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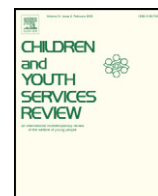
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The developing relationship between recently placed foster infants and toddlers and their foster carers: Do demographic factors, placement characteristics and biological stress markers matter?

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ABSTRACT

Background: Infants and toddlers often react to a foster family placement with avoidant behavior. Foster carers may interpret this as if the child is adapting quite well to the new family. This misunderstanding may lead to stress in the child and create a risk for an enduring relationship.

Objectives: To investigate the quality of newly formed relationships between recently placed infants and toddlers and their foster carers.

Methods: In a sample of 123 foster families interactions between foster children, aged between 6 weeks and 42 months, and foster carers were videotaped and coded according to a semi-structured procedure (Emotional Availability Scales; EAS). Foster carers were asked to fill in a parenting stress scale (NOSI-R). Children's case files were studied for demographic and placement characteristics. Samples of children's salivary cortisol were taken.

Results: 70–80 % of the children scored low on EAS responsiveness and involvement. The majority of foster carers did not perceive stress in the relation with their foster child (NOSI-R). The children who gave rise to relational stress tended to show higher levels of salivary cortisol.

Conclusions: If foster carers do recognise relational stress, this may indicate stress in the child. It is important that foster carers learn to recognise this shut off behavior as a possible risk factor because it may lead to maladaptation and chronic stress in young foster children. Implications for research and practice are discussed.

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1. Introduction

1.1. The effects of trauma and placement stress in foster children

Many children in foster care have histories of recurrent interpersonal trauma perpetrated by caregivers early in life, which are often referred to as complex trauma (Stein, Zima, Elliott, Burnam, Shahinfar, Fox, et al., 2001). These children experience a diverse range of reactions across multiple areas of functioning that are associated with exposure to trauma. Compared to children with other types of trauma, children with complex trauma histories have significantly higher rates of internalizing problems, posttraumatic stress, and clinical diagnoses, such as PTSS, anxiety disorders or depression (Greenson, Briggs, Gerrity, & Kisiel, 2011). They may present behavioral problems such as aggressive, defiant, impulsive,

overactive, or hyper-sexualized behavior (Crittenden, 1992). They may exhibit intense fears and anxiety related to situations associated with past trauma (for example, bathing, being left alone in a room, diaper changes) (Albus & Dozier, 1999; Heller, Smyke, & Boris, 2002). Their behavior may become challenging to the caregivers, leading to stress in the household and to an increased chance of early placement breakdown (Chamberlain et al., 2006; Gunnar & Barr, 1998; Silver & Dicker, 2007). Behavioral problems increase the risk of an early placement breakdown in case of caregivers who are not able to cope with the stressful situation (Barth et al., 2007). For more than one out of three foster carers, the severity of the child's problem behavior in the foster family is a reason for terminating the placement (James, 2004; Dorsey, Farmer, & Barth, 2008). The loss of birth family is in nearly all cases a traumatic experience for a child, as is replacement and re-abuse in care (Bruskas, 2008; Samuels & Pryce, 2008). Strijker and Knorth (2009) found that more than 55% of the foster children (0 to 18 years) have experienced at least one or more replacements in foster care. Their study reveals significant associations between the number of placements and the presence of attachment

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disorders, the severity of behavioral problems, and the breakdown of new foster care placements.

Replacements in foster care increase the risk of behavioral and emotional problems in the child (Chamberlain et al., 2006; Frame, 2002; Rhodes, Orme, & Buehler, 2001; Strijker & Knorth, 2009). Many former foster children report later in life about the devastating effects of having been moved (Newton, Litrownik, & Landsverk, 2000). They mention a profound feeling of loss (of the foster family and friends, of belongingness and self-esteem, and of being connected with the familiar neighborhood and school) as a result of being moved. They feel having been betrayed and lack trust in other people. These feelings frequently persist into adulthood (Rubin, O'Reilly, & Luan, 2007).

1.2. Stress and emotional availability between foster carer and foster child

Non-kinship foster carers and foster children do not have a joint history. Often the foster carer does not know the history of the child in full detail. It seems clear that the developing relationship between the foster carer and a young foster child is precarious in many ways. The conflicting emotions of the child and the insecurity in the relation with the foster carer may lead to elevated stress levels in the foster carer and the child (Dozier, Manni, Gordon, & Peloso, 2006; Leathers, 2004).

