment insecurity and disorganization is concerning, because developing new secure attachment relationships in alternative families is a protective factor for children exposed to early adversity (McLaughlin et al., 2012).

A meta-analytic review found a similar distribution of attachment security patterns among both young children in foster care and low-risk children, although foster children did reveal a higher rate of disorganized attachment at a behavioral level (van den Dries et al., 2009). However, little is known about older children placed in foster care, who are likely to have experienced more cumulative adversity than children placed as infants. Furthermore, as children grow older, the attachment system moves to the level of representation, which is more resistant to change than attachment behaviors (Bovenschen et al., 2016; Román et al., 2012).

Attachment Representations in Foster Children

As children develop more advanced cognitive skills of representation and language, attachment behaviors become less explicit and children build generalized mental representations or internal working models about the availability of attachment figures and about the self as being worthy or unworthy of love, affection and protection (Bretherton et al., 1990; Thompson, 2008). However, despite their paramount importance for children in foster care, very few studies have sought to assess foster children's attachment representations.

A study in France with 40 children (4 to 10 years) in emergency foster care found that foster children had higher levels of disorganization and less security in their attachment representations than community children (Toussaint et al., 2018). Another study in Germany

assessed the attachment representations of 49 foster children aged between 3 and 8 years, together with attachment behaviors and a number of other child, placement and foster caregiver-related factors. Foster children were observed to have a higher level of disorganization but no less security or more insecurity (hyperactivation) than the low risk children from the standardization sample of the measure (Bovenschen et al., 2016). In a study with a small sample of Chilean children in foster care (n = 21), García-Quiroga et al. (2017) found that foster children not only had greater disorganization but also less security and more insecurity than their community counterparts. These three studies have used dimensional, continuous scores of attachment representations, which can provide a precise, complex and dynamic picture of the organization of the attachment system in children exposed to early adversity (Román et al., 2018). Continuous scores of attachment representations can reflect the endurance of insecure/disorganized while at the same time show the development of soe secure indicators common in this population after some time in caring foster or adoptive families (Hodges et al., 2003; Román et al., 2012).

In short, the findings reveal both a high level of disorganization in foster children's attachment representations and their potential for developing security at a representational level in foster care. These results are broadly consistent with related findings indicating that secure mental representations are more easily influenced by current circumstances, whereas disorganized representations tend to last longer among children exposed to early adversity (Hodges et al., 2003; Pace et al., 2014; Román et al., 2012; Toth et al., 2000). The group-level conclusions of the studies reviewed nevertheless mask a high level of outcome variability, with some foster children having mainly disorganized representations and many having mainly secure ones. The analysis of predictors of attachment representations among foster children may shed some light on this heterogeneity.

Predictors of Attachment Representations in Foster Children

Several factors have been found to predict individual variation in the attachment representations of foster children and other related populations. Exposure to maltreatment entails a lack of availability and attention to the child's needs in the case of neglect, as well as frightening experiences in the case of physical or emotional abuse, and as such has a devastating effect on children's attachment system (Cyr et al., 2010). It is related to more negative self- and parental representations, as well as to more disorganization (Hodges et al., 2003; Toth et al., 2000). In the study by Bovenschen et al. (2016), severity of maltreatment, particularly physical abuse, predicted higher disorganization. However, whereas some studies have found that, among maltreated children, those exposed to physical abuse manifest the most negative mental representations (Toth et al., 1997), others found no differential effects in accordance with type of maltreatment (Fresno et al., 2017; Stronach et al., 2011).

Another relevant factor is mental illness in one of the child's birth parents, which may be associated with role-reversal and atypical parenting behavior, leading to negative and disorganized representations in children (Madigan et al., 2006). This factor was found to predict less secure attachment behavior in the study by Bovenschen et al. (2016). As in the general population, gender is another relevant factor: girls consistently reveal more secure representations and boys more disorganized ones when assessed using narrative story stems (Pace et al., 2014; Pierrehumbert et al., 2009; Román et al., 2012), and foster children are no exception (Bovenschen et al., 2016).

