

Cognitive Development and Social-Emotional Functioning in Young Foster Children: A Follow-up Study from 2 to 3 Years of Age

Heidi Jacobsen · Vibeke Moe · Tord Ivarsson ·
Tore Wentzel-Larsen · Lars Smith

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Abstract Foster children (FC) are at risk of delayed development relative to their peers due to early caregiver disruptions and adverse experiences prior to placement. Descriptive analyses and linear mixed effects (LME models) were used to analyse the cognitive development and social-emotional functioning of 60 FC and 42 comparison children (CC) at 2 (T1) and 3 years (T2). Changes in group differences between T1 and T2 were examined, and significant group differences occurred on all cognitive scales, with the FC obtaining lower scores than the CC. An analysis of social-emotional functioning revealed significantly more externalising, dysregulation behaviour and poorer competencies among the FC, which exhibited significantly better cognitive abilities and competencies at T2 than T1, with the exception of receptive language. The FC did not demonstrate more negative social-emotional behaviour at T2 (apart from more internalisation

behaviour), but failed to catch up with the CC. Young foster children need screening and support to improve their developmental potential.

Keywords Foster children · Cognitive development · Social-emotional functioning · Toddlers · Developmental catch-up

Introduction

Most foster children have experienced disruption related to their primary caregivers, which may be due to negative adverse parenting prior to placement [1–3]. These children are therefore at risk of developmental delays in both cognitive- and social-emotional development [4]. Even if they are institutionalised, foster children often experience an array of negative caregiving environments early in their lives before being placed in foster care [5–8].

Research has underscored the importance of early, nurturing caregiving environments on brain development [9–11], and the importance of positive brain–environment interaction during the first 2 years of life has also been documented by research on foster care and adoption [1, 12–14]. To help enhance healthy development, children need a supportive, contingent and stimulating caregiving environment [15], with this being particularly urgent for foster children [16]. Research on the development and functioning of young foster children is scarce, and longitudinal studies are thus needed to explore and understand possible developmental pathways [17, 18]. Key research issues related to foster children include the possible developmental significance of age at placement, and whether it is possible to identify an age of placement that is optimal for facilitating developmental catch-up.

H. Jacobsen (✉) · V. Moe · L. Smith
National Network for Infant Mental Health, Centre for Child
and Adolescent Mental Health Eastern & Southern Norway,
Oslo, Norway
e-mail: heidi.jacobsen@r-bup.no

H. Jacobsen · V. Moe · L. Smith
Department of Psychology, University of Oslo, Oslo, Norway

T. Ivarsson · T. Wentzel-Larsen
Centre for Child and Adolescent Mental Health Eastern &
Southern Norway, Oslo, Norway

T. Ivarsson
Institute of Neuroscience and Physiology, University of
Gothenburg, Gothenburg, Sweden

T. Wentzel-Larsen
Norwegian Centre for Violence and Traumatic Stress Studies,
Oslo, Norway

Research on cognitive development in foster children is important, as the possibility to help such children may be lost if they are not identified early. Promising results on cognitive developmental catch-up have been reported from studies on Romanian foster children who experienced extreme neglect before placement. In the Bucharest Early Intervention Project (BEIP), 136 institutionalised children were randomly selected to either continued institutional care or placement in foster care, in addition to being compared with a group of children who had never been institutionalised. Since foster care was virtually non-existent in Romania at the time of the study, foster parents were selected and trained to meet the needs of severely deprived institutionalised children. Cognitive functioning was assessed at the age of 30, 42 and 54 months using standardised developmental tests. The results showed that children in foster care had significantly better cognitive outcomes when compared with children remaining in institutions, but that these outcomes were significantly lower than those reported for children who had never been institutionalised [19].

Furthermore, in the American National Survey of Child and Adolescent Well-Being (NSCAW), 353 infants were observed from age 13–66 months using developmental tests. The foster children exhibited significantly lower levels of cognitive development compared to children adopted or reunified with their biological parents [7]. Similar problems in cognitive development have been identified in preschool foster children [8], girls in foster care [20] and young foster children with different histories of abuse experiences [21].

Behavioural problems among foster children are also important to identify early because foster parents may have difficulties identifying and responding to foster children's problem behaviour [22]. Infants and young children in foster care need help in regulating their emotions and developing healthy social-emotional functioning [23]. The possibility of identifying social-emotional problems among young foster children from 6 months to 5.5 years has been documented. Using screening instruments, 24 % of the foster children were identified as having social-emotional problems [24]. Moreover, in preschool foster children, those with a history of both abuse and neglect revealed lower social-emotional functioning compared to children with a history of neglect only [21].

There may not be a unique pattern typical of foster children's development in all domains, and in terms of social-emotional functioning; problem behaviour among foster children may actually increase during their stay in foster care. When released from care, foster children who were first placed between the ages of 0–9 years demonstrated significantly more problem behaviours than those who remained with their biological parents who were mistreating them, or those who were placed with relatives [25]. However, in the BEIP study, children who were

placed in foster care at either the age of 30 or 42 months showed significantly higher levels of attention and positive affect at the age of 56 months, as well as a reduction in internalising disorders [26], compared to those who remained in institutions. It should be noted though that those remaining in institutions received extremely varied levels in the quality of care. In addition, the children who remained in institutions demonstrated more signs of reactive attachment disorder. However, disinhibited behaviour was also apparent among the foster children at the age of 30 and 54 months [19]. The possibility for a positive development in social-emotional functioning in foster children investigated for first time as infants and then followed up at 66 months was shown in a study by Lloyd and Barth [7]. There was no difference between those reunified with their parents, adopted or placed in foster care, and the majority were within the non-clinical range on the child behaviour checklist (CBCL). Moreover, foster children may function within the normal range even if that is not the case for all [27].

