Social functioning and mental health among children who have been living in kinship and non-kinship foster care: Results from an eight-year follow up with a Norwegian sample.

Abstract

Objective: Studies have shown relatively high rates of emotional and behavioural problems among children living in out-of-home care. This study reports the prevalence of social problems at an eight-year follow up for a group of children/young adults. Predictors for prevalence and change in emotional and behavioural problems at the follow up are examined.

Methods: A prospective cohort design with 233 children who had been living in foster care was used. Forty-eight per cent (n = 111) of those interviewed at baseline were located and interviewed at follow up. Mean age was 17.4 (SD = 2.9) years. Mental health symptomatology was measured with Child Behaviour Checklist (CBCL) and Adult Self Report (ASR). Linear and generalised mixed model analyses were used.

Results: Changes in internalizing and externalizing problems from baseline to follow up was associated with gender. Boys showed more problems at a young age, whereas girls developed more problems later. Predictors for social problems at follow up were mental health at baseline, kinship care and care placement away from the local community.

Keywords: foster care; kinship; gender; mental health; social functioning; longitudinal

Introduction

Studies identifying mental health problems among children in foster care are often compromised by methodological limitations (Taussig & Clyman 2011; Winocur et al., 2009). There is a need for more studies that use a longitudinal design that control for baseline

functioning when assessing the effects of foster care interventions. Longitudinal studies are needed to profile the patterns of children's and youth's mental health problems over the course of their stay in foster care. Such studies can make it possible to identify what sorts of treatment and support that are needed. The first aim in this study is to examine the prevalence of social problems and changes in behavioural and emotional symptomatology at an eight year follow up among boys and girls who were court-ordered into out of home care.

Population studies have reported differences according to gender distribution for self-reported psychological distress in adolescence, with girls reporting more health problems than boys. This gender difference increases with age (Ravens-Sieberer et al., 2009). Yet, many studies on behavioural and emotional symptomatology do not address gender differences when assessing the development and expression of conduct problems among children and youths (Loeber & Keenan 1994, Tiet, Wasserman, Loeber, McReynolds, & Miller, 2001). In their review, Berkout, Young and Gross (2011) argue that "differences found between boys and girls with regard to conduct disorder (CD) and related etiological factors argue for a stronger effort towards the inclusion of female participants by future researchers" (p. 509). The second aim is therefore to study if gender is a predictor for changes in conduct problems among children living in foster care or kinship care.

Prevalence and predictors of mental health problems among children in foster care

The health of children in foster care has been extensively reviewed (Jones & Morris, 2012). Several studies have documented relatively high rates of emotional and behavioural problems among children and youths in child welfare care compared to the general population using

normed problem checklists reported by parents, foster parents and teachers (Holtan et al., 2005; Keller, Salazar, & Courtney 2010; Ringeisen, Casanueva, Cross, & Urato 2009; Shin 2004; Tarren-Sweeney 2008). Studies have also indicated that there is a link between placement stability and child well-being (Berger, Bruch, Johnson, James, & Rubin 2009). In addition to the age at entry into foster care, the strongest predictors of mental health problems among children in foster care are having an intellectual disability and experiencing cumulative early adversity, e.g., the type and amount of abuse and neglect experienced (Jones & Morris 2012; Tarren- Sweeney 2008). The use of mental health services by youths in foster care is higher compared to those in the general population (Ringeisen, Casanueva, Cross, & Urato 2009). In a two year follow up study (n = 49), Vanderfaeillie, Van Holen, Vanschoonlandt, Robberechts, and Stroobants (2013) found that behavioural problems among children in foster care were quite stable but that a clinically significant increase in problems was observed in 18 cases. Clinically significant increases in problems were related to parenting strategies but not to the type of foster care experienced or to demographic characteristics. In a two year follow up with an Australian sample (n = 53) that only examined average changes, Fernandez (2008) found no difference in the amount of children scoring in the clinical range for mental health problems between baseline and follow up. In a five year longitudinal study, Taussig (2002) found that mental health problems at baseline predicted later delinquency, substance abuse and sexual risk behaviours.