Placement factors, such as number of placements, have also been found to predict disorganized representations (Toussaint et al., 2018), which is logical given the detrimental effect of placement changes for a wide range of outcomes and the separation from caregivers they entail (Fisher et al., 2013). Foster caregiver-related factors such as commitment, support for autonomy or state of mind regarding attachment have also been found to predict foster children's attachment outcomes (West et al., 2020).

Their relationship with their birth family may also influence foster children's attachment representations, since children in foster care often have ongoing contact with their birth family in the form of regular visits (Hess, 2014). Although visits with their birth family can be positive for some foster children, they can also be a source of emotional distress, particularly when the relationship between the two families (birth and foster) is not collaborative and when the visits are low quality (Boyle, 2015; Hess, 2014). Some studies have shown that more frequent visiting was related to loyalty conflicts for the children (which were in turn associated with more adjustment problems; Leathers, 2003). However, the association between birth family factors and foster children's attachment representations has not been empirically explored.

The Present Study

We intend to expand existing knowledge of the attachment representations of foster children by comparing them with those of community children who have not suffered early adversity. We also aim to analyze potential predictors of foster children's attachment representations, including maltreatment profile and type of maltreatment (abuse vs neglect), other pre-placement and adversity factors (time with birth family, mental illness in the birth parents, sexual abuse exposure), other placement factors (age of entry into care, placement with sibling, time in residential care, number of placements, time in current placement) and factors concerning children's current relationship with their birth family (positive or negative visits, and birth parents' opposition to the foster placement).

This study therefore had two aims: 1) to describe the attachment representations of foster children and compare them with those of a community group of low-risk children, considering the variability among foster children by differentiating subgroups based on the type and severity of their maltreatment experiences; and 2) to analyze the contributions made

by different potential predictors of security and disorganization at a representational level, including sociodemographic, maltreatment, pre-placement, placement and birth family variables. We expected to find that foster children had more disorganization and less security than the community group, and that the greatest differences (more negative and less positive) in security, insecurity, avoidance and, especially, disorganization would be found between community children and those foster children exposed to more severe maltreatment. Regarding predictors, we expected maltreatment variables (especially abuse) and number of placements to predict more disorganization. Although there are not many previous studies on which to base our predictions, we also hypothesized that time in current placement would be associated with more positive and less negative attachment representations indicators, that visits would be associated with positive and negative attachment representations depending on their emotional valence for the child, and that mental illness in birth parents, time in residential care and birth parents' opposition to the foster placement would be related to more negative and less positive attachment representations indicators.

Method

Participants

The sample comprised 109 children between the ages of 4 and 9 years: a foster care group of 51 children (27 girls and 24 boys) placed in foster families within the child protection system and 58 community children (29 girls and 29 boys) with no prior involvement with the child protection system or known history of early adversity. The mean age of the foster care group was 7.07 years (*SD* = 1.63), whereas in the community group it was 6.26 years (*SD* = 1.22). The eligibility criteria for the foster care group were being between 4 and 9 years old at assessment, having been in a non-kin foster placement for at least 5 months in one of two provinces in southern Spain and not having a severe disability.

Of the 65 potential participants, 52 participated and one was excluded after participation. Attrition analyses revealed no differences in available parameters (gender, age, and age of entry into care) between participating and non-participating children (see *deleted for anonymous review*). The community group was recruited through flyers in community schools located in different areas representative of various socioeconomic levels, in a medium-sized city in southern Spain.

Table 1 presents the descriptive data for the foster care group pre-placement and placement factors, including mean, standard deviation and minimum and maximum scores of continuous variables, and distribution of categorical variables. The sample had been exposed to a mean of 4.37 indicators of neglect and 2.27 of abuse, and displayed a mean of around one previous placement. The foster children had been a mean of 26.92 months (SD = 24.74; range 5-106 months) at their foster placement at the time of assessment. They entered the foster placement at a mean age of 4.82 years (SD = 1.95, range 0-8.67 years).

Over half of the birth parents opposed the foster placement. Of the total, 28 children (54.9 %) were in a long-term foster placement and 23 in a short-term foster placement (45.1 %); 13 foster care caseworkers (84.6 % women) also participated, providing information on all the foster children's past and current circumstances (each caseworker provided information on multiple children).

