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Child and Youth Coaching in families experiencing complex and multiple problems: A longitudinal evaluation study

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Abstract

Studies investigating services for families experiencing complex and multiple problems have emphasized the need for more child-centred support. The aim of this longitudinal study was to investigate whether providing child-centred services (Child and Youth Coaching) combined with family-focused services (Ten for the Future) is effective for children growing up in families experiencing complex and multiple problems. Children's psychosocial skills, emotional and behavioural problems, and the quality of their pedagogical environment were measured at baseline, 6 months and 12 months. Parent and coach reports of children indicated for Child and Youth Coaching ($n = 57$) and nonindicated children ($n = 18$) were analysed using repeated measures multilevel models. Both parents and coaches reported improved psychosocial skills of children, but changes were only significant for coach reports. In both reports, no significant decrease in emotional and behavioural problems was observed for both indicated and nonindicated children. Many children still experienced considerable problems at case closure. Furthermore, no significant improvement in quality of the pedagogical environment was observed in both groups. Given the limitations in this study, more research is needed to identify whether these findings can be replicated and attributed to the Child and Youth Coaching and Ten for the Future programmes.

KEYWORDS

child-centred services, dual key worker, emotional and behavioural problems, home-visiting, psychosocial skills, quality of the pedagogical environment

1 | INTRODUCTION

1.1 | Services for families experiencing complex and multiple problems

Families experiencing complex and multiple problems (FECMP) are characterized by an accumulation of problems in multiple areas of life (e.g., parenting, mental health, and housing). Several studies have suggested that services are often ineffective in addressing the needs of

these families (Bartman, 2019; Curtis et al., 1964; Millett et al., 2016; Sousa & Rodrigues, 2012; Spratt & Devaney, 2009). Furthermore, FECMP are often recurrently involved with child protection services (Chaffin et al., 2011; Millett et al., 2016). To meet the needs of FECMP, several multifaceted home-visiting services have been developed. Service evaluations have shown these multifaceted home-visiting programmes are moderately effective in improving family functioning and preventing out-of-home placement at case closure (Al et al., 2012; Van Assen et al., 2020). Furthermore, children in these

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families show a decrease in emotional and behavioural problems. However, many children participating in home-visiting services still experience considerable problems at case closure and a substantial group of children is placed out of home in the year following case closure (Department of Health and Human Services, 2002; Evenboer et al., 2018; Van Assen et al., 2020; Veerman et al., 2005).

1.2 | Integrated services and the dual key worker approach

Many professionals experience considerable problems in providing suitable care for FECMP (Goerge & Wiegand, 2019; Jooisse et al., 2019; Pannebakker et al., 2018; Tausendfreund et al., 2016; Van Den Berg et al., 2008). In home-visiting services professionals often aim to improve outcomes of children through the improvement of parenting and family functioning. Although multiple studies have shown that home-visiting services have a positive effect on family functioning (Al et al., 2012; Damen et al., 2021), many children still experience considerable problems at case closure (Van Assen et al., 2020). This suggests that in the context of FECMP, improved family outcomes do not necessarily result in improved outcomes of children. A second option to improve outcomes of children in home-visiting services is to involve them more directly in services intended for the whole family. Although whole-family approaches show promising results (Bolt & Van der Zijden, 2021; Majoribanks & Davies, 2016; Thoburn et al., 2013), professionals often experience considerable difficulties in involving all family members in these services. Several studies have suggested care professionals experience considerable challenges in building multiple alliances with family members (Busschers & Boendermaker, 2015; Tausendfreund et al., 2015). Furthermore, professionals are often led to prioritize aspects other than child well-being (Munro, 2011). Although most home-visiting programmes aim to adopt a systems-focused approach that involves all members of the family, several studies have suggested there is a lack of child-centred practice in services for FECMP (Alberth & Bühler-Niederberger, 2015; Ferguson, 2017; Dutch Inspectorate for Youth Care, 2016; Munro, 2011; Tausendfreund et al., 2015; Visscher et al., 2020). For example, Tausendfreund et al. (2015) showed that only a small part of care activities were directed at children.

To address the needs of children growing up in FECMP, this study investigates the provision of simultaneous services by two care professionals in a dual key worker approach. Thoburn et al. (2013) identified the dual key worker approach as a promising intervention strategy. In the dual key worker approach a family-focused services are provided simultaneous with child-focused services. Based on the clinical experience that children growing up in FECMP are in need of child-centred support, a similar approach has been developed by the Salvation Army of the Netherlands. In this dual key worker approach, a family-focused care worker from the Ten for the Future (TF) programme provides family-focused services and a worker from the Child and Youth Coaching (CYC) programme provides services for the children. A qualitative evaluation of the care process of the CYC

programme suggests that the provision of an additional child-centred care professional could be beneficial for children growing up in FECMP (Van Assen et al., 2021). Furthermore, children participating in the CYC programme stated the provision of additional child-centred services addressed their needs more directly and improved their participation (Van Assen et al., in preparation).