As a result, children who enter foster care, do so with a myriad of challenges, including developmental delays, mental and physical health problems, and attachment disorders (Dicker, Gordon, & Knitzer, 2001; Jonkman, Verlinden, Bolle, Boer, & Lindauer, 2013; Vig, Chinitz, & Shulman, 2005). Foster carers have to deal with the child's (problem) behavior and to provide a secure and stable environment for the child (Zeanah, Shaffer, & Dozier, 2011). This is a complicated but very important task. Recent research has shown that caregiver characteristics better predict placement stability and developmental outcomes than foster child characteristics do (O'Neill, Riskey-Curtiss, Ayon, & Williams, 2012). The caregiver needs certain skills to help the child, like 'monitoring the child, positive engagement, positive reinforcement, discipline and problem solving behavior' (Belsky, 1984). Biringen (2009) states that 'emotional availability' is a relevant concept in this regard. All reciprocal relationships include 'emotional availability', and this can be applied to different relationships that matter to the child, including foster family care. Emotional availability refers to an individual's emotional responsiveness and affective attunement to another individual's needs and goals; key is the acceptance of a wide range of emotions rather than responsiveness to solely distress situations (Emde, 1980). This not only means that the adult shows age-appropriate emotional signals to the child, but also the signals of the child to the adult have to be taken in account. Furthermore, it means that the adult shows adequate anticipating preventive behavior to help the child when necessary (Biringen, 2008). To be able to do so, the adult needs to be mindful when interacting with the child and not stressed (Brok & De Zeeuw, 2008). The presence of parental stress may influence the quality of the interaction in a negative way. This may go as follows: 1: parental stress is causally related to poor parenting, 2: poor parenting is causally related to problems in child's adjustment, but also 3: child's adjustment problems aggravate parental stress (Deater-Deckard, 1998).

Stress may be related to child factors, parental factors or life events (Loyd & Abidin, 1985).

Children who enjoy "emotionally available" relationships with their carers are less likely to react with aggression and less likely to be targets of aggression from other children, they have better peer relationships and they are more attentive at school. They are more likely to show secure bonding or emotional attachment. "Emotionally available" caregivers protect the child for developmental risk or the effects of trauma, because the child becomes more resilient (Brooks & Goldstein, 2001). Some relationships may have a "built in" mismatch as for example in foster care (Biringen, 2008).

1.3. The impact of foster care placement on infants and toddlers

Research on the risks mentioned above and on the emotional and behavioral problems of children in family foster care generally covers broad age ranges (Unrau, Seita, & Putney, 2008). However, less is known about the emotional and behavioral problems of foster children in specific age groups. Vulnerability may vary with age and developmental stages. Infants, for example, are very sensitive to the emotional tone of their environments (Dozier, Stovall, Albus, & Bates, 2001; Leve et al., 2012). Lack and loss of a caregiver as well as parental neglect have negative effects on children's stress regulation system (Dozier, Peloso, Lewis, Laurenceau, & Levine, 2008). The infant experiences grief and loss; for many, these negative experiences will be stored in memory forever (Felitti, 2009). Other negative experiences (trauma, exposure to violence) may influence the child as well (Felitti, 2009; Stein et al., 2001). Exposure rates for traumatic experiences in foster children approach 90% (Stein et al., 2001).

Holland and Gorey (2004) state that absence of problem behavior is the clearest manifestation of successful adjustment on the part of the child. They claim that most young children are able to adapt in a couple of days or weeks to the new foster family (Holland & Gorey, 2004). Others indicate that the way foster parents act is an important factor in helping the child to adapt to his/her new situation (Zeanah, Shaffer, & Dozier, 2011). Indeed, the claim of Holland and Gorey (2004) could be misleading. Infants and toddlers often adapt with avoidant behavior. At first glance, the child's behavior may seem to be adequate. It may only become notable as inadequate when the child does not actively appeal to the foster carer, especially when in need or in pain. In the meantime, children actually may be highly stressed which is not identified as (externalizing) problem behavior (Dozier et al., 2008). So, absence of problem behavior in the young foster child does not prove a successful adjustment to the new foster family.

In this study, we will explore the quality of the newly formed relationships between foster carers and infants/toddlers (6 weeks to 3.5 years of age), six to eight weeks after placement. The research questions are: 1) How can the interaction between foster children and their carers be characterized in terms of emotional availability and perceived parenting stress?

2) Which demographic and placement characteristics influence the quality of this interaction? 3) Is the interaction between foster children and foster carers influencing children's biological stress levels?

2. Method

2.1. Foster family care in The Netherlands

In 2013, 21.606 children in The Netherlands were living in family foster care (https://www.pleegzorg.nl/over-pleegzorg/factsheet/factsheet_pleegzorg_2013_def.pdf, 2014). In the Dutch foster care system, a short-term placement (less than six months) is normally intended to protect a child from harm, bring it in a safe environment, and prepare for reunification with the birth parents (Strijker, 2009). For a number of children, however, a transition to a long-term placement will be needed. Thus the children often experience at least two placements, which may pose an extra risk in itself. In 2013, 69% of the children in The Netherlands were living in long-term family foster care. Eighty-four percent of them were placed with non-relatives, sixteen percent with relatives (kinship care). About one third of the group was younger than five (Pleegzorg Nederland, 2014).