How the age at placement, reasons for placement and number of placements, respectively, relate to child cognitive development and socio-emotional functioning are also key questions concerning foster care. In a study investigating the frequency of developmental problems in young children aged 1 month to 7 years, children placed after their second birthday were reported as having significantly more developmental problems (including physical development) than those placed earlier [28]. These results were supported by findings in the BEIP. A catch-up in language development was possible if children were placed before the age of 15 months [19], and in cognitive development if the foster children had not had an experience of institutional care and were placed in foster care before the age of 24 months [11]. In another study, most placement history variables were not associated with better developmental outcomes, except that the age at first placement had a moderate positive association with executive functioning, with those placed older than at 2 years performing better [8]. In adoption studies, an age as low as 6 months has been suggested as an ideal age for the best outcome in cognitive development [13], while in terms of social-emotional functioning, a study by Lawrence et al. [25] revealed that age at first placement was not associated with problem behaviour.

Previous caregiving experiences are most likely closely linked to the reasons for placements. Accurate data concerning foster children's caregiving experiences prior to placement is often difficult to determine [29]. As to the reasons for placement, being removed primarily because of neglect or emotional abuse was negatively related to several domains in cognitive development [8]. Contrary to these findings, no associations between the reason for

placement and developmental problems were found in a study by Horwitz et al. [28].

Foster children are at risk for placement disruptions and therefore experience a number of placements [30], while the association between the number of placements and developmental outcome in foster children has been investigated to a certain extent. Contrary to expectations in the NSCAW study, the number of placements was not associated with lower levels of cognitive development or more problem behaviour [7]. Contrary to the findings in a study by Lawrence et al. [25], children with more social-emotional problems experienced more placements. Support for negative outcomes in social-emotional behaviour when experiencing multiple placements was found in a study of foster children aged 2–17 years [17], as well as for those experiencing a number of previous placements [8, 31].

Even if findings related to cognitive development and social-emotional functioning among foster children reveal certain challenges, many studies report that children improve in foster care [32–34]. Many children adjust well, and long-term foster care has been shown to be a good option in many cases [35]. Living in a stable placement in a family setting appears to be an important factor for enhancing the cognitive development of foster children [1], and often leads to improved social-emotional functioning and a reduction in negative outcomes [36]. However, placing children in foster care can be a challenging intervention for young children. How foster children develop when placed in permanent foster care requires further study.

Child protection services in high-income countries vary in terms of whether foster care is seen as an appropriate and suitable option for children in need of new caregivers. In Norway, foster care rather than adoption or institutional care is prioritised as a first option when children are taken into custody by child protection services (CPS). This is because the aim of the Norwegian foster care system is to provide long-term stable placements and to give children the opportunity to live in a foster home until they leave between the ages of 18 and 22, with foster children in Norway usually experiencing a low number of different placements [37]. In December 2010, a total of 8,787 children aged 0–22 years were in foster care in Norway [38] compared to a total of 408,425 children recorded in the US in September 2010. The proportion of the total foster population in Norway and the US is nearly the same [39]. However, at this time, only 4.9 % of foster children in Norway were in the age group 0–2 years compared to the US, where approximately 20 % were between the ages of 0–2 years.

The Present Study

This study forms part of a national follow-up investigation of development and attachment in young foster children.

The present article has two key aims: firstly, to investigate cognitive development and social-emotional functioning of foster children at 2 and 3 years of age, and to assess their potential to catch up with their age-matched peers during the third year of life. Secondly, the study aims to investigate whether the cognitive development and social-emotional functioning of foster children are related to the age at which the children were removed for the first time from inadequate care, the reasons for their placement and the number of placements they experience. Hence, the following research questions were posed:

1. Do young foster children differ from their age-matched peers in terms of cognitive development and social-emotional functioning at the age of 2 and 3 years, respectively?
2. If the cognitive development and social-emotional functioning of foster children are poorer when compared with their peers at the age of 2 years, are young foster children able to catch up with children who are living with their biological parents by the time both reach the age of 3 years?
3. How are the cognitive development and social-emotional functioning of foster children related to their age at first placement, the reasons for their placement and the number of placements?

Methods

Participants

At T1, the sample consisted of 60 foster children (FC) (24 girls) aged 22–25 months ($M = 23.3$, $SD = 0.7$) and 42 comparison children (CC) (21 girls) aged 22–24 months ($M = 23.2$, $SD = 0.5$). At T2, there were 56 FC (21 girls) aged 34–36 months ($M = 35.2$, $SD = 0.4$) and 40 CC (21 girls) aged between 35 and 36 months ($M = 35.2$, $SD = 0.4$). Forty-six (76.7 %) of the FC children and 39 (92.9 %) of those in the CC group were of Norwegian ethnicity. The average birth weight of the FC was significantly lower than that of the CC, being 3,146 g versus 3,493 g ($p = .001$). Nine FC (15 %) were born prematurely, as compared to none of the CC.