Current evidence suggests that children in kinship foster care may fare better than those in non-kinship foster care with regard to behavioural development and mental health functioning. In a review by Winokur, Holtan and Valentine, 2009 it was found that in seven different studies (Davies, 2005; Holtan, Rønning, Handegård, & Sourander, 2005; Jones Carena 1998; Rudenberg 1991; Strijker, Sandberg, & Van Der Maulen 2003; Tarren-Sweeney & Hazell 2006; Timmer, Zedlar, & Urquiza 2004) behavioural development was measured in

kinship and non-kinship foster care using the Total problems scale from the Child Behaviour Checklist (CBCL). Children in kinship foster care had lower reported levels of internalising and externalising behaviour problems than those in non-kinship foster care. The systematic review (Winokur et al. 2009) revealed a statistically significant, small overall effect size for all of the studies using the CBCL scale as their measure. In a study of 270 children in England comparing kin and non-kin placements, Farmer (2009) found no differences in behaviour problems, but children in non-kin placements were significantly more likely to have been recorded as having experienced emotional difficulties than those in kin placements. Other studies have shown no differences in health outcomes between children living in kin versus non-kin foster care (Fechter-Leggett & O'Brien 2010; Taussig & Clyman 2011)

Gender differences in child mental health problems

Conduct Disorder (CD) are less common among girls but are more severe when they are present (Loeber & Keenan, 1994). Increased mental health problems for girls in adolescence have also been found in cross cultural population surveys (Ravens-Sieberer et al., 2009, Thorsheim et al., 2006). This phenomenon has been called the gender paradox. Some researchers have argued that the causes leading girls to CD is similar to that for boys, but with a different trajectory where CD among girls becomes more apparent in adolescence (Lahey et al., 1998), which is possibly related to the onset of puberty (Burt, McGue, DeMarte, Krueger & Iacono, 2006). Other researchers have argued that the general theoretical model for the etiology of CD needs to be revised to take into account gender differences, given that social and interpersonal variables may have differing influences on the development of CD pathology across gender. Broader contextual factors, such as environmental disadvantages, appear to play a substantial role in the development of CD among females (see Berkout, Young & Gross (2011) for a review). Additionally, the greater comorbidity with internalising

disorders among females may be associated with a stronger risk for developing more severe problems later in life (Dishion, 2000).

Factors that protect from development of mental health problems

In their review of interventions that promote resilience processes in foster care, Leve et al. (2012) concluded that given the "increased likelihood of poor outcomes for foster children, increased efforts to understand the pathways to vulnerability for this population are indicated" (p.1197). It is worth noting that many children show improved outcomes (Forrester, Goodman, Cocker, Binnie, & Jensch 2009) when taking into account factors like the age at placement and the permanency of placement (Barber & Delfabbro, 2005; Minty, 2000; Oosterman, Schuengel, Wim Slot, Bullens, & Doreleijers 2007;Tilbury & Osmond, 2006).

Continuity in social relations impacts children's well-being, as shown in a study by Aanes, Mittelmark and Hetland (2010), who claimed that this "supports the hypotheses that social connectedness mediates a relationship between interpersonal stress and psychological distress" (p.3). This indicates that support from social services to maintain social relations with biological parents and extended family may protect against development of problems later in life.

Methods

The study is a prospective cohort design with children (n=233) who had been living for more than 12 months in foster care by 1999. Forty-eight percent (n = 111) of the participants who had been interviewed at T1 were located and interviewed at T2, which was eight years later. Then, the mean age of the children was 17.4 (SD = 2.9) years. The informants at T1 were the

foster parents. At T2, the informants were the foster parents (n = 111) and the young adult (n = 28) if he or she was 16 years or older. In the follow up study the foster parents filled out questionnaires about placement history and the social functioning of the foster child/ youth (n= 111) and the Child Behaviour Checklist (n = 38). The foster children filled out the questionnaire Adult Self Report (n = 28). The unit of analysis for this study is the child.