Before being licensed as a (non-kinship) foster parent, an introductory course has to be followed. This course has been developed according to the MAPP approach (i.e., Model Approach to Partnerships in Parenting (Dorsey et al., 2008; Strijker, 2009)). Furthermore, an assessment of the prospective foster carers is carried out by the foster care services, focusing on the parenting skills of the carers. During placement foster families are supported and evaluated by foster care workers. If

kinship carers are registered within the foster care services, they can appeal to get the same support when needed.

2.2. Sample

The study was part of a randomized controlled trial of the Foster parent–Foster child Intervention (FFI), with a first measurement (baseline) 6–8 weeks after placement and a second measurement six months later (Van Aniel, Grietens & Knorth, 2012). A convenience sample of 12 (out of 28) foster care services in The Netherlands participated (Babbie, 2001). Children were included in the study if the data collection could be carried out within 6–8 weeks after placement and if informed consent from both foster and biological parents was present at that moment. Also the expected duration of placement in the foster family had to be at least 6 months to be able to do the posttest in the RCT. Excluded were children with birth deficits, severe cognitive dysfunctions and problems leading to an indication for treatment as indicated by the foster care services (implicating that there was a high risk of placement breakdown if the child would be assigned to a 'foster care as usual' condition and/or that evident attachment or psychiatric disorders were present in the child). Based on these criteria, 123 infants and toddlers were included. Data was collected between July 2009 and August 2013; we supervised data collection to help foster care workers use the protocol of our study properly. Foster care workers from all participating institutions reported it was a major problem to meet the deadline of 6–8 weeks, because it was a narrow time frame to get informed consent from biological parents. This was the reason why many foster children who potentially met the inclusion criteria, could not participate in the study.

2.3. Instruments

2.3.1. Demographic and placement characteristics.

From the foster children's case files we collected information on demographic characteristics (i.e., age and gender), placement characteristics (i.e., number of replacements, kinship or non-kinship placement, contact with birth parents (frequency and duration of visits at the home of the parent or on "neutral territory"), foster carers' experience (duration of being a foster carer, number of other (foster) children), presence of other children in the foster family, short-term or long-term placement), and reasons for placement (maltreatment, psychiatric illness of a parent, addiction, etc.).

2.3.2. Parenting Stress Index (PSI) [Nijmeegse Ouderlijke Stress Index (NOSI-R)].

Foster carers were asked to complete the revised Dutch version of the PSI (Parenting Stress Index; Abidin, Jenkins & McGaughey, 1992) (in Dutch: Gereviseerde Nijmeegse Ouderlijke Stress Index or NOSI-R; De Brock, Vermulst, Gerris, Veerman & Abidin, 2006), a self-report questionnaire to measure stress in the family. The NOSI-R contains 85 items, describing the degree of stress, experienced by parents in two domains: (1) the Parent domain, rating the extent of stress the parent experiences in his/her role as a parent (for example: "I try to raise my child, but I always get the feeling I do something wrong"); and (2) the Child domain, rating parents' estimation of child factors that contribute to stress in the parent–child relationship (for example: "My child cries a lot more than other children do"). The items are rated on a 4-point scale (from 'totally not true' to 'totally true'). Norm scores from non-clinical reference groups of 927 mothers and 864 fathers of children between 2 and 14 years of age have been used (De Brock, Vermulst, Gerris, Veerman, & Abidin, 2006). Scores above the mean indicated more stress in the relation between the child and the carer. The reliability tested in parents with and without psychiatric symptoms proved to be high, and the validity has been assessed as 'good' (Evers, Van Vliet-Mulder & Groot, 2000).

2.3.3. Emotional Availability Scales (EAS).

The Emotional Availability Scales refer to a semi-structured procedure, which can be used to assess dyadic interactions between an adult and a child (Biringen, Derscheid, Vliegen, Closson & Easterbrooks, 2014) and covers six dimensions. Four dimensions relate to the adult's contribution in the interaction: sensitivity, structuring, non-intrusiveness, and non-hostility. Two dimensions focus on the child's contribution: responsiveness and involvement. All six scales can be scored from 7 to 29 points. Scores above 18 are considered to be acceptable to good (Biringen, 2008; Biringen & Easterbrooks, 2008), which implies a positive interaction between parent and child and a sufficient engagement to each other. For this reason, a score of 18 was taken in our study as the cutoff score, with scores <18 being considered as suboptimal or problematic. The EAS scales have acceptable psychometric properties (Biringen, Derscheid, Vliegen, Closson, & Easterbrooks, 2014), including indices of validity and reliability (inter-rater reliability was in the range of .76–.96). In addition, many studies have supported the theoretically expected relations between emotional availability and child–mother attachment, as well as attachment to professional caregivers (Baker & Biringen, 2015; Chaudhuri, Easterbrooks & Davis, 2009). Other studies have addressed the links between emotional availability in carer–child interactions and characteristics of caregivers (e.g., mental health; Goldman-Fraser, Harris-Britt, Thakkallapalli, Kurtz-Costes & Martin, 2010) and children (e.g., children with disabilities; Beeghly, 2012; Dolev, Oppenheim, Koren-Karie & Yirmiya, 2009).