As shown in Table 1, the main participants in both groups were primarily female caregivers, and the caregivers in both groups were typically married and of Norwegian ethnicity. All families except one were two-parent households. To record the combined educational level of female and male caregivers, a three-point scale was used (see Beckett et al. [40]): “Both low” indicated that neither caregiver had a level of education above secondary school; “Low/high” indicated that one caregiver had a level of

Table 1 Sample characteristics of caregivers in the two groups

Characteristics	FC (n = 60)	%	CC (n = 42) ^a	%	p value
Gender of main participant					
Female	55	91.7	39	92.9	.826
Marital status					
Married	48	80.0	28	66.7	.199
Cohabiting	12	20.0	13	31.0	
Earlier	0	0.0	1	2.4	
Married/ cohabitating					
Ethnic origin of female caregiver					
Norwegian	55	91.7	41	97.6	.382
Norwegian/other	2	3.3	0	0.0	
Other	3	5.0	1	2.4	
Ethnic origin of male caregiver					
Norwegian	58	96.7	39	92.9	.226
Norwegian/other	0	0.0	2	4.8	
Other	2	3.3	1	2.4	
Education both caregivers					
Both low	23	38.3	3	7.5	<.001*
Low/high	21	35.0	8	20.0	
Both high	16	26.7	29	72.5	
Working out of home					
Female caregiver	30	50.0	32	78.0	.004*
Male caregiver	54	90.0	40	100.0	.039*
Mean family income (USD)	131970 (SD 32366)		144868 (SD 40020)		.079
Mean age of caregiver					
Female	37.8 (SD 5.4)		33.6 (SD 4.0)		<.001*
Male	39.7 (SD 5.2)		36.7 (SD 5.3)		.005*
Mean number of children	2.5 (SD 1.2)		2.0 (SD 1.1)		.046*

^a Characteristics were not reported by all participants, therefore the numbers do not necessarily equal 42

education not above secondary school, while the other had additional two to four years or more of full-time higher education, whereas in households ranked as “Both high”, both caregivers had two to four years or more of full-time higher education. As shown in Table 1, the group difference in the level of education was significant ($p < .001$). Most typically, both foster parents had a low level of education, whereas in the CC group both parents usually had higher education. Despite the difference in educational attainment, there was no significant group difference with regard to household income, with significantly more parents in the CC group working out of home ($p \leq .039$). The

foster parents were significantly older than parents in the comparison group ($p \leq .005$), and there was a significant difference noted between the groups ($p = .046$) in terms of the total number of children in the household at T1.

Characteristics of the Foster Group

The age of the children at first placement (i.e. the age at which they were removed from their biological family) varied between 1 and 565 days ($M = 141.2, SD = 159.4$); the age of their final placement varied between 2 and 662 days ($M = 248.3, SD = 176.5$). Most children were moved (from presumably inadequate caregiving) before the age of 6 months ($n = 40$), some between age 6–12 months ($n = 12$). Eight children were placed when they were older than 12 months. The CPS worker was asked to state the reasons for the placements by selecting two out of seven pre-selected possible options, including: parental substance abuse, parental psychiatric problems, parental mental disabilities, parental caring abilities, home violence, maltreatment and abuse (of all kinds). Cross tabulation showed that for 12 FC (20 %) a combination of substance abuse and parental caring abilities was stated as the reasons for placement. Eleven FC (18.3 %) were placed due to substance abuse and other reasons specified on the list, while for 33 FC (55 %) parental caring abilities and other reasons on the list were declared. Only four FC (6.7 %) had been placed for other reasons on the pre-selected list. Because the frequencies of these other reasons were lower, only two separate variables for reasons of placement were included in the analysis, namely “parental caring abilities” and “parental substance abuse”.

Nineteen children had had one placement (including those who had been placed directly from hospitals shortly after birth), 33 had had two placements and eight children had been moved three times or more. Children with more than one placement had experienced an emergency shelter home as their first placement, though none had experienced institutional care. The length of time the children spent in their current foster home varied between 2 and 23 months ($M = 15.1, SD = 5.8$); 56 children were placed in non-kinship and four in kinship foster care. The number of visits by the biological parents ranged between 0 and 18 times per year ($M = 6.5, SD = 4.0$). Lastly, nine (15 %) had experienced some type of abuse (physical, emotional or sexual), but only one to a serious degree.

Of those who had responded 51 (87.9 %) of the foster mothers and 49 (86.0 %) of the foster fathers at T1 had participated in PRIDE Training, a programme to recruit and train foster parents before they are certified [41]. At T1 of those who had responded, 14 (24.1 %) of the foster mothers and 14 (25.5 %) foster fathers had not received any form of supervision after placement, while 11 foster families (18.3 %) had one additional foster child living in the family.