The Regional Ethical Committee and the Norwegian Data Inspectorate approved the study. The Norwegian Data Inspectorate required that questions concerning the reasons for placement were eliminated because the children's biological parents had not been asked for consent. We are therefore unable to take the type of maltreatment or neglect into consideration in this study. However, we know that all participants had been subject to some form of abuse or neglect because all of them had been court-ordered into either kinship or non-kinship foster care. Consent to participate at T1 was acquired through local child welfare authorities, who sent a letter with information and a letter of consent to the foster parents. At T2, the researchers were mandated to obtain new consent from the foster parents to participate in the follow-up. Given that the study also included youths who were 16 years or older at T2 and who were therefore required to provide their own written consent to participate, the foster parents were asked to forward a letter of consent to their foster child. We do believe that there are two main reasons for the high attrition. Firstly, many of the participants could not be located at T2. The main reason for this is that the study did not obtain birth numbers from participants at T1. We were therefore not able to use the National Registry to trace the participants who had moved and/or changed names. Secondly, some foster parents did not agree to participate at T2 or to forward the letter of consent to the foster child.

Participants

The data collected at T1 were part of a study commissioned to evaluate the outcomes of kinship foster care (Holtan et al., 2005). Therefore, the participants consisted of a kinship foster care group and a comparison group comprised of the foster parents of children living in ordinary out of home foster care.

The mental health status of the children in this study was measured at baseline in the year 2000 and reported by Holtan et al. (2005). They found that 36% of children living in kinship care and 52% of children living in ordinary foster care scored above the clinical borderline on the Child Behaviour Checklist (CBCL) (Achenbach, 1991). The children were placed in foster care at young ages (M = 2.3, SD = 1.0) and had been living in the same foster home for an average of 5.4 years (SD = 3.0). There were six sibling pairs in the sample. Slightly over half (55 %) of the children were male. Foster care had been relatively stable during the eight-year period. Only eleven of the foster care arrangements were prematurely terminated such that the child had to move. In these cases, eight of the children moved to residential institutionalised care and three moved to different foster homes. The rest of the children were either still living in the foster home at T2 or had moved out of the foster home after the age of 18 (n = 77). Two children were adopted. It should be noted that in Norway it is possible to formally stay in foster care after the age of legal majority, until the age of 23. Twenty-one adults were still living with foster carers at T2.

Attrition analyses

Selective dropout from the study was examined with a generalised linear mixed model analysis (GLMM) using participation at T2 as the dependent variable. There were no demographical differences between the foster children who were located and interviewed at T2 compared to those who were not. Moreover, there were no differences on the indices of

child psychosocial predictors (Table 1).

-- Table 1 about here

Measures

Data were collected at T1 and T2 through questionnaires and interviews with the foster parents and foster children.

The data collected were as follows:

(a) Demographic information and placement characteristics. The questionnaire at T1 was designed to obtain the following: (1) children's care history (e.g., the age at first removal, the number of previous placements and the duration of time spent in care), (2) caregiver characteristics (e.g., age, marital status, education, income, health and the type of kinship relation between the child and caregiver)

(b) Child emotional and behavioural symptomatology. The child's caregiver completed the Child behaviour Checklist (CBCL) at T1. The problem part of the CBCL consists of 118 items (0-2 scale) addressing various emotional and behavioural problems (Achenbach, 1991), which is rated by caregivers. Two main types of mental health problems were measured. Externalizing problems are problems related to aggressive and delinquent behaviour. Internalizing problems are related to anxiousness/ depression, somatic complaints and withdrawnness. Total problems is the sum of internalizing and externalizing problems. Here, the Total problem score as well as the Internalising and Externalising scores were converted to T scores using the ASEBA software package.

(c) Placement history between T1 and T2. The number and type of changes in care arrangements were collected from foster parents if the child was under the age of 18 at T2 and

from the youth if he or she was older. Based on these data, foster care was classified as 'permanent' (90 %) if the child was living with same foster parents upon turning 18 or the foster placement was terminated according to plan. Placement was classified as 'disrupted' (10 %) if the child had moved to residential care or a different foster care placement.