[TABLE 1 AROUND HERE]

Procedure

The families were visited in their home by two trained psychologists and researchers. While one researcher interviewed the main caregiver, the other administered different tests to the child, including the Story Stem Assessment Procedure (SSAP), which was video recorded. We also collected information on the foster children's pre-placement history,

adverse experiences and child protection trajectory from child welfare case records, with the assistance of caseworkers in the corresponding foster care agencies, who also provided information on the foster children's visits to their birth family. The data came from two different studies (*deleted for anonymous review)*, both approved by local Ethics in Biomedical Research Committees, guided by the Helsinki Declaration. Informed consent forms were obtained from all the main caregivers and verbal assent was acquired from the participating children (where applicable).

Measures

SSAP

We used the Spanish translation of the SSAP to assess attachment representations (Hodges et al., 2003; Román et al., 2018). As with other narrative measures, the administration of this measure entails the adult presenting different attachment-related dilemmas to the child using dolls representing a family and animals and then asking him or her "to show me and tell me what happens next". It includes eight story stems from the MacArthur Story Stem Battery (spilled juice, mum's headache, three's a crowd, burnt hand, lost keys, bathroom shelf, burglar in the dark, and exclusion; Bretherton et al., 2003) and five additional story stems devised by Jill Hodges and her team at the Anna Freud Centre to assess mental representations among children with experiences of maltreatment (crying outside, little pig, stamping elephant, picture from school and bikes; Hodges et al., 2003), making a total of 13 stems administered always in the same order. The session was recorded and transcribed for coding purposes.

The SSAP coding scheme includes 32 content and engagement indicators covering adult and child representations, avoidance maneuvers, aggression and disorganized indicators, rated in each story on a 0-2 scale ranging from *not present* to *definitely present*

(Hodges et al., 2004). These 32 indicators converge reliably on four global constructs representing dimensions of attachment-related mental representations: security (11 indicators of positive adult-child representations and coherent resolution of attachment-related conflicts), insecurity (seven indicators of negative adult and child representations and expectations of rejection and ignorance in the adult-child relationship), avoidance (eight indicators of lack of engagement with story and avoidance of dilemmas or attachment-related emotions) and disorganization (six indicators of dysregulated aggression, catastrophic fantasies, role-reversal, etc.; for more details on the SSAP coding system, see Hodges et al., 2003). The Cronbach's alphas were $\alpha = .81$ for the security scale, $\alpha = .72$ for the insecurity scale, $\alpha = .80$ for the avoidance scale and $\alpha = .83$ for the disorganization scale.

The transcripts were coded by the first and second authors (half each) and 20 % of the transcripts were coded by both authors, obtaining an inter-rater reliability of averaged kappas of between .89 and .97 in the four constructs. Both authors were trained and certified for the administration and coding of the SSAP at the Anna Freud Centre and University College London (London, UK).

Language skills

We used the receptive vocabulary subscale of the K-Bit (Kaufman & Kaufman, 1990) to assess language skills in the foster care group and the *Comprensión de Estructuras Gramaticales* (Understanding of Grammatical Structures; Mendoza et al., 2005) test in the community group. Vocabulary and grammar development are correlated, so a child in a certain relative position (percentile) within the population in vocabulary skills can be assumed to be in a comparable position in grammar skills (Jiang et al., 2018). In both cases we used the percentile scores based on the Spanish standardization norms of each measure.

Maltreatment

We collected the detailed maltreatment reports completed by child protection caseworkers upon the child's entry into the child protection system (Observatorio de la Infancia de Andalucía, 2011). These reports included several indicators for the main maltreatment types, scored dichotomously (0 = *not present*, 1 = *present*). In accordance with recent conceptualizations of maltreatment, we created a variable for abuse experiences (including physical and emotional abuse) and a variable for neglect or deprivation (including supervisory, physical and educational neglect), summing the total number of indicators for each child (14 for the abuse score, 21 for the neglect score; McLaughlin & Sheridan, 2016; Puetz et al., 2019). Higher scores therefore indicate greater exposure to each type of maltreatment. Both scales were found to have adequate reliability (abuse scale $\alpha = .82$, neglect scale $\alpha = .81$). See Table S.1 and Table S.2 in the Supplementary Material for a list of indicators pertaining to each scale.