2.3.4. Salivary cortisol.

Salivary cortisol is considered to be a reliable stress indicator, with increased levels of cortisol correlating positively with increased levels of stress (Westenberg, Bokhorst, Miers, Sumter, Kallen, Van Pelt & Blöte, 2009). After the HPA-axis (Hypothalamic–pituitary–adrenal axis) has matured, salivary cortisol concentrations show a diurnal variation: the concentration normally is very low at midnight, is the highest in the morning, and shows 50% of the morning concentration in the afternoon (Kiess, Meidert, Dressendorf, Schriever, Kessler, Schwarz & Strasburger, 1995). Cortisol diurnal activity reacts to variations in care quality among infants and toddlers (Gunnar & Donzella, 2002). Only a small amount of saliva (0.5 ml) is needed to measure cortisol concentration (Srivastava, Sharma, Uttam Singh Baghel, Yashwant & Neha Sethi, 2010).

2.4. Procedure

After informed consent was obtained from the birth parents (or legal representatives) and the foster carers, the children were signed up in the research. Master students from the Centre for Special Needs Education and Youth Care of the University of Groningen visited the foster families at home to record the interaction between a foster carer and the child during a 20 min video observation according to the EAS protocol. Our protocol did not prescribe which foster carer should interact with the child in the pretest, only that the foster carer in the posttest, had to be the same foster carer in the pretest. Only one foster father was included in the study. Foster carers were instructed to behave "as they were used to do" when interacting with the child. The foster carers were asked to fill in the NOSI-R and instructed on how and when to obtain the specimen of salivary cortisol. The students presented them a written instruction together with the items necessary to send the specimen to the lab.

The videotaped foster carer–foster child interactions were rated using the EAS. The tapes were assessed twice by two independent groups of trained professionals (2 persons, licensed by Dr. Z. Biringen to use the EAS, 4th ed. 2008) and trained students (4–6 persons, receiving an in company training to use the EAS 4th ed. 2008). If scores per dimension between the two groups differed more than five points, the video was analyzed a third time with both groups together and a

consensus score was established after discussion. This was the case in 5 of 123 video observations (4%). If scores per dimension differed less than five points, the mean score was taken. In one case, two children of the same family (within the age range for our study) had been placed together in the same foster family. Both children were included in the study.

From each child involved in the study two samples of salivary cortisol were collected with help of one of the foster carers. We asked the foster carer to obtain the samples during an ordinary day. The first sample was obtained in the morning within half an hour after awakening; the second sample was obtained before going to sleep in the evening on the same day. Foster carers followed a standardized written instruction. In the written instruction it was emphasized that samples should be taken on an ordinary day with no acute stressors present or to be expected (like illness, visits of biological parents). Furthermore, it was emphasized not to brush teeth within half an hour before the measurement (possible contamination with blood), and the foster carers were instructed that the second measurement should be carried out at least half an hour after dinner on the same day as the first measurement. Saliva was routinely collected twice in an ordinary day using salivettes with polyester wad (Sarstedt Ltd.), and subsequently analyzed using Ultra Performance LC (UPLC) followed by a tandem quadrupole mass spectrometer (Waters, Milford, MA, USA). The lower detection limit was 0.68 nmol/l, the mean intra- and inter-assay coefficients of variation were respectively 2.6% and 5.9%.

2.5. Analysis

To answer the question about characterizing the interaction between foster children and foster carers, we analyzed the EAS dimensions 'responsiveness' and 'involvement', followed by the 'experienced parenting stress' scores in both domains of the NOSI-R, using descriptive statistics. Difference in mean scores of 'responsiveness' and 'involvement' were analyzed with a paired sample t-test. The linear relationships within and between EAS and NOSI-R domains were explored using Pearson correlation coefficients.

To answer the second question we explored the relationships between demographic and placement characteristics, reasons for placement and foster children's reactions; we calculated percentages, and carried out chi-square analyses with the dichotomized scores on 'responsiveness' and 'involvement'. We dichotomized scores because we wanted to know from a clinical point of view whether the reactions of the child to the foster carer were qualitatively sufficient or insufficient (cut off score for suboptimal or problematic interactions: 18 points; Biringen, 2008). Children who showed a negative affect such as whining, tantruming, but also children who were emotional shut down, would get a scoring <18 points on responsiveness. A child might score <18 on involvement when he/she might involve the adult only instrumental rather than an emotional connection or he/she might signal not needing to play or interact with the adult (Biringen, 2008). Hence, the association between EAS dichotomized scores and demographic characteristics (age, 9 months of age and gender), placement characteristics (number of placements, experience of the foster carer, presence of other children in the foster family, short-term or long-term placement, (non) kinship care, frequency of visits to biological parents), and reasons for placement (known problems in the child, known problems in the parents) was tested by means of chi-square analyses. In addition, ANOVAs were carried out to explore relations between the continuous scores on EAS scales and these characteristics. We decided to dichotomize age into "9 months of age" and older than 9 months. This was based on research showing that at the age of 9 months children start to develop "stranger anxiety" and "separation anxiety" (DeHart, Sroufe & Cooper, 2000), which might lead to extra vulnerability for changes in relationships (as happens when a child is placed in a foster family).