(d) Current adult mental health and symptomatology. The Adult Self-Report (ASR) (Rescorla, et al., 2003) is a parallel version of the CBCL that assesses Internalising, Externalising and Total problems by self-report. The measure is validated, and normed scales allow for the computation of T scores in the same manner as for the CBCL. For adults, this instrument was used instead of the CBCL at T2. The ASR was completed by 28 of the T1 children who were adults at T2. Given that the ASR is a self-report measure and the CBCL is reported by a foster parent, there were low correlations between the Total problem scores on the CBCL at T1 and the ASR scores at T2 (r = .18). Achenbach, Krukowski, Dumenci and Ivanova (2005) reported a mean cross informant correlation of .30.

(e) Current social functioning. Foster parents were asked whether the youth's social functioning was better, the same or worse compared to what can be expected from youth of this age in the domains of (i) school/work, (ii) relations with friends and (iii) social functioning at home. Social functioning was classified as 'worse' if foster parents indicated that the youth's social functioning was worse than what they considered normal.

Statistical analysis

First, the bivariate relationships between the child characteristics, the foster care characteristics and the social and mental health problems at T1 and T2 were analysed using correlations. Dependency in the data, which was due to inclusion of siblings who were living in the same foster homes, impacts the p-values for correlation estimates. To account for this,

significance probabilities were computed separately for each correlation using a linear mixed model analysis. In the second analysis, we used bivariate and multivariable generalised linear mixed model analyses to assess the associations between social functioning and different predictors. A linear mixed model analysis was used to assess a change in emotional and behavioural symptomatology from T1 to T2. This method was also used to assess the predictors of Total problems, Internalising and Externalising problems at T2, as well as the predictors for changes in the Total problems, Internalising and Externalising scores from T1 to T2. For inclusion in the multivariable analysis, we selected the variables that were significantly correlated with the Total problem scores at either T1 or T2 from the bivariate analysis (Table 2). The foster care characteristics included foster carer's education, kin versus non-kin foster care, and whether the foster home was within the same local community as the parents' home. The child characteristics included age and gender. Although the age at first removal and the number of previous placements are factors that may predict later outcomes, they were not included in this model as they were not associated with the CBCL or the ASR scores in the bivariate analyses. The instrument type, CBCL versus ASR, was included in the model in order to control for instrument bias.

Given that the data are from a study that was originally designed to compare kinship foster care with non-kinship foster care, the kin-group in this sample was overrepresented. The proportion of foster care placements that were with relatives was approximately 12% in Norway during the year 2000 (Thørnblad, 2011). An analysis was conducted to check whether development in Total Problem scores was different in kinship foster care compared to ordinary foster care. For this analysis, we only included individuals who were still living in foster care at T2. Raw scores from the CBCL Total Problems scale were used for this analysis.

The CBCL raw scores were also used to calculate whether a meaningful change in scores had occurred between T1 and T2, with a meaningful change defined as a change in magnitude of more than eight score points.

Results

Preliminary analysis

Associations between the child and foster care characteristics and child problems are shown in Table 2. We found that foster carers who were educated at the bachelor level or above (32%) reported higher CBCL scores (M = 59.3, SD = 15.9) at follow up compared to foster parents with less education (M = 48.2, SD = 14.2) ($t = -2.7$, $df = 36$, $p = .01$). Gender and kinship foster care were not associated with CBCL problems at T2. A change in the local community was defined as foster care in a different municipality, which indicates that there was geographical distance between the parents' home and the foster home. This was significantly associated with the CBCL problem scores at both baseline and follow up. At follow up, there was a rather large difference ($t = 2.45$, $df = 31.4$, $p < .05$) in the problem scores for children who had moved away from the local community (M = 51.6, SD = 14.7) compared to those who were still living in the same area (M = 41.2, SD = 11.6). We note that at follow up the group of children living in foster care in the same local community was small (n = 10).