Pre-placement, Placement and Birth Family Factors

We collected information on the foster children's sociodemographic, pre-placement, placement, and birth family factors by reviewing their case records, including mental illness in one or both birth parents, sexual abuse exposure, time in current foster placement, number of previous placements, time in residential care, and opposition of birth parents (one or both) to the current foster placement. All categorical variables were dichotomous and were assigned a value of 1 if that circumstance was documented in the case records and a value of 0 if it was recorded as not present, not applicable or unknown.

The "positive visits with birth parents" and "negative visits with birth parents" variables were constructed on the basis of two questions answered by the foster care caseworkers. We collected information on whom the foster children had visits with and the emotional valence of those visits for them. Of those foster children who had visits with either

their mother, father or both parents, those who had a negative emotional reaction ("nervous/anxious" or "rejection") were assigned a value of 1 in the negative visits with birth parents variable and those who had a positive emotional reaction ("positive/motivated") were assigned a value of 1 in the positive visits with birth parents variable. Due to the small number of children who had negative visits (n = 4), this variable was discarded and only the positive visits with birth parents' variable was used (see Table 1).

Data Analysis

To fulfill our first aim, we constructed two subgroups within the foster care group based on the type and severity of maltreatment experiences. The median of the abuse score was 1, indicating that roughly half of the foster care group had not suffered severe physical or emotional abuse, although almost the entire sample had suffered neglect. Given that previous studies had found subgroups of only neglected and neglected and abused children (Manly et al., 2001), we decided to divide the foster care group along the abuse median, not as an arbitrary cut-off point but rather as a meaningful point that split the group in two natural subgroups or "taxons" (Meehl, 1992). We then compared the two subgroups in terms of maltreatment and other placement and sociodemographic variables using Student's *t*-tests, with non-parametric bias-corrected accelerated (Bca) bootstrapped CIs for continuous variables and the chi-square test for categorical variables. Cohen's *d* is given as an indication of effect size.

We then conducted two rounds of four one-way ANCOVAs to determine the differences in attachment representations indicators between the foster care and community groups and between the neglected, severely maltreated and community groups, controlling for relevant covariates. A pre-analysis of the assumptions revealed that assumptions of normality and homogeneity of variance were violated in the models with insecurity,

avoidance and disorganization (with age as a covariate). We conducted the analysis reporting non-parametric bootstrapped Bca CIs for interpretation, since this method has been found to perform well with heteroscedastic and non-normal data (Carpenter & Bithell, 2000).

To fulfill our second aim, namely to analyze the predictors of secure and disorganized attachment representation indicators within the foster care group, we established a hierarchical regression model with each attachment representation indicator as a dependent variable and the maltreatment, placement and birth family variables of interest as predictors. We focused only on security and disorganization given their high correlations with the other indicators and their theoretical and practical relevance. This analysis was only conducted in the foster care group. Of all the variables deemed relevant on the basis of both theory and previous empirical findings, we selected for the models only those which were found to have a bivariate correlation with at least a small effect size ($r > .10$) with the dependent variable of interest. The two regression models met the assumptions of linearity, normality of error distributions and absence of multi-collinearity. A visual inspection of the plots of standardized residuals by standardized predicted values showed signs of heteroscedasticity in the model predicting disorganization. Since the wild bootstrap method has been shown to provide satisfactory inference when dealing with heteroscedastic disturbances in multiple linear regressions, we reported bootstrapped Bca CIs computed using the wild bootstrap method based on 2000 samples along with standardized coefficients for each predictor showing positive results (Astivia & Zumbo, 2019).