1.3 | TF and CYC

TF is a family-focused programme for FECMP that provides integrated care focused on 10 areas of life. The aim of the programme is to preserve the family within socially accepted limits. To achieve this goal, multiple proximal and intermediate goals focused on improving parenting skills and family functioning are used. The name of the programme is derived from the 10 areas of life that are the central focus of the programme. The areas of life are as follows: (1) Housekeeping, (2) administration and finances, (3) care responsibility, (4) parenting, (5) education, (6) daily activities, (7) mental health, (8) care management, (9) social network, and (10) behaviour management (Tausendfreund & Van Driel, 2019). The programme theory is eclectic and includes systems theory, learning theory, and contextual therapy. Care activities are predominantly focused discussing and addressing problems within the family system. Furthermore, care professionals in the TF programme often provide support in contact with authorities and other care professionals (Tausendfreund et al., 2015). An evaluation of the programme showed that parents experienced less stress after case closure. Outcomes with regard to children's emotional and behavioural problems were heterogeneous. Although several children showed decreasing emotional and behavioural problems during their participation in the TF programme, other cases were characterized by unchanged or increased emotional and behavioural problems at case closure. A comprehensive evaluation was conducted by Tausendfreund et al. (2015) and an elaborate programme description is provided by Tausendfreund and Van Driel (2019).

CYC is a programme aiming to improve the well-being of children growing up in FECMP. In the CYC programme a personal coach provides individual support in multiple areas of life for children and teenagers. The inclusion criteria state that children in the programme are between 3 and 18 years old, families experience problems in multiple areas of life, parents are not able to support children adequately themselves, children are motivated for participation and are not in need of specialized psychiatric treatment. Care goals are based on the needs of children and centred around seven themes. The seven themes are as follows: (1) self-image and self-confidence, (2) emotions, (3) social skills, (4) (social) anxiety, (5) bullying, (6) grieve, and (7) physical well-being. Coaches use a flexible care approach tailored to the needs of children and combine leisure activities (e.g., sports and crafts) with care provision. Care activities are mainly focused on discussing life experiences from the perspective of the child. Furthermore, coaches apply a variety of techniques (e.g., cognitive behavioural techniques, social learning) to realize behavioural change (Van Assen et al., 2019; Van Assen et al., 2021). Although care goals and activities

vary considerably among cases, most trajectories were characterized by a focus on improving social skills and decreasing children's emotional and behavioural problems (Van Assen et al., 2021). The focus and basic structure are similar across cases, but activities are adapted to the age and capabilities of the child. For example, different worksheets and behavioural exercises are available for different age ranges. Children participating in the programme have reported positive changes in their well-being and social skills (Van Assen et al., in preparation). For a more elaborate description of the programme theory see Van Assen et al. (2019), and for an analysis of care activities in practice see Van Assen et al. (2021).

1.4 | Aim of the study

The aim of this study is to evaluate the effectiveness of the dual key worker approach of CYC and TF family support (Tausendfreund, 2015; Thoburn et al., 2013; Van Assen et al., 2019). Furthermore, we compared the effects for children indicated for CYC and children not indicated for CYC. The nonindicated group was included for three reasons. First, the nonindicated group was intended as a comparison group for the control group in the original study design (see Section 2.2). Second, the nonindicated group allowed for a comparison of the case characteristics of indicated and nonindicated children. Third, children in the nonindicated group were expected to experience less severe problems. Therefore, the group could be used to investigate whether CYC could prevent problems. The assessment of effectiveness of programmes for FECMP is complex because programmes are often characterized by flexibility in service provision and heterogeneous target groups (Boddy et al., 2011; Van Assen et al., 2021). Due to the heterogeneity of the target group and focus of the services on multiple areas of life, a variety of outcomes can be used to evaluate services for FECMP. The CYC programme is focused on improving children's ability to deal with stressors in their environment by training their psychosocial skills. By improving children's abilities to deal with stressors in their environment the programme aims to decrease emotional and behavioural problems of children (Van Assen et al., 2019). Because psychosocial skills and emotional and behavioural problems are central to the programme rationale, these outcomes were used in this evaluation. Furthermore, quality of the pedagogical environment was included as an outcome to identify changes in the child-rearing environment. Finally, we assessed reasons of case closure for the CYC programme (goal attainment, out-of-home placement, referral to continued care).