To answer the third question, we analyzed the relation between experienced parenting stress (both NOSI-R domains) and cortisol outcomes. Multilevel linear regression models for cortisol outcomes were conducted with the children as highest level, and the two measures (morning and evening cortisol) per child as lowest level to account for dependencies between measures within children. Time (with categories morning and evening) and 'experienced parenting stress' scores were included as predictors, as well as the interaction between both. Fixed and random effects were included. P-values smaller than 5% were considered as significant. Similar analyses were performed with EAS domain scores and salivary cortisol.

Multilevel analysis was performed in MLwin, version 2.23. All other analyses were performed in SPSS, version 22.0.

3. Results

From all 123 children EAS videotaped observations were collected. In addition, 110 NOSI-R questionnaires (13 questionnaires were not correctly answered or not sent back) and 104 cortisol morning and evening samples (19 cases were missing) were collected. We did not find significant differences in demographic, placement characteristics or scores on EAS domains between the missing and non-missing group.

3.1. Demographic and placement characteristics

The mean age of the children was 18.8 months (age measured at the time the child was included in the research group; $SD = 14.5$ months), with 35% being younger than 9 months. Some skewness in the age distribution ($g = .36$) was present with very young children being somewhat overrepresented (0–2 months of age: 12.2%). More than half of the children (51.2%) were boys. The majority (84.3%) were non-kinship placements. For 38% of the children it was the first placement, for 44% it was the second placement, and 18% of the children had experienced more than two placements. Visiting arrangements with biological parents varied considerably: 16.3% of the children did not have any arrangements, 31.5% did have a visiting frequency of once in 14 days, whereas 22% did have a visiting frequency of once a month. Sixty-five percent of the foster carers had experience with prior placements or was having biological children.

In many case files (91.2%) (risks of) child neglect previous to placement was reported. In 44% of the cases a history of psychiatric problems in a biological parent and/or instability in child rearing was reported, and in 9.6% of the cases addiction to alcohol/drugs in (one of) the birth parents as well.

3.2. Emotional availability and perceived parenting stress

Cronbach's alpha was computed: EAS parent scales alpha: 0.81, EAS child scales alpha: 0.88 and alpha for all scales together: 0.86.

The coding of the videotapes using the EAS procedure showed the following outcomes (Table 1).

A paired sample t-test with responsiveness and involvement shows that both groups differ significant from each other: $t = 6.47$, $SE = 0.183$; $df = 122$; $N = 123$; $p < .01$.

Many children (67.5–81.2%) reacted in a suboptimal or problematic way to their foster carer. Furthermore, almost 40% of the foster carers scored 'insufficient' on the domain 'sensitivity', and about one third scored 'insufficient' on the domains 'structuring' and 'non-intrusiveness'. All subscales of the EAS positively intercorrelated (Pearsons' r between .36 and .83, $N = 123$, $p < 0.01$). No correlation was found between NOSI-R subscales and EAS subscales (Pearsons' r between $-.04$ and $.74$, $N = 107$, $p > 0.05$).

Table 2 shows the perceived parenting stress (NOSI-R Parent and Child domains) in foster carers, as compared to the general population norm, using two categories ('mean or below mean'/'above mean').

Table 1
Outcomes on EAS domains: Mean, SD, range, and percentage of foster carers scoring 'insufficiently' ($N = 123$).

EAS domain	Parental sensitivity	Parental structuring	Parental non-intrusiveness	Parental non-hostility	Child responsiveness	Child involvement
Mean	20.3	20.3	20.9	26.9	17.9	16.7
SD	3.8	3.4	3.5	2.1	3.3	3.6
Range	10–28	11–27	10–27	20–29	8–27	7–27
Insufficient ^a	39.8%	35.9%	31.6%	0.0%	67.5%	81.2%

^a Insufficient: score < 18 points.

Foster carers recognized 11.8% of the children as having problematic behavior leading to stress in the relation; 6.4% experienced a high level of stress related to their own performance as carer. Scores on both domains of perceived parenting stress were positively correlated (Pearsons' $r = .62$, $N = 110$, $p < 0.01$). Cronbach's alpha for NOSI-R Parent and Child domains in our study was 0.76. No significant correlations were found between EAS dimensions and NOSI-R domains.