Procedure

Participants were recruited throughout Norway during 2009 and 2010, and 70 foster parents and 46 comparison parents were invited to participate. Of these 60 foster parents and 42 comparison parents agreed to participate. The foster children and their foster parents were recruited through the Norwegian Directorate for Child, Youth and Family Affairs (Bufetat) and through direct contact with the community Child Protection Services (CPS). Only foster children placed in long-term foster care were included in the study. All foster children should have lived in the foster home for at least 2 months at the time of the first assessment. If the CPS allowed a child to be included, the foster parents were asked if they would like to be given more information about the study. If they agreed to participate, informed consent was sent by mail, signed by both foster parents and then returned. The biological parents of the foster children were not involved in the study, and permission was obtained from the Norwegian Ministry of Children, Equality and Social Inclusion to recruit the foster children who were in the care of the CPS without needing the informed consent of the biological parents.

One important reason for enrolling a comparison group was a lack of Norwegian norms for measures employed in the present study. The CC were primarily recruited through kindergarten and public health centres at the same sites as the study group, either after their parents had attended an information meeting held by the first author or been contacted by the head of the kindergarten. Once information about the study had been given, consent was obtained in the same way as it had been obtained from the foster parents.

Inclusion was based on agreement from the caregivers and the CPS after they had read and signed a written informed consent form. The dropout rate was minimal, only consisting of four FC (three girls and one boy) and two CC (two boys). The reasons for the dropout among the FC were as follows: one child was moved to another foster home, one foster family received a very ill new foster child, one foster family was dissatisfied with the study procedures and one foster family did not return at T2. In the CC group, one family did not give any reason for dropout, and one family did not respond when contacted. The researchers decided that children could only be excluded from enrolment in the study on the grounds of severe physical handicap or developmental retardation.

The intention was to match the caregivers in the FC and CC groups on caregiver education; however, this was not entirely successful. As a group the foster parents had a lower level of education. It was therefore decided to use caregiver education as a covariate in the analyses. The study did not intend to recruit caregivers in the comparison

group of a similar social-economic status (SES) to those of the biological families of the foster children, but rather to the SES of the foster parents who constitute the actual caregiving environment of the foster children. To use a comparison group of low SES may mask important differences and protective factors [42].

All observations and tests were done in a laboratory setting during a single day, and questionnaires were mostly completed at home after the observations were completed.

Measures

The Mullen Scales of Early Learning (Mullen Scales)

The Mullen Scales [43] is an individually administered measure of cognitive functioning in children from birth to the age of 68 months, which consists of four cognitive scales (Visual Reception, Fine Motor, Receptive Language and Expressive Language) as well as a Gross Motor scale. The reliability and validity of these scales have been found to be satisfactory, and since Norwegian norms were not available, the present study was based on US norms. Separate analyses of the four cognitive scales were undertaken for each participant using the ASSIST software programme, and T-scores were calculated using a mean of 50 and an SD of 10. T-scores of 30 or below (i.e. two SDs below the mean) are seen as an indication of significant developmental delay and therefore as a sign that an early intervention is warranted. All the children in the present study were included in the analysis, including those who did not attend at T2. One foster child was not testable at T1 because of severe attention problems, while another refused to perform on any of the tasks on the Receptive Language scale. The first author, who is a clinical psychologist with experience in testing children in this age group, tested all children at both T1 and T2. The caregiver was present during the testing procedure, but was told not to assist the child in any way.

The caregivers in both groups were given brief verbal feedback about the performance of their children on the Mullen Scales when they were tested at 2 and 3 years of age. If there were concerns about a child's developmental outcome, the first author asked the caregiver if she/he needed assistance or advice. If so, the caregiver was encouraged to seek help and to contact the first author if needed.

The Infant-Toddler Social and Emotional Assessment (ITSEA)

ITSEA [44], which was used to assess the children's social-emotional development, is a caregiver report measure used to identify social-emotional problems and competence in

children from the age of 12 months up to the age of 35 months and 30 days. The following behavioural domains are assessed using ITSEA: Externalising, Internalising, Dysregulation and Competence, with T-scores being calculated for each of these. A score of 1.5 SD above or below the mean was considered to be “of concern”. If possible, missing data were obtained by contacting the caregivers, although very few data were missing, and all the domains could be calculated in accordance with the requirements of the manual [44]. ITSEA was administered at T1 and again at T2. At T2 some of the children had just passed the age of 35 months and 30 days. In such cases, the calculation of the T-scores was done on the basis of the norms for children aged 35 months and 30 days. A Norwegian translation of the questionnaire was used, but Norwegian norms were not available. In the present study, the report provided by the main participant was used.

Caregiver Questionnaire

Both caregivers were asked to complete questionnaires, which included details related to social-economic data and information about family size. Questionnaires were completed after the assessment at T1 and T2, respectively, primarily after the observations had been made. The foster parents were also asked to answer additional questions about their experience as foster parents, supervision and visitations from the biological parents, with the response rate at T1 being 94.1 % for female and 89.2 % for male caregivers, and at T2, 90.2 and 85.3 %, respectively.

CPS Questionnaire

Retrospective data relating to the foster children were obtained from the CPS at T1, and a CPS worker was asked to complete a questionnaire based on the information in the case file. The questions were about the age of the child at the first and last placement, the number of placements, the reasons for placement, the number of visitations with the biological parents and the child’s possible adverse caregiving experiences before placement. The CPS questionnaire was completed for each foster child.