Results

Comparison of the Foster Care Group, The Maltreatment Subgroups and the Community Group in Relation to Attachment Representations

Maltreatment Subgroups

The foster care group was split along the median of the abuse score (Mdn = 1), resulting in a subgroup of 28 children with moderate exposure to neglect (M = 3.43, SD = 2.92; hereinafter, the *neglected* subgroup) and little or no exposure to abuse experiences (M = 0.69, SD = 0.48) and a group of 23 children with a moderately higher exposure to neglect (M = 5.52, SD = 3.69; $t(49) = -2.26$, $p = .028$, mean difference 95 % Bca CI [−4.27, −2.91], d = 0.63) and a much higher exposure to physical and emotional abuse (M = 4.22, SD = 1.59; $t(49) = -10.28$, $p < .001$, mean difference 95 % Bca CI [−3.96, −0.36], d = 3.00; hereinafter, the *severely maltreated* subgroup). The two subgroups did not show statistically significant differences in their distribution of other covariates (including language) and placement variables, with the exception of time in residential care (neglected M = 6.11 months, SD = 10.11; severely maltreated M = 1.17 months, SD = 3.31; $t(49) = 4.93$, $p = .021$, mean difference 95 % Bca CI [1.23, 8.86], d = 0.65) and time in current foster family (neglected M = 35.04 months, SD = 28.98; severely maltreated M = 17.04, SD = 13.21; $t(49) = 2.94$, p = .006, mean difference 95 % Bca CI [6.15, 30.33], d = 0.80). Differences were also observed in type of foster placement, with the severely maltreated group being predominantly in short-term foster care (70 %) and the neglected group being predominantly in long-term foster care (75 %; χ^2 (1) = 10.13, p = .002).

[TABLE 2 AROUND HERE]

Between-Group Comparisons for Attachment Representations

Our pre-analysis of potential covariates revealed that the foster care and community groups showed statistically significant differences in age (the foster children were slightly older) but not in language skills or gender distribution. The neglected subgroup was older than the community group, whereas the severely maltreated group was not. Given the

statistically significant associations between age and attachment representations indicators, this variable was included as a covariate in all the ANCOVAs.

Table 2 presents descriptive data for the attachment representations indicators in each group, along with the results of the ANCOVA and Bonferroni pairwise comparisons between the whole foster care group and the community group and between each maltreatment subgroup and the community group. Differences were found between the foster care group as a whole and the community group in security and avoidance, with a medium effect size. Large differences were found between the severely maltreated group and the community group in security and disorganization indicators, and differences with a small effect size were found in the same variables between the severely maltreated subgroup and the neglected subgroup. Both maltreatment subgroups had similar levels of avoidance, with a medium effect size difference with the community group.

Predictors of Attachment Representations in Foster Children

The following analyses of the potential predictors of attachment representations among foster children were conducted only with the foster care group. The correlation matrix between attachment representation indicators and potential predictors is presented in Table 3. Regarding the covariates, age showed statistically significant associations with security ($r = .42$, $p = .002$), insecurity ($r = -.32$, $p = .022$), and avoidance ($r = -.32$, $p = .024$). Being a male was associated with higher disorganization ($r = .30$, $p = .030$), whereas language skills did not show any statistically significant associations with attachment representations indicators. Avoidance correlated highly with security ($r = -.72$, $p = .000$) and disorganization with insecurity ($r = .79$, $p = .000$; see Table S.3 in the Supplementary Material).

[TABLE 3 AROUND HERE]

In the two multiple linear hierarchical regression models predicting security and disorganization, the covariates were entered in the first step and the selected predictors in the second step. The regression model predicting security explained 25 % of the variance, with only age (β = .21, 95 % Bca CI [.03, .44]) and time in residential care (β = .27, 95 % Bca CI [.09, .46]) predicting higher security. The regression model predicting disorganization explained 47 % of the variance. Being male (β = .26, 95 % Bca CI [.11, .42]), birth parents' opposition to the foster placement (β = .32, 95 % Bca CI [.11, .53]), and, especially, higher exposure to experiences of physical and emotional abuse (β = .42, 95 % Bca CI [.23, .61]) predicted higher disorganization. Mental illness in one or both birth parents also predicted higher disorganization (β = .27, 95 % Bca CI [.09, .48]). The full details of the regression models are presented in Table S.4 of the Supplementary Material.

Discussion

In this study, we sought to expand existing knowledge of the attachment mental representations of children in foster care. We compared their attachment representations with those of a community group of children with no experience of early adversity and separation, and we also established different maltreatment profiles within the foster care group in order to account for heterogeneity among foster children. Furthermore, we analyzed the contributions made by different potential predictors of individual variability in attachment representations. Our results revealed heterogeneity among the foster children's representations in accordance with their maltreatment profile, and identified several factors as predictors of variability in them, especially in relation to disorganization.