-- Table 2 about here

Social problems at follow up

The odds for having social problems at follow up increased if emotional and behavioural symptomatology was prevalent at T1. If foster care was not in kinship then social problems at follow up was more likely (table 3).

--Table 3 about here

Changes in behavioural and emotional symptomatology

There was no difference in mental health symptomatology scores for the group at baseline and follow up. This means that on average, the amount of problems were the same. Although there were no differences in the scores at the two occasions at the group level, this does not mean that nothing changed. Figure 1 presents a histogram of the difference scores for Total problems, which was calculated as T2 minus T1. On the individual level, 14 of 61 children improved from scoring within the borderline range (BR) at baseline to the non-borderline range at follow up. Twelve children were not within the BR at baseline but scored above the BR at follow up. Five were within the borderline range at both times and 30 were below the borderline range at both times. A score above borderline range indicate that the amounts of problems are serious and that the child may be in need of mental health treatment. When we only look at the cases in which the children were below the age of 18 years at T2, we found a substantial change in the CBCL Total problems, defined as more than an 8 point change in the raw score, was found for 20 (53%) of the cases. In 10 of these cases, the problems increased (M = 41.8, SD = 25.7) and in the other 10 cases, the problems decreased (M = 24.2, SD = 15.7). In eighteen cases, there was no substantial change. It is evident that, although

many youth and young adults' Total problems were about the same, some showed substantial improvement and others worsened considerably. A substantial increase of externalizing problems was seen in 12 cases and substantial increase of internalizing problems was seen in 14 cases. A substantial decrease in externalizing problems was seen in 11 cases and substantial decrease in internalizing problems was seen in 11 cases.

-- Figure 1 about here

Predictors for prevalence and change in behaviour and emotional symptomatology

Internalizing problems such as anxiety /depression and somatic complaints were more prevalent than aggression and rule braking at T2. Scores for emotional and behavioural symptoms at T2 are shown in table 4.

-- Table 4 about here

The analysis showed that the only predictor associated with Total Problems at follow-up was whether the foster care was located in a different local community. None of the predictors were significantly associated with the levels of Internalising problems or Externalising behaviours at T2.

Gender was associated with a change in Total problems, as well as changes in Internalising and Externalising problems. This indicates that girls' problems increased at follow up compared to boys' problems. High foster parent education was associated with increase in total problems from T1 to T2. This was a surprising result. High parental education is generally not considered a risk factor in development of mental health problems. It is possible

that education is a parental characteristic that bias parent's expectations of their children's behaviour and social functioning. Table 5 displays the estimates of the T score changes for one unit change in the predictors.

--Table 5 about here

Kin vs. non-kin foster care

There was a difference ($p < .01$) in the CBCL Total problem scores at T1 between the children living in kin and non-kin foster care. Children below the age of 18 years who were still living in kinship foster care at follow up had lower scores on the CBCL Total Problems at baseline ($M = 18.1$, $SD = 18.2$) compared to children living in ordinary non-kin foster care ($M = 35.8$, $SD = 22.9$). This group difference had disappeared eight years later. The reason for this seems to be that externalizing problems were reduced from baseline to follow up for children living in non-kinship foster care. Therefore, it seems that overall mental health problems are about the same for both groups at the eight year follow up. Yet, it is evident that some individuals' problems in both of the groups changed quite a lot.

Discussion

Social and mental health problems for children in care

Overall, the changes in mental health problems in this sample were small when adjusting for age and gender. Previous studies have reported that mental health problems among children are quite stable over time (Nock, Kazdin, Hiripi, & Kessler, 2007; Fernandez 2008). Compared to the two year follow up study by Vanderfaeillie et al. (2013) in which the meaningful changes in CBCL Total problems were primarily increases, we found that the

CBCL scores just as frequently decreased as increased. Differences in the support and services provided for the foster families, particularly with regard to parenting strategies, may explain some of the differences in developmental trajectories between the study samples (Repetti, Taylor & Seeman, 2002). Additionally, some problems among children in foster care may be associated with adjusting after the transition in care from parents to foster care. A short-term boost in problems after placement would not have been captured by our study given that the T1 data were on average collected five years after placement. Therefore, the changes in mental health problems that were found among participants in the current study is not primarily considered to be related to the process of entering and adapting to life in public care.