Statistics

Descriptive statistics and independent sample t-tests were used to analyse the sample characteristics. Linear mixed effects (LME) models were used to analyse the changes in the Mullen and ITSEA scores between the age of 2 and 3 years, with fixed effects including the interaction between group and time, as well as an adjustment for birth weight, gender, parental education, and a random intercept. The number of included participants for the

complete sample and the foster children only was 100 and 60, respectively for Mullen Scales and 98 and 58 for ITSEA, and the model fit was investigated by plots of the residuals by fitted values and by normal plots of the residuals [45]. We also estimated a linear mixed effect model within the foster group only, with time and age at first placement, and parental caregiving abilities and parental substance abuse as covariates. Analysis of variance (ANOVA) was used to compare the Mullen and ITSEA scores at T1 and T2, in addition to the T2-T1 differences for placement at the age of 6 months, between age 6–12 months and after 12 months. Analyses used the R statistics programme (The R Foundation for Statistical Computing, Vienna, Austria). The R package nlme [45] was used for the analysis of the mixed effects models, and SPSS version 18 (IBM SPSS, Armonk, New York, USA) was used for other analyses.

Results

Mullen Scales

A graphical analysis confirmed that the LMEs had a satisfactory fit for all of the Mullen Scales. As shown in Table 2, the FC obtained significantly lower scores than the CC on all Mullen Scales ($p \leq .005$), both at T1 and T2, except for Receptive Language at the age of 3 years, where no statistically significant group difference was identified ($p = .062$). The FC obtained a significantly higher score at T2 compared to T1 ($p \leq .004$) on all scales except for Receptive Language, where no significant test age difference was identified ($p = .053$). An identical pattern emerged for the CC, for whom significantly higher scores were reported at T2 compared to T1 ($p < .001$) on all scales, except for Receptive Language, where the CC had significantly lower scores at T2 compared to T1 ($p = .002$). The group differences at T1 compared to T2 were not significantly different, thus no significant time by group interactions on any of the Mullen Scales ($p \geq .264$) was identified.

A descriptive group analysis, including the four cognitive scales of Visual Reception, Fine Motor, Receptive Language and Expressive Language, revealed that both the FC and CC—with just one exception—obtained mean T-scores within the normal range at T1 as well as at T2. The exception was Expressive Language; the FC scored somewhat below the normal range at T1 (see Table 3).

Birth weight was positively related to fine motor performance only ($p = .047$), while gender was significantly related to performance on all Mullen Scales ($p \leq .026$), with girls performing better than boys (see Table 2).

Table 2 Mullen Scales of Early Learning at 2 (T1) and 3 (T2) years of age: Interaction between group and time, and differences between and within the foster group (FC) and the comparison group (CC)

	Coef.	(95 % CI)	<i>p</i> value
Visual reception			
Group by time			.282
Group (2 years) ^a	−9.5	(−14.2, −4.9)	<.001*
Group (3 years) ^b	−11.9	(−16.7, −7.2)	<.001*
Time (foster) ^c	4.2	(1.3, 7.0)	.004*
Time (comp) ^d	6.6	(3.2, 9.9)	<.001*
Birth weight ^e	0.2	(−0.1, 0.6)	.194
Sex ^f	5.5	(2.0, 8.9)	.002*
Education low/high ^g	2.1	(−2.6, 6.7)	.380
Education high/high ^g	3.8	(−0.9, 8.5)	.112
Fine motor			
Group by time			.718
Group (2 years) ^a	−8.2	(−12.8, −3.5)	.001*
Group (3 years) ^b	−8.9	(−13.6, −4.1)	<.001*
Time (foster) ^c	6.0	(3.5, 8.5)	<.001*
Time (comp) ^d	6.7	(3.7, 9.6)	<.001*
Birth weight ^e	0.4	(0.0, 0.7)	.047*
Sex ^f	4.5	(1.0, 8.1)	.013*
Education low/high ^g	1.6	(−3.1, 6.4)	.496
Education high/high ^g	2.4	(−2.4, 7.2)	.329
Receptive language			
Group by time			.264
Group (2 years) ^a	−6.2	(−10.4, −1.9)	.005*
Group (3 years) ^b	−4.1	(−8.4, 0.2)	.062
Time (foster) ^c	−2.3	(−4.7, 0.0)	.053
Time (comp) ^d	−4.4	(−7.2, −1.6)	.002*
Birth weight ^e	0.2	(−0.1, 0.5)	.226
Sex ^f	3.6	(0.4, 6.8)	.026*
Education low/high ^g	3.2	(−1.1, 7.5)	.142
Education high/high ^g	4.4	(0.1, 8.8)	.046*
Expressive language			
Group by time			.296
Group (2 years) ^a	−6.9	(−11.4, −2.5)	.003*
Group (3 years) ^b	−8.9	(−13.4, −4.4)	<.001*
Time (foster) ^c	9.0	(6.6, 11.4)	<.001*
Time (comp) ^d	11.0	(8.1, 13.9)	<.001*
Birth weight ^e	0.0	(−0.3, 0.3)	.995
Sex ^f	4.6	(1.3, 8.0)	.007*
Education low/high ^g	3.3	(−1.2, 7.8)	.151
Education high/high ^g	3.1	(−1.5, 7.6)	.185