Comparison Between the Foster Care Group, The Maltreatment Subgroups and the Community Group in Relation to Attachment Representations

The moderate group-level differences observed between foster children and community children in security and avoidance partly confirmed our hypotheses. Although some studies have also found less secure attachment representations in foster children than in community children (Garcia-Quiroga et al., 2017; Toussaint et al., 2018), the most replicated finding is a high level of disorganization, which was present in one of the subgroups of our sample (severely maltreated subgroup) but less evident in the other and at a group level. However, the group-level results masked a high degree of heterogeneity among foster children. The foster children in our sample who had been exposed to more severe maltreatment (especially to physical and emotional abuse, but also to neglect) had fewer indicators of security and more indicators of disorganization in their narratives than their community counterparts. These findings are consistent with those reported by previous studies conducted with maltreated children (Cyr et al., 2010; Hodges et al., 2003; Stronach et al., 2011; Toth et al., 2000). Avoidance seemed to be unrelated to foster children's maltreatment profiles, as scores did not differ between the subgroups. No differences were observed between the foster group and the community group in terms of insecurity indicators.

The two maltreatment subgroups within the foster care group differed in several other variables linked to child protection policies, with severely maltreated children being younger, being placed mostly in a short-term foster care, having spent very little time in residential care and having been in their current foster placement for less time than their moderately neglected counterparts, a situation which seems to reflect a more urgent separation from the birth family. None of these variables were related to attachment representations, except for age (which was controlled for in the analyses) and time in residential care, which was found to have a weak positive association with security when analyzed in combination with other variables in the regression analyses.

Predictors of Attachment Representations in Foster Children

Very few of the variables studied predicted variability in foster children's security. Previous studies found that current rather than pre-placement factors are related to children's security and insecurity (both behaviorally and at a representational level), whereas disorganization is mainly predicted by past adverse experiences, a trend partially confirmed by our results (Bovenschen et al., 2016; Román et al., 2012). A weak association was found between length of time in residential care and more security. However, this finding should be interpreted with care given the study's low statistical power for detecting small effects. The subgroup analyses revealed that those children with less exposure to abuse and neglect had spent more time in residential care than those who had been severely maltreated, suggesting that it is probably these other adversity variables, clustered together with length of time in residential care, which underpin this finding.

As expected, boys had more disorganization indicators (although not fewer security indicators) than girls. This is consistent with most previous research using narrative measures with community and at-risk children (Bovenschen et al., 2016; Pace et al., 2014; Pierrehumbert et al., 2009; Román et al., 2012). Even though boys seem to be more vulnerable to adverse environmental experiences in general, some authors have argued that these gender differences may be methodological artifacts rather than true gender differences in attachment representations (Toth et al., 2013).

Birth parents' opposition to the foster placement was related to more disorganized attachment representations. Even though this is not a direct measure of loyalty conflicts, we consider it to be a reasonable proxy. For example, a qualitative study on the determining factors for the relationship between the foster and birth families found that birth parents' acceptance of the placement was a key element in building a positive relationship between families (Chateauneuf et al., 2018). This is consistent with the results of previous studies, which found that a conflictive relationship between the foster and birth families is associated

with more adjustment problems among foster children (Leathers, 2003; Linares et al., 2010). Further research is needed to replicate and confirm this finding.

Consistently with the findings of previous research, past adverse experiences were more related to disorganization than to security (Bovenschen et al., 2016; Hodges et al., 2003; Toth et al., 2000). Exposure to physical and emotional abuse predicted disorganization, whereas exposure to neglect did not to the same degree, a finding which replicates that reported by Bovenschen et al. (2016). However, other studies with maltreated children failed to find this differential effect on children's attachment representations (Fresno et al., 2017; Stronach et al., 2011). Considering the role of frightening caregiving experiences in the etiology of disorganized attachment (van IJzendoorn et al., 1999), it is only to be expected that highly frightening experiences, such as physical and emotional abuse, would predict disorganized mental representations. A mental illness in one or both birth parents also predicted more disorganized indicators, a finding which is consistent with that reported in the broader literature on precarious parental mental health as predictors of children's disorganized attachment (Madigan et al., 2006).