3.3. Impact of demographic and placement characteristics

Using Chi Square analysis, we did not find a significant association between the dichotomized EAS scores 'responsiveness' and 'involvement' of the child on the one hand and gender, age, foster carers' experience with children, presence of other children in the foster family, number of replacements of the child, short- and long-term placement, frequency of visits to birth parents, known problems in the child (emotional problems, behavioral problems, somatic complaints, eating disorders) and known problems in the parents (psychiatric problems, addiction, illness) as reported in the original case files, on the other hand. We did find a significant difference between type of placement (kinship/non-kinship) and scores on responsiveness ($\chi^2 = 3.98$, $df 1$, $N = 112$, $p = .046$).

The ANOVAs showed one significant effect for younger or older than age 9 months with involvement. ($F = 5.6$, $df 1$; $p < .05$). ANOVAs with 'responsiveness' and these characteristics showed no significant effects.

3.4. Impact on children's biological stress levels

First, morning salivary cortisol (mean 8.53 nmol/l; $SD = 9.55$ nmol/l; range 70.5 nmol/l) and evening salivary cortisol (mean 1.82 nmol/l; $SD = 2.81$ nmol/l; range 16.9 nmol/l) were inventoried. There was a large difference in mean scores but also in dispersion of individual scores. A logarithmic transformation has been performed to solve the problem of homoscedasticity.

In Table 3 the results of the multilevel analysis are presented for the transformed measurements of salivary cortisol. Two models are distinguished: a model with 'experienced parenting stress' on the NOSI-R Child domain as predictor, and a model with 'experienced parenting stress' on the NOSI-R Parent domain as predictor.

The analysis showed a significant effect for the Child domain: a high level of 'experienced parenting stress' in the Child domain is most often found in families with children who showed a relatively high cortisol level for both morning and evening measures, and vice versa. For the Parent domain a similar trend was found; the trend, however, was not significant.

Table 2
Number and percentage of foster carers who experience parenting stress on NOSI-R Parent and Child domains (mean and above mean levels, $N = 110$).

	Frequency	Percentage
Perceived stress level in Parent domain		
Mean or below mean	103	93.6
Above mean	7	6.4
Perceived stress level in Child domain		
Mean or below mean	97	88.2
Above mean	13	11.8

Fig. 1 shows the measured cortisol level in a multilevel analysis model with the 'perceived parenting stress' level (Child domain) of the NOSI-R as a predictor variable.

Children of foster carers perceiving high parenting stress scores on the NOSI-R Child domain tended to have higher scores on salivary cortisol levels, especially in the morning, as compared to children of foster carers perceiving lower parenting stress scores. In contrast, both the continuous and the dichotomized EAS scores did not significantly relate with the cortisol levels measured in the morning and the evening.

4. Discussion

4.1. Significance of the findings

In this study, we focused on the quality of newly formed relationships between recently placed infants and toddlers and their foster carers and we explored the role of child and carer related characteristics as relevant factors.

Regarding the reaction of the children to their foster carer, it is notable that 67.5% of the children show a lack of responsive behavior to the foster carer and 81.2% show a lack of involving behavior as well. Biringen (2008) describes children showing this kind of behavior as reacting in an 'emotionally shut down' way; there is little or no eye contact with the (foster) carer. A shut down adaptation may seem normal for infants and toddlers who find themselves in a new situation, but it is also known that safely attached children turn to their carer when in need or in pain (Biringen & Easterbrooks, 2012). A majority of the infants and toddlers we observed do not show this kind of help seeking behavior when in need. An explanation may be found in the stressful adaptation to their new foster home, but child related factors like anxiety because of trauma/neglect in the past, attachment disorders or covert psychiatric disorders (such as an autism spectrum disorder which often is being diagnosed at a later age) may also contribute (O'Neill et al., 2012).

Children score slightly higher on EAS responsiveness compared to EAS involvement. This may be explained by the relatively young age of the children; very young children do have a relatively limited capacity to show involving behavior (Biringen, 2008).

Table 3
Effect estimates (and SE) of time (morning/evening) and 'perceived parenting stress' based on the NOSI-R child and parent domain.

Factors	Model with Child domain	Model with Parent domain
Fixed effects		
Time		
Morning	1.68 (0.10)	1.71
Evening	0.12 (0.08)	0.15
Perceived parenting stress		
High stress	0.48 (0.21)*	0.45 (0.27)
Low stress (reference)	–	–
Random part (variance level 2)		
Time		
Morning	0.89 (0.13)	0.93 (0.13)
Evening	0.61 (0.09)	0.61 (0.09)
Covariance	0.21 (0.08)	0.23 (0.08)

* $p < .05$.

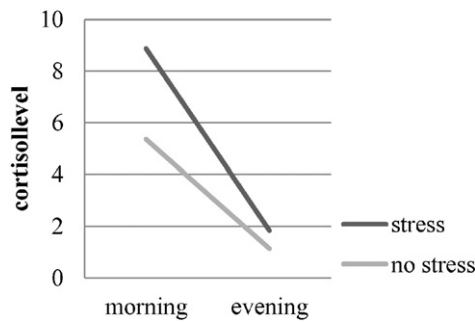


Fig. 1. Measured cortisol level by time and parenting stress level (Child domain).