^a Time 3 years versus 2 years, foster group^b Time 3 years versus 2 years, comparison group^c Difference foster versus comparison group at 2 years^d Difference foster versus comparison group at 3 years^e Per 100 grammes^f Girls versus boys^g Reference group low/low**Table 3** Mullen Scales of Early Learning: Mean T-scores and standard deviations at 2 (T1) and 3 (T2) years of age

	Foster children (FC)		Comparison children (CC)	
	Mean	SD	Mean	SD
T1				
Visual Reception	45	8.0	57	8.6
Fine Motor	40	9.6	50	8.0
Receptive Language	50	12.0	59	8.8
Expressive Language	39	8.7	47	8.6
T2				
Visual Reception	49	13.1	64	10.6
Fine Motor	45	11.6	57	10.9
Receptive Language	48	6.5	55	8.1
Expressive Language	48	12.5	58	6.6

ITSEA

A graphical analysis confirmed that the LME had a satisfactory fit for the externalising-, internalising-, dysregulation- and competence behaviour scales. As shown in Table 4, the FC exhibited significantly more externalising behaviour ($p = .011$) at T2 and more dysregulation behaviour at both T1 ($p = .017$) and T2 ($p = .002$) compared to the CC. When compared with the CC, the FC demonstrated significantly less competence behaviour at T1 ($p < .001$) and T2 ($p = .007$). Children in both groups showed significantly more internalising behaviour at T2 ($p \leq .022$) compared to T1, and finally, the FC were reported to show significantly more competence at T2 compared to T1 ($p = .008$). The group differences at T1 compared to T2 were not significantly different, thus no significant time by group interactions for any of these domains ($p \geq .060$) were identified.

Descriptive group analyses, including the four ITSEA domains—namely, externalising, internalising, dysregulation and competence—revealed that neither the FC nor the CC obtained scores were “of concern” in any domains at either T1 or T2 (see Table 5).

Gender was significantly related to the internalising ($p = .044$) and to the dysregulation domains ($p = .002$), with girls displaying more negative behavior than boys (see Table 4). Parental education was positively related to the dysregulation domain only ($p = .026$).

Analysis Including Foster Children Only

The LME analysis, which included foster children only, did not yield results that differed substantially on any of the Mullen Scales or the ITSEA domains compared to an analysis that included all the children. The age at

Table 4 Infant–Toddler Social and Emotional Assessment at 2 (T1) and 3 (T2) years of age: Interaction between group and time, and differences between and within the foster group (FC) and the comparison group (CC)

	Coef.	(95 % CI)	<i>p</i> value
Externalising			
Group by time			.211
Group (2 years) ^a	4.4	(−0.7, 9.3)	.092
Group (3 years) ^b	6.7	(1.6, 11.8)	.011*
Time (foster) ^c	1.8	(−0.6, 4.2)	.141
Time (comp) ^d	−0.6	(−3.4, 2.3)	.695
Birth weight ^e	−0.2	(−0.6, 0.2)	.281
Gender ^f	3.8	(−0.1, 7.7)	.058
Education low/high ^g	−2.7	(−8.1, 2.6)	.310
Education high/high ^g	−2.1	(−7.4, 3.3)	.442
Internalising			
Group by time			.985
Group (2 years) ^a	4.0	(−0.4, 8.5)	.075
Group (3 years) ^b	4.0	(−0.5, 8.5)	.080
Time (foster) ^c	3.2	(0.9, 5.5)	.008*
Time (comp) ^d	3.2	(0.5, 6.0)	.022*
Birth weight ^e	0.0	(−0.3, 0.4)	.869
Gender ^f	3.5	(−0.1, 7.0)	.044*
Education low/high ^g	−3.6	(−8.2, 1.1)	.130
Education high/high ^g	−2.5	(−7.2, 2.2)	.298
Dysregulation			
Group by time			.350
Group (2 years) ^a	6.1	(1.1, 11.1)	.017*
Group (3 years) ^b	8.3	(3.3, 13.4)	.002*
Time (foster) ^c	0.3	(−2.7, 3.4)	.830
Time (comp) ^d	−1.9	(−5.5, 1.7)	.298
Birth weight ^e	−0.0	(−0.4, 0.3)	.829
Gender ^f	6.0	(2.3, 9.7)	.002*
Education low/high ^g	−5.2	(−10.2, −0.2)	.041*
Education high/high ^g	−6.8	(−11.9, −1.8)	.008*
Competence			
Group by time			.060
Group (2 years) ^a	−10.0	(−14.9, −5.1)	<.001*
Group (3 years) ^b	−7.0	(−11.9, −2.0)	.007*
Time (foster) ^c	2.8	(0.7, 4.8)	.008*
Time (comp) ^d	−0.2	(−2.7, 2.2)	.843
Birth weight ^e	−0.0	(−0.4, 0.4)	.992
Gender ^f	1.4	(−2.5, 5.3)	.483
Education low/high ^g	0.9	(−4.4, 6.2)	.735
Education high/high ^g	1.4	(−3.9, 6.8)	.595