No significant association was found between any attachment representations outcome and time in current foster family, positive visits with birth parents, placement with sibling or number of placements. Due to the heterogeneity and size of the sample, it was difficult to identify any main effects of single variables, all of which likely interact with a myriad of other factors in most of these cases, which does not, of course, mean that they do not play a role. We expected number of placements to be related to disorganized attachment representations, since a previous study found this same relationship (Toussaint et al., 2018), although it is also true that another did not (Bovenschen et al., 2016). More information regarding the circumstances of the placement changes (e.g., whether or not they were due to

breakdowns) would help identify how placement transitions affect foster children's attachment representations.

Limitations and Future Directions

This study has several limitations, the principal ones being the small sample size, the highly heterogeneous nature of the sample and the cross-sectional design. Due to the low statistical power for disentangling factors and the fact that, consistently with a person-oriented approach, different adversity and placement factors clustered together, some of the results of the study and the true meaning of certain predictor variables are difficult to interpret. The study design also limits the interpretation of the direction of the effects observed, although well-established findings (e.g., maltreatment as a predictor of disorganized attachment) and the temporal precedence of most predictors suggest a predictor-to-outcome direction for the main results.

The heterogeneity of the sample also posed distribution problems that violated standard parametric assumptions, beyond sample size. We dealt with these distribution issues by using resampling procedures and providing bootstrapped confidence intervals for all analyses, which make no assumptions regarding the sample distribution and perform well in these situations (Carpenter & Bithell, 2000). Another limitation was the lack of information on foster family factors, which have been found to predict attachment representation outcomes in foster children and related populations.

Many of the limitations of this study could be overcome with a larger sample size and a longitudinal design. A larger sample size would allow for a better analysis of foster children's profiles, a promising research direction for explaining outcome heterogeneity in this population and detecting differential service needs. For its part, a longitudinal design would allow researchers to track changes in foster children's attachment representations and

to chart the evolution of child or foster family-related factors that either promote or prevent positive changes.

Conclusions and Implications for Practice

Despite these limitations, however, our study has relevant implications for both theory and practice in foster care. Very few previous studies have focused on the attachment representations of foster children and, to the best of our knowledge, only one has compared them with those of community children from the same context (Garcia Quiroga et al., 2017), and none have analyzed in detail some of the factors included in our study, such as relationship with birth family. This study is also the first to explore the attachment representations of foster children in Spain.

Our findings show how children in foster care have more negative attachment representations than community children from the same cultural context who have not suffered early adversity. They also highlight the heterogeneity of foster children's profiles and attachment representations: children placed in short-term foster care seem especially likely to have suffered more severe maltreatment and display mental representations with few positive expectations regarding adult figures or distress relief, coupled with a high level of disorganization and unresolved fear; whereas, besides some avoidance, children placed in long-term foster care do not appear to have much more negative representations than their typically-developing counterparts. Thus, foster families in short-term placements may need additional support and guidance to understand their foster children's behavior and provide therapeutic caregiving that could disconfirm and gradually change those mental representations.

Several factors were found to be related to foster children's attachment representations, particularly to disorganization. Exposure to physical and emotional abuse,

rather than to neglect, appears to strongly predict disorganized mental representations. We also found initial evidence suggesting that a factor linked to the quality of relations between the foster and birth families, birth parents' opposition to the foster placement, is associated with foster children's attachment representations. Although further research is needed to confirm this finding, initiatives promoting a cooperative relationship between the two families involved in a foster placement are likely to be beneficial to foster children's emotional security (Linares et al., 2010). These and other related findings contribute to gradually constructing a "road map" of foster children's attachment-related strengths and vulnerabilities, which may help guide practitioners and families as they support and care for these children.