The prevalence of problems related to social functioning at the follow up was significantly associated with kinship foster care and with CBCL scores at T1. Social functioning was assessed by foster parents. Parents reporting bias may be a result of sample selection. It is possible that non-kin foster parents reported higher problems at T1 with an intent to elicit services or economical support. Kinship foster parents may underreport problems in order to avoid stigmatization of the family. The difference in social functioning and mental health problems between kinship care and foster care may therefore be the result of different standards and motivation for different raters. Differences in reporting motivation may be less pronounced at T2 when the youth was about to enter adult life. This may explain why externalizing problems decreased more in the non-kinship group, where scores were elevated at T1. Therefore it is a possibility that difference scores are influenced by a regression towards the mean effect. We were not able to correct for this because it requires having knowledge about the population mean and SD (Yudkin & Stratton 1996). Further research is

needed to determine the reporting bias of socio-economic status and kinship when foster parents are informants.

The prevalence of mental health problems was associated with the foster home being located within the same local community that the child had been living in prior to being ordered into foster care. We were not able to completely separate the effects of kiship care from the effect of staying in care within the same local community. Kinship care predicted lower social problems over and above the placement community, but this order of importance was reversed with regard to emotional and behaviour symptomatology. These findings correspond with Holtan et al.'s (2005) results showing that both kinship care and foster care placement in the same geographic area are significantly associated with lower mental health problems at T1. This finding suggests that the protective effects of placement with relatives in their local community are stable over time. The reason that local care may protect against psychological problems is not known, but being able to maintain contact with friends, leisure activities, school and other relatives after placement may reduce some of the burdens associated with living in foster care. The geographical location of the foster care may be a prerequisite for continuity in social relations outside of the family sphere. Although family relations may be important, as indicated by studies showing that kinship care is associated with a reduction in mental health problems (Winokur et al. 2009), this highlights the need to examine social relations more broadly in order to tease apart the factors that contribute to determining the outcomes of children in foster care.

A study by Vanschoonlandt et al. (2012) suggested that differences in behaviour problems found in studies that compare kinship care to foster care might be due to a selection effect.

Children with fewer problems may be more wanted by kin. Children with severe problems may be more likely to be placed in non-kinship care eventually in another region. The children in this sample were placed in care at very young age (M = 2.3 years). It is not known if the differences in amount of problems that was measured at T1, about five years after first placement, could have been visible enough to cause such a selection effect in this sample. It is however possible that a selection did take place based on some other variable and that this variable was a confounder for the mental health problems that were measured later.

Gender differences

Gender was the most important predictor associated with changes in scores from T1 to T2. At baseline, boys scored significantly higher on Total problems and Externalising problems compared to girls (Holtan et al., 2005). There was no difference between boys and girls at T2. It was evident that girls' scores changed more than boys' scores, which suggests that boys' problems in this sample may have had an earlier onset and that girls developed more problems as they approached the late teens. Because we used T scores, which are adjusted for broad age and gender specific norms, the gender developmental trajectory in the normal population is controlled for to some degree. For this sample, the implication is that girls' conduct problems developed differently from boys' conduct problems.

We assume that parenting variables, such as warmth, the appropriate use of discipline and behaviour monitoring, are more effective for reducing aggression, which is the predominant male CD trait, compared to female specific traits of CD, which include bullying and callousness. Future research should look more closely at whether the positive side effects of foster care, such as improved parenting, better protect against the development of CD among boys compared to girls. If so, the girls that show early signs of CD in foster care may be in

need of additional gender specific treatment, such as one that emphasises internalising difficulties. This is similar to Berkout et al.'s (2011) proposal.