Only a small percentage of the foster carers perceive stress in relation with the child (11.8%), which may be explained by the 'emotionally shut down' way of reacting of many children. However, this is notable because a considerable amount of questions in the NOSI-R focus on internalizing problems in the child. So, a difference seems to exist between stress reported by foster carers on the NOSI-R and observed reactions of the child on the EAS.

It is also interesting to note that 30–40% of the foster carers score 'suboptimal' on the EAS domains sensitivity, structuring and nonintrusiveness, which implies that 60–70% react on average or above. The following question raises: Do foster carers react in this way because of or despite the 'emotionally shut down' way of reacting of the child?

We found a significant positive correlation between EAS responsiveness and EAS involvement, and also between these EAS child domains and the way the foster carers' scores on sensitivity, structuring, and non-intrusiveness. Foster carers seem to react less sensitive, with less structuring and more intrusive behavior and with a tendency to be more hostile as well, when the child reacts in a nonoptimal or maladaptive way. Foster carers do not seem to recognize the child's low scores on responsiveness and involvement as an area of concern. Ideally, the caregiver uses specific skills to help the child, like monitoring, positive engagement, positive reinforcement, discipline and problem solving behavior (Belsky, 1984), which is reflected in higher scores on the EAS parent domain. Furthermore, within the NOSI-R Child domain, only a small percentage of foster carers experience relational stress because of the behavior of the child. The question is whether one can expect foster carers to develop a secure relationship with their foster child, when they are not fully understanding the meaning of the behavior of the child.

Demographic and placement characteristics have little influence on the interaction between the child and the foster carer. Only for kinship/non-kinship placement a significant difference was found. It was notable that the children scored higher on EAS responsiveness in the non-kinship placement group. We expected a difference in favor of kinship care. Some authors claim that kinship placements are preferable because they guarantee more stability. Kinship carers already know the child and vice versa; often they have developed a bond in the past and the kinship parents do know the biological parents (Smyke, Zeanah & Fox, 2010). On the other hand, kinship foster carers may be loyal to the biological parents and thus see the child as a temporary guest, and this may be reflected in the way they build a relation with the child. Recently, in a follow-up study of 1.215 alumni foster children, no difference was found between kinship care or non-kinship care regarding the child's well-being (academic achievement, behavior, and general health) (Font, 2014). It would be interesting to do a follow-up longitudinal study on the quality of the relation between foster carers and foster children and test differences in sensitivity in between kinship and non-kinship carers and responsiveness/involvement outcomes in children.

We did not find a significant association between EAS responsiveness/involvement of the child and the number of replacements the

child had experienced. This result is notable because it contradicts studies showing that moves in care significantly increase the risk of behavioral and emotional problems (O'Neill et al., 2012; Strijker & Knorth, 2009). A possible explanation may be that 40% of the children in our group still lived in the first foster care family and were under the age of 12 months. In addition, we believe that the length of time the children were living in their new foster family may have been too short (6–8 weeks) to develop these kind of behavioral problems. We did find a difference on '9 month of age' in involvement scores. The interpretation of this finding is difficult, because of the skewness of the scores in our research group. Involving behavior is still limited in babies (Biringen, 2008).

A next question is whether the child's stress, expressed in salivary cortisol levels, is related to the quality of the relation with the foster carer. It is known that many foster children have been neglected or maltreated previous to placement (Strijker & Knorth, 2009), and that this deregulates their stress system (Cicchetti & Rogosch, 2001). In our sample, 82.9% of the children has been neglected/maltreated in the past according to the case files. Furthermore, placement in foster care is considered to be a stressful life event (Dozier et al., 2006). A question that raises here is: are foster carers not able to recognize stress-associated symptoms or do they perceive a certain amount of stress in the relation as 'normal' because the child is new in the family? More research in a larger sample, including older foster children, is needed to answer this question.

Nevertheless, we actually found a small group of foster carers who did recognize symptoms in their foster child and reported relational stress. We found a significant relation between 'perceived NOSI-R stress' scores and cortisol levels of the child. This relation was strongest when the foster carer scored above average on the NOSI-R Child domain. This finding underlines the importance that foster carers carefully 'read' the behavior of the child. Indeed, when foster carers experience stress in the relation with the child, this is related to higher levels of salivary cortisol. However, we do not know if the stress in the child causes the stress in the foster carer, and/or vice versa.