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Table 1

Descriptive Data for Maltreatment, Placement, and Birth Family Variables in the Foster Care Group

	M (*SD*)	Min	Max	*n* (%)
Birth parents' mental illness	-	-	-	21 (41.2)
Neglect	4.37 (3.42)	0	18	-
Abuse	2.27 (3.43)	0	8	-
Sexual abuse	-	-	-	13 (25.5)
Number of previous placements	1.10 (0.86)	0	3	-
Time in residential care	3.88 (8.14)	0	34	-
Time in current foster placement	26.92 (24.74)	5	106	-
Birth parents' opposition to the foster care placement	-	-	-	30 (58.8)
Positive visits with birth parents	-	-	-	9 (17.6)

Note. All the time variable units are expressed in months.

Table 2

Descriptive Data, Analysis of Covariance and Pairwise Mean Comparisons of Attachment Representations, Controlling for Age, Between the Total Foster Care Group, the two Maltreatment Subgroups and the Community Group

			95 % Bca bootstrapped CI			Total FC (n = 51)	Neglected (n = 28)	Severely maltreated (n = 23)	Community (n = 58)
	F	Mean difference	Lower bound	Upper bound	*d*	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Security						3.51 (1.42)	3.92 (1.49)	3.01 (1.15)	4.03 (1.73)
FC−C	8.15**	−0.82**	**−1.34**	**−0.32**	**0.54**				
N−C		−0.46	−1.16	0.19	0.31				
SM−C	6.49***	**−1.19****	**−.1.83**	**−0.55**	**0.79**				
SM−N		**−0.72***	**−1.46**	**0.62**	**0.47**				
Insecurity						0.82 (0.67)	0.73 (0.58)	0.93 (0.76)	0.70 (0.78)
FC−C	4.13*	0.23	−0.55	0.51	0.31				
N−C		0.16	−0.12	0.49	0.22				
SM−C	2.87*	0.29	−0.06	0.65	0.41				
SM−N		0.13	−0.22	0.47	0.17				
Avoidance						0.72 (0.82)	0.68 (0.88)	0.79 (0.75)	0.51 (0.47)
FC−C	8.62***	**0.35****	**.10**	**0.59**	**0.54**				
N−C		**0.33**+	**0.01**	**0.75**	**0.52**				
SM−C	5.70**	**0.36***	**0.09**	**0.65**	**0.56**				
SM−N		0.03	0.90	−0.45	0.03				
Disorganization						0.63 (0.76)	0.42 (0.40)	0.88 (1.01)	0.45 (0.72)
FC−C	4.29*	0.29	−0.01	0.57	0.38				
N−C		0.10	−0.16	0.36	0.13				
SM−C	4.22**	**0.49***	**0.09**	**0.93**	**0.68**				
SM−N		**0.40**+	**0.03**	**0.77**	**0.54**				

Note. FC = Foster care; C = Community; N = Neglected; SM = Severely maltreated. Pairwise comparisons based on estimated marginal means controlling for age. 95 % bias corrected accelerated bootstrap CIs are reported. Values in bold indicate that the 95 % confidence intervals do not include zero.

*** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .010$

Table 3

Pearson Correlations Between Attachment Representations and Predictors

	5.	6.	7.	8.	9.	10.	11.	12.	13.
Outcome variables									
1. Security	.09	−.26	−.20	−.02	−.13	.42**	−.10	−.14	−.04
2. Insecurity	.16	.24	.26	−.02	−.05	−.06	−.09	.22	−.02
3. Avoidance	.01	.05	.18	−.12	.12	−.15	.10	.17	.05
4. Disorganization	−.25+	.44**	.47***	.03	.05	−.07	−.19	.25+	−.07
Predictor variables									
5. Birth cg. mental illness (1 = yes)		−.11	.08	−.40**	.12	.14	−.25+	.05	.03
6. Abuse			.47**	.20	−.23	−.25	−.39**	−.14	.01
7. Neglect				−.05	.10	−.18	−.22	.22	.21
8. Sexual abuse					−.28*	−.18	−.12	.12	−.27+
9. Number of placements						.27	−.05	.14	.19
10. Time in residential care							−.19	−.01	.22
11. Time in current foster placement								.08	−.18
12. Birth parents' opposition to the foster placement (1 = yes)									−.14
13. Positive visits with birth parents (1 = yes)									

*** $p < .001$, ** $p < .01$, * $p < .05$, + $p < .10$