Limitations

Given that this study was designed as an observational study without any randomised controls, there is a possibility that unknown confounders biased the results. We do not know whether there was a particular reason for why some children were placed within the local community and/or with kin while others were moved farther away, but we do assume that the availability of foster homes, safety issues and each child's special needs were important factors. Although the attrition analysis did not yield any significant differences in the demographics measured at T1 between the responders and non-responders at T2, we cannot conclude from this that the development in mental health problems from T1 to T2 was the same for both groups. It is likely that some characteristics that were not measured influenced scores at T2. Thus, the small number of participants in this study and the dropout rate from T1 to T2 urge us to take caution in the interpretations of our results. Problems at T1 were reported by foster parents, whereas problems at T2 were reported by either the foster parents or the young adults. Although comparison between the self-reported problems and the foster parent reported problems is possible within the ASEBA ecosystem of assessment packages with the use of normed T scores, the correlation between the CBCL scores and the ASR scores was low in this sample. Multiple informants at both occasions would have strengthened this study. The borderline range was defined as T score > 60 based on the US normative sample. A T score > 63 was defines as clinical range. The reason that US norms were used in our study is that there are no available Scandinavian norms for the ASR. Because the study pooled subjects with CBCL scores and ASR scores it was considered appropriate to use the

US norms for both instruments. Parent reported emotional and behavioural problems using the CBCL instrument are however lower in the Scandinavian countries (Larsson & Frisk 1999; Jozefiak, Larsson, Wichstrøm & Rimehaug, 2012) compared to the US. This may have led to an underestimation of the number of children/young adults scoring within borderline/clinical range. Given that the sample may have been biased by attrition before T1 and by further attrition at the follow up on some dimensions that were not captured by the study measures, we cannot safely say that the prevalence of problems found in this sample is representative of the population. Furthermore, the changes in symptomatology over time that are described here may be specific to long-term stable foster care arrangements. We would like to add that, although the limitations are many, so are the difficulties associated with recruitment and long-term retention of informants for studies with this population (see Jackson, Gabrielli, Tunno & Hambrick 2012, for a review). This may explain why there are so few useful longitudinal studies compared to population surveys of mental health for this particular group of children.

Conclusions

Overall, the changes in mental health problems were small, but girls seem to experience an increase in emotional and behavioural symptoms compared to boys at an eight year follow up. Being placed in public care within the same local community as when the child was living with parents and/or being placed in kinship foster care was associated with less mental health problems both at baseline and at eight year follow up.

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Table 1: Analysis of T1 predictors associated with dropout at T2(GLMM)

Independent variable	OR	t (p)
Age	1.11	2.01 (.053)
Gender (Girl vs Boy)	1.03	0.12 (.91)
CBCL T1	1.00	-0.07 (.94)
Kinship (Non-kin vs kin)	1.39	1.12 (.26)
Education (Low vs High)	0.99	-0.05 (.96)

Table 2: Means, standard deviation and correlations among study variables

Variables	M / %	SD	1	2	3	4	5	6	7	8	9	10
Child characteristics												
1.Age at T1 (year 2000)	9.4	2.7	-									
2.Gender[a] = male	55 %		-.02	-								
3. Age at first removal	2.3	1.0	.39***	.03	-							
4. Number of previous placements	0.6	0.8	-.03	-.03	-.11	-						
Foster care characteristics												
5.Kinship care = yes[a]	55 %		.10	.02	-.06	.11	-					
6. Permanency vs disruption[a]	90 %		-.05	-.03	-.22*	-.05	-.12	-				
7. Carer education = low	64 %		.07	.05	-.01	.03	.10	-.17	-			
8. Changed local community = yes	82 %		-.12	.02	-.05	-.17*	-.33*	.00	-.07	-		
Symptomatology and Social problems												
9.CBCL problem score T1[b]	50.8	13.8	.17*	-.20**	.07	.08	.22**	-.07	-.01	-.34***	-	
10. Social functioning at T2 = worse[e]	41.4%		-.16	.09	.17	.20	-.30**	.29*	.02	-.21*	.32***	-
11.CBCL problem score T2[c]	51.8	15.5	-.06	.13	.12	.10	.16	-.19	.34*	-.38*	.44**	.62***
12. ASR problem score T2[d]	47.2	13.2	.48**	.13	.13	.18	.09	.33	-.29	-.07	.18	.32