^a Time 3 years versus 2 years, foster group

^b Time 3 years versus 2 years, comparison group

^c Difference foster versus comparison group at 2 years

^d Difference foster versus comparison group at 3 years

^e Per 100 grammes

^f Girls versus boys

^g Reference group low/low

Table 5 Infant-Toddler Social and Emotional Assessment: Mean T-scores and standard deviations at 2 (T1) and 3 (T2) years of age

	Foster children (FC)		Comparison children (CC)	
	Mean	SD	Mean	SD
T1				
Externalising	52	11.7	47	7.6
Internalising	49	10.2	45	9.3
Dysregualtion	46	10.4	38	8.7
Competence	44	11.7	55	7.5
T2				
Externalising	54	12.5	46	8.1
Internalising	53	9.9	49	8.0
Dysregualtion	46	13.7	36	10.6
Competence	46	10.4	54	8.7

placement, the reasons for placement and the number of placements were not significantly associated with any of the Mullen Scales or the ITSEA domains, but those children who were placed predominately because of parental substance abuse performed significantly better on expressive language compared to those without such experience (a difference of 8.3, 95 % CI 2.8 to 13.8, *p* = .004). ANOVA, including the variable age at placement, divided into placement before the age of 6 months, between 6 and 12 months and later than 12 months, did not reveal any significant differences for either T1 and T2 exclusively, or when comparing T2 to T1.

Discussion

The present study had two aims: (1) To investigate the cognitive development and social-emotional functioning of foster children at 2 and 3 years of age, and their potential to catch up with their age-matched peers during the third year of life; (2) To analyse the relationship between the age at first placement, the reasons for placement, the number of placements and the children’s cognitive development and social-emotional functioning.

The results related to the cognitive development and social-emotional functioning of the foster children were mixed. First, the foster children performed less well developmentally at the age of 2 and 3 years compared to the children in the comparison group, and were unable to close the gaps in most of the measured developmental scales and domains. Interestingly, the foster children’s performance at both time points was mostly within the expected norms, and was not socially-emotionally reported by their caregivers as displaying problem behaviour and

competencies within what could be regarded as a zone “of concern”.

As to the second aim, neither cognitive development nor social-emotional functioning of foster children were significantly related to the age at which the children were removed for the first time from inadequate care, the reasons for their placement or the number of placements they experienced.

The finding that the foster children in this study were cognitively behind their age-matched peers at both 2 and 3 years of age is supported by other recent research on foster children [19]. In the BEIP study noted earlier, foster children were found to perform better than those children who had remained in institutions, although less well than those who had never experienced foster care [19]. Additionally, foster children in the NSCAW study performed less well cognitively than those who had been adopted or reunified with their biological family [7]. However, a comparison of the results of the present study with those obtained in other studies is not without its difficulties. In particular, Romanian foster children in the BEIP study experienced institutional care, and some had been reported to exhibit signs of disinhibited attachment, which was not the case for the children in the present study. Furthermore, the fact that most research to date on cognitive development among foster children [8, 20, 46] has included children older than what was the case in the present study may add to these difficulties. It may be argued that the children in the present study fared well, but it should be noted that the group differences found in the present study were close to one standard deviation. Similar results have been reported in a study of children born to substance abusing parents placed in well-functioning foster homes [47].

The performance of the foster children was promising insofar as the results were within the normal range on most scales; thus, the results in the present study concur with research on foster care and adoption among older children [13, 19]. On the other hand, the differences in the performance of the foster- and comparison children in the present study was found not to decrease between the ages of 2–3 years, thereby suggesting that there are still persistent challenges associated with the cognitive development among young foster children. The fact that the children in the comparison group also performed better at age 3 may mean that the foster children in the present study were actually *less* competent at the age of 3 years than suggested by our results, which were obtained using standard scores based on old test norms, as IQ scores tend to increase over time—a change known as “The Flynn effect” [48]. Hence, it could be argued that the foster children were actually *below* the normative range on most of the Mullen Scales. Another possible explanation for the differences in cognitive development between the two groups might be in

terms of differences in caregiver IQ. In the present study, data were not collected prior to placement, and it was therefore not possible to conduct IQ tests on the biological parents. In addition, conducting IQ tests on the caregivers in both groups would be ethically questionable.

Previous research has shown that foster children tend to experience problems related to social-emotional functioning [49, 50], although they often show improvement while in foster care [32]. The present study found that the foster children functioned less well socially-emotionally at the age of 3 years compared to the children in the comparison group, though the causes and persistence of such behavioural problems are unclear. It is commonly assumed that when such problems occur in infancy they may be partially related to neurobiological factors [51], and that helping such children may therefore be particularly challenging. Nevertheless, even though the foster children did demonstrate more problem behaviour than the comparison children, the problem behaviour did not increase over time within most domains. One plausible explanation for why problem behaviour did not increase may be due to the fact that the present children were placed in stable long-term foster care. In contrast, Lawrence et al. [25] found that the behavioural problems of foster children may actually increase during their time in foster care. Unlike the foster children in previous studies [25, 52], the foster children in the present study did not exhibit social-emotional problems that could be ranked as being “of concern”.

There is a dearth of research related to the behavioural competence of foster children, although it has recently become clear that early placement and long-term foster care may provide a window of opportunity for healthy development. Several studies have shown that stable placements advance the healthy development of foster children [17, 53], which is a finding corroborated by the present study. Moreover, the present foster children were found to increase their social-emotional development between the ages of 2 and 3 years.