2 | METHOD

2.1 | Design

The aim of this quasi-experimental longitudinal evaluation study was to examine the outcomes of the dual key worker approach of the TF and CYC programmes. Originally, the study was designed as

a partly randomized study with three groups that all received TF family-focused services. In this design the first group consisted of children indicated for CYC. The other two groups were not indicated for CYC and randomized to a nonindicated CYC group receiving additional CYC and a control group with only TF services. The control group suffered from considerable missing data and drop out and was therefore excluded from the study. The adaptations to the study design and limitations of this study are discussed in more detail in the discussion. In this study, we compared two groups that both received TF services. The first group consisted of children indicated for CYC (*indicated CYC*). The second group consisted of children who were not indicated for CYC, but received additional services from the CYC programme (*nonindicated CYC*).

2.2 | Participants

The study was designed to include children between the age of 3 and 18 years old participating in the TF programme in the Northern Netherlands. A total of 392 children that entered the TF programme between June 2016 and December 2019 were contacted for participation in the study. First, a check was performed to assure whether children were eligible to participate. A total of 79 children were excluded because they did not meet one or more of the following inclusion criteria:

1. The child's family received services through the TF programme;
2. The child's family consisted of at least one biological parent;
3. Children were between the age of 3 and 18;
4. Children did not receive coaching in another coaching programme (children receiving other types of services were included).

For the remaining 313 children, parents and children above the age of 12 were asked to sign an informed consent form explaining the aim and design of the study and ethical guidelines. For a total of 180 children (58% of the eligible population) informed consent was given. These children entered the allocation procedure of the study. When multiple children in one family received CYC, only one (randomly selected) child within each family could participate in the study. When children were eligible for the CYC programme based on the inclusion criteria (see par 1.3), family-focused professionals in the TF programme decided together with the parents and the child whether a child would be referred to the CYC programme. Children who were referred to the CYC programme during the first 3 months¹ of the TF programme were assigned to the first group (*indicated CYC*). Nonindicated children were assigned to the second group (*nonindicated CYC*). In the informed consent form parents also consented to the possible participation of their child in the nonindicated group. As all families in the TF programme were characterized by complex and multiple problems, problems in child domains were present in all these families. This allowed for the provision of child-centred services from the CYC programme for nonindicated children.

Of the 180 children that consented with study participation, 30 children dropped out during the first 3 months of the TF programme. In most of these cases TF services were terminated after a few sessions. In a small number of cases children did not participate due to an ongoing investigation of a Child Protection Board or due to an out-of-home placement. Of the 150 remaining children, 72 (48%) were indicated for the CYC programme. After allocation to the indicated group 15 children dropped out before the start of the study. This resulted in a group of 57 indicated children. The other 78 (52%) children were regarded as nonindicated. A total of 41 children were allocated to the CYC programme (the *nonindicated group*) of which 18 participated in the study. Many children that dropped out after allocation to the nonindicated group were involved with multiple services and stated they did not want to participate in additional services. The remaining 37 children were allocated to a control group that was part of the original design (see Section 2.1) and excluded from this study due to high rates of missing data (see Figure 1). The sample consisted of 39 boys (52%) and 36 girls (48%). Children participating in the study were between 4 and 17 years old. Children in the indicated

group were on average older ($M = 11.0$ years) than children in the nonindicated group ($M = 9.7$ years). A more elaborate description of participant characteristics is provided in Table 1.

2.3 | Instruments

To assess the effectiveness of CYC the Strengths and Difficulties Questionnaire (SDQ), Questionnaire Psychosocial Skills (QPS) and the Best Interests of the Child Questionnaire (BIC-Q) were used. The SDQ and QPS were filled out by the CYC. The expert version of the BIC-Q was filled out by the family coach of the TF programme. Parents filled out the parent version of the SDQ and QPS.

Case characteristics: At the start of the CYC programme an intake interview was conducted to identify the care needs of children. As part of the intake procedure a form was used to collect data on demographic characteristics such as age, gender, migration background, educational level of the child and family composition. Furthermore, a description of the family's care history was used to identify whether families received any type of services prior and/or simultaneous to their participation in the study. Finally, coaches discussed with the child and parents whether they experienced problems in several child and/or family domains. These domains were based on a review of problem domains of FEMCP by Holwerda et al. (2014). In case of missing data, other case file documents (e.g., care plans) were used to complete data.