Note: p-values estimated with mixed model analysis, *p < .05; **p < .01: ***p < .001 (two-tailed), [a]Gender was coded 0 = male, 1 = female, Kin was coded = 0 and non-kin was coded = 1, permanency was coded = 0 and disruption was coded = 1, Carer education was coded 0 = low and 1 = high, changed local community was coded 0 = yes and 1 = no; social problems compared to peers at T2 was coded 0 = same and 1 = larger; [b]n = 233; [c]n = 38; [d]n = 28; [e]n = 111

Table 3: Generalized linear mixed model analysis of factors associated with social functioning at T2 (n = 111).

Variable	Social functioning compared to peers: Same vs worse	
	Bivariate analysis OR (t)	Multivariable analysis OR (t)
Child characteristics		
Age	1.13 (1.71)	1.08 (0.96)
Gender = boy	0.71 (0.89)	1.02 (0.05)
CBCL Total problems at T1	1.05 (3.22)**	1.04 (2.34)*
Foster care characteristics		
Kinship care = kin	3.53 (3.11)**	2.60 (2.17)*
Foster parents' education = low	1.07 (0.17)	1.04 (0.09)
Foster care away from local community = yes	0.25 (-2.05)*	0.78 (-.33)

Notes: Coding was Gender: 0 = male, 1 = female; Kinship care: 0 = kin, 1 = non-kin; Permanency in care: 0 = disruption, 1 = permanency; Foster parents' education: 0 = no higher education, 1 = higher education; Foster care away from local community: 0 = yes, 1 = no; *p < .05, **p < .01. n =

Table 4: CBCL / ASR scores on T2

	M (SD)	Above clinical range (T>63)
Total problems	49.9 (14.7)	11 (17.5 %)
Externalizing problems	49.9 (11.9)	8 (12.7 %)
Aggressive	54.6 (6.9)	8 (12.7 %)
Delinquent/ Rule breaking	55.7 (8.4)	8 (12.7 %)
Internalizing problems	51.2 (14.8)	18 (28.6 %)
Anxiousness/Depression	56.8 (9.4)	13 (20.6 %)
Somatic complaints	57.0 (8.3)	12 (19.0 %)
Withdrawn	55.6 (7.8)	11 (17.5 %)

Note: N = 63, there were three cases with missing data.

Table 5: Linear mixed model analysis for predicting prevalence and change in emotional and behavioral symptomatology (n = 61-63).

	Analysis of symptomatology at T2			Analysis of change in symptomatology from T1 to T2		
Dependent variables	Total problems T2	Externalizing T2	Internalizing T2	Total problems T2-T1	Externalizing T2-T1	Internalizing T2-T1
Measure (CBCL / ASR)	-8.1	-2.3	-4.6	-7.8	-5.4	-7.6
Child characteristics						
Age	-0.5	-0.1	0.1	0.9	0.02	0.9
Gender	5.1	6.2	0.2	10.2*	9.8*	10.0**
Foster care characteristics						
Kinship care	1.9	0.4	1.5	-5.0	-7.3*	-4.0
Foster parents' education	6.1	2.7	8.1	8.7*	5.8	5.7
Foster care away from local community	-11.5*	-8.3	8.7	-7.5	-5.2	-8.7

Notes: Table show fixed effects regression coefficients. Measure: 0 = CBCL, 1 = ASR; Gender: 0 = male, 1 = female; Kinship care: 0 = kin, 1 = non-kin; Foster parents' education: 0 = no higher education, 1 = higher education; Foster care away from local community: 0 = yes, 1 = no; *$p < .05$, **$p < .01$, $^{t}p < .10$; Estimators are changes in t-scores per unit change in predictor. Due to missing data on certain variables N varies from 61-63 in these analysis.