We expected to find a relation between EAS variables as an indicator of the quality of the relationship between foster carer and foster child and cortisol outcomes. It seemed plausible that a problematic relationship would be associated with higher levels of stress and thus leading to higher levels of salivary cortisol. However, this was not the case. One reason for this lack of significance may be that the research group was relatively small. The power of our study has been calculated in relation to the expected intervention effect in the RCT, taking into account the effect sizes reported in similar studies (Hulley, Cummings, Browner, Grady & Newman, 2007). In addition, a rather large part of the sample consisted of very young children, which also may explain the lack of significance. It is known that the cortisol stress system in young children is still in development and it is a controversial matter at which age the system reacts at a mature level (Antonini, Jorge & Moreira, 2000; Edwards, Clow, Evans & Hucklebridge, 2001; Price, Close & Fielding, 1983).

4.2. Strengths and limitations

This study has a few strengths. It focuses on the budding relation between foster children and foster carers and on the importance of building a secure relationship between them. It notes the difficulties both foster carers and children face in this situation, and how a lack of 'behavioral excesses' identified during the child's initial adaptation to the home should be overlooked neither by providers, nor professionals. The study focuses on risks and opportunities to promote healing relationships for children in foster care. This is important because developing a secure relation with the child is what the child needs in the first place (Zeanah et al., 2011). Furthermore, as far as we know, this is one of the few studies focusing on infants and toddlers in foster care.

This study has also a few limitations. First, because of the strict inclusion criteria needed to study the evidence base of the FFI program, only 123 children could be included. This is a rather small number considering the fact that in The Netherlands about 21.000 children are living in a foster family on a yearly basis and about one third of this group is under the age of five (https://www.pleegzorg.nl/over-pleegzorg/factsheet/factsheet_pleegzorg_2013_def.pdf, 2014). A replication study in a larger sample of infants and toddlers is needed in order to generalize the findings of this study.

Second, we were not able to control how many children participated in the research. We do not know how many children were signed up in foster care and how many of them were indicated to join our research, because this was delegated to the foster care organizations. Foster care organizations in The Netherlands all use different intake and selection procedures. We also do not know how many children could not participate because they did not meet the inclusion criteria. This may have biased the selection of foster carers and/or children. We tried to minimize this risk by helping participating organizations with supervision and by focusing on their selection procedures during data collection.

A third limitation concerns the NOSI-R, which originally was developed for children between 7 and 12 years. Later, the age range was expanded from 2 to 14 years (Evers, Van Vliet-Mulder, & Groot, 2000). It may be that the relational stress experienced by foster parents of infants and toddlers is not fully covered by the NOSI-R items. This may explain their rather low scores on relational stress. Staal, Van den Brink, Hermans, and Schrijvers (2011) conclude that assessment of (early signs of) parenting and developmental problems in very young children uses to be difficult as no well-validated instruments are available.

Fourth, findings also have to be interpreted carefully because of missing data on NOSI-R scores and salivary cortisol. Most of the missing NOSI-R data were due to wrong answers (blanks) in the questionnaire. Because of our strict entry criterion of data collection within 6–8 weeks after placement, it was not possible to rectify these blanks by calling the foster carer and ask her/him about the missing data. Missing data on salivary cortisol could not be rectified as well.

A final limitation concerns the age of the children. A substantial part of our sample was babies, which may be too young of age to show a diurnal cortisol rhythm and a standardized reaction of the cortisol system to stress. Many researchers claim the stress system is still developing under one year of age (Antonini, Jorge, & Moreira, 2000; Edwards, Clow, Evans, & Hucklebridge, 2001; Van Andel, Jansen, Grietens, Knorth, & Van der Gaag, 2014). The very young age of the children may have led to difficulties in interpretation of the results on cortisol.

4.3. Implications for practice

Our study has implications for practice. It seems clear that the newly formed relationship between foster carer and the young foster child is precarious in many ways. It is plausible that the stress in the foster child often goes unnoticed, because of the child's shut down behavior. Foster carers may not notice the negative effects of placement on the well-being of the child. The risk, especially when the foster child is in the first year of life or has a (unidentified) developmental problem, may be considerable. The child may feel that the foster carer does not understand his/her needs, which may trigger unsafety and stress, and this in turn may contribute to longer lasting or chronic relational stress. Longstanding relational stress is a high risk factor for attachment problems, unhealthy social and emotional development, and somatic and psychiatric illness in later life (Wulczyn, Brunner Hislop, & Jones Harden, 2002).

As a clinical implication we recommend specific training for foster care workers. It is important that foster carers learn to recognize shut off coping behavior in their young foster child as a problem that needs attention. Foster carers need to learn to help the child cope in a different and more secure way. This will help to build the relationship and may help the child to cope with underlying trauma and stress.

Foster care workers also have to learn to identify this risk and to help foster carers deal with it in adequate ways. Foster carers in turn need to be educated and trained to identify symptoms of distress in their foster child and they have to learn to act in ways that improve the bond with the child in a sensitive and secure way. There is some evidence to support the positive impact of attachment-based interventions, especially in very young children (Kerr & Cossar, 2012). These interventions may help foster care workers and carers deal with the risks reported in this study.

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