The role of age at first placement, the reasons for placement and the number of placements for the development and functioning of foster children were also investigated in the present study. Contrary to previous findings such as those by Nelson et al. [11] and Smyke et al. [19], no age-related effects were detected. Studies have yielded differential results, as researchers have attempted to ascertain whether the timing of foster placement and adoption (at the age of 6 months, 12 months or after 24 months) represents a cut-off for optimal development [13, 14, 54, 55]. Because most of the children in the present study were placed before the age of 12 months, and all before the age of 24 months, identifying a relationship between age at placement and developmental outcome was not feasible due to a lack of data variance. One key point

should be noted: the relatively promising results may be due to the children's early placement in foster care, as it is probable that their negative caregiving experiences were minimised.

In the present study, the reasons for placement were computed into two variables, "parental caring abilities" and "parental substance abuse". Placement because of other abusive experiences were included in one of these two variables, and could therefore not be identified as an independent reason. Except that children who were placed due to parental substance abuse performed better on expressive language, no relations were detected. Why these children performed better on expressive language remains a puzzle and could be a random effect. Another hypothesis may be that since these children so obviously were in need of early intervention, they received much attention and help from the child protection services before placement as well as in the foster home. Although a history of abuse has been reported to worsen the developmental outcome of young children in foster care [21], very few children in the present study were reported to have had such experiences to a serious degree. A detailed knowledge of foster children's early experiences before placement is often difficult to obtain [29, 56], as was the case in the present study.

The role of the number of placements in the present study was in keeping with the findings of the NSCAW study, which reported that the number of placements (zero, one and two or more) was not associated with the children's development. Nonetheless, in their study of 4- to 5-year-old adoptive children, Lewis et al. [57] reported an association between higher levels of problem behaviour and the number of placements in foster care before adoption. Within a Norwegian context in the present study, being placed twice often implied that the children had been placed in two relatively well-functioning foster homes. If the children experienced two placements, the first placement was most typically in an emergency shelter home. In Norway, emergency shelter caregivers are specially trained to identify and help young foster children with their challenging early caregiving history. Together with the relatively good quality of such homes, the low number of placements may therefore explain why the number of placements was not associated with the development and functioning of the foster children.

The present study has several limitations. First, there is a question of generalisability, as the study comprised 60 young foster children, and though the foster children were recruited from all over the country, they may not be seen as being a representative population of foster children. A further question is whether the foster care system in Norway is qualitatively better and has different goals, including fewer placements for young foster children, than foster care systems in comparable high-income countries. It could

be that research on similar populations of foster children in other countries might reveal different results. Second, caregiver education, which is known to be an important predictor of childhood IQ, differed between the two groups, thus making interpretations difficult. However, the data analyses were adjusted for variations in the caregiver's education. Since there were more boys than girls in the foster group, the effects of gender were also controlled for. Third, other limitations of the study comprise scarce information about the foster children's histories before placement, an absence of information regarding the IQ levels of the biological parents, as well as a lack of information about the genetic disposition of the children. Lastly, the sample size of foster children was not large enough to allow for an analysis of the association between cognitive development and social-emotional functioning in relation to gender, birth weight and caregiver education in the foster group exclusively.

Foster children constitute a vulnerable and heterogeneous group in need of continuous follow-up from early life, although their needs are not easily identified [58]. The lack of longitudinal data on foster children placed very early makes it hard to state what the best predictors of later development and functioning are. Consequently, the foster care system is in need of significantly better routines and processes to help facilitate the development of foster children through infancy, preschool and adolescence. The results of the present study serve to highlight the importance of focusing on early screening and intervention in order to increase the quality of a child's caregiving environment. Studies that longitudinally follow-up early-placed youngsters will contribute significantly to increasing our knowledge of the development and functioning of foster children when they are placed within well-functioning, long-term foster homes.

Summary

Foster children are in danger of developmental setbacks in both cognitive- and social-emotional development. Hence, the first aim of this study was to investigate whether young foster children differed from their age-matched peers in terms of cognitive development and social-emotional functioning at the age of 2 years and again at 3 years. If the foster children were found to be lagging behind the comparison group at 2 years, would they be able to catch up with their age-matched peers living with their biological parents by the age of 3 years? The second aim of the study was to analyse the relationship between the age at first placement, the reasons for placement, the number of placements, the children's cognitive development and their social-emotional functioning. Cognitive measures

demonstrated that the foster children performed less well compared to their age-matched peers, although they scored significantly higher at T2 compared to T1 on most scales. The results of the social-emotional assessment were less clear, as foster children exhibited significantly more dysregulation behaviour at both T1 and T2, and more externalising behaviour at T2, when compared to the comparison children. However, the foster children did not increase in negative behaviour at T2, with the exception of externalizing behaviour, though they increased their competence behaviour. At this early stage, age at placement, the reasons for placement and the number of placements were not found to be related to the cognitive development and social-emotional functioning of the foster children. Although the foster children performed within the normal range, they lagged behind the comparison children. Hence, longitudinal research is necessary to investigate whether the differences detected early in life will continue to influence their later development and functioning.

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