Psychosocial skills were measured using the Questionnaire Psychosocial Skills [Dutch: Vragenlijst Psychosociale Vaardigheden] (QPS; Van Der Ploeg & Scholte, 2013). The QPS consisted of 36 Likert scale questions scored from 1 (*strongly disagree*) to 5 (*strongly agree*). Psychosocial skills were operationalized with both an interpersonal and intrapersonal component. Interpersonal skills refer to skills needed to interact with others (e.g., *The child understands when he/she has hurt or insulted someone*). Intrapersonal skills refer to children's self-direction and self-perception (e.g., *The child thinks before he/she acts*). Scores range from 36 to 180 with scores below the 20th percentile indicating clinical problems. The internal consistency of both informant and self-report questionnaires was good for all (sub)scales ($\alpha > .80$). Furthermore, they evaluated the construct validity, content validity and concurrent validity positively as well. The reliability of the QPS in this study was very good for both the parent report ($\alpha = .92$) as the coach report ($\alpha = .92$).

Emotional and behavioural problems were measured using the Dutch version of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 2001; Van Widenfelt et al., 2003). The SDQ consisted of 25 questions on the behavioural and emotional problems of children. Questions consisted of statements about the behaviour of the child (e.g., *Easily distracted, concentration wanders*) that were scored as *not true* (0), *somewhat true* (1), or *certainly true* (2). Scores were calculated (range 0–20) for a scale of internalizing problems (emotional problems and peer problems) and externalizing problems (conduct problems and hyperactivity). The total problem score had a range from 0 to 40. Scores of 16 and higher indicated clinical behaviour problems. Van Widenfelt et al. (2003) found a good reliability ($\alpha = .80$) of the Dutch

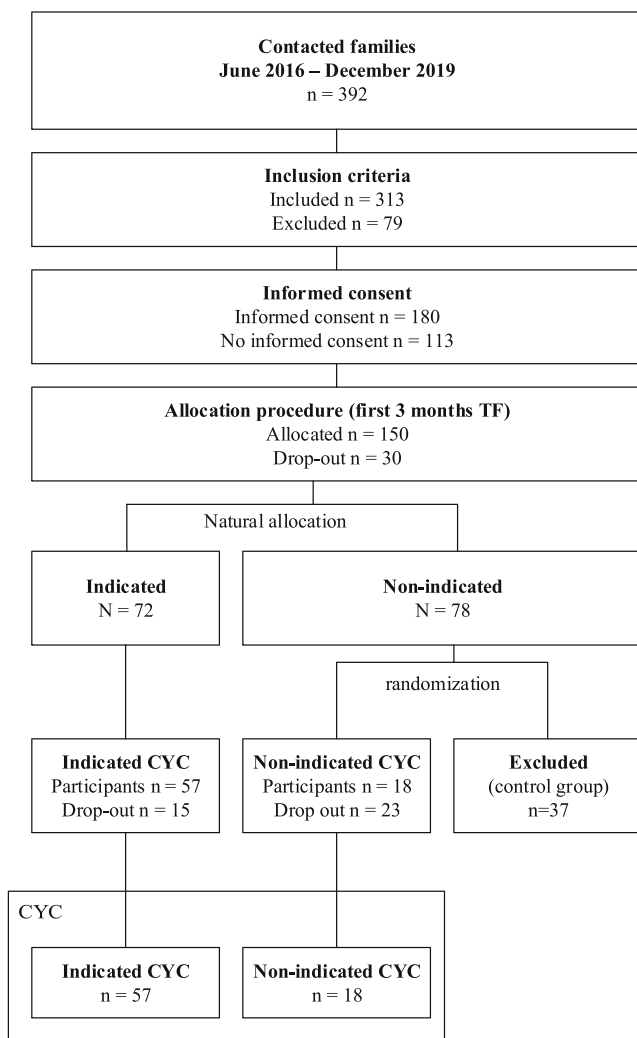


FIGURE 1 Sampling and allocation procedure

TABLE 1 Case characteristics and service use at baseline

	Indicated (n = 57)		Nonindicated (n = 18)	
	M (sd)	Range	M (sd)	Range
Age child (years)	11.0 (2.9)	6–17	9.2 (3.5)	4–15
Age mother (years)	38.3 (5.8)	27–53	38.7 (7.7)	30–53
Age father (years)	45.0 (7.4)	33–59	37.3 (6.6)	25–45
Number of children	3.0 (1.7)	1–8	2.4 (0.9)	1–4
Duration CYC (months)	13.2 (8.1)	1–34	10.4 (9.1)	1–36
	n (%)		n (%)	
Gender				
Boy	31 (54.4%)		8 (44.4%)	
Girl	26 (45.6%)		10 (55.6%)	
Family composition				
Nuclear family	19 (33.3%)		4 (22.2%)	
Single parent family	23 (40.4%)		8 (44.4%)	
Blended family	15 (26.3%)		6 (33.3%)	
Migration background				
No migration	50 (87.7%)		14 (77.7%)	
1st generation	3 (5.3%)		2 (11.1%)	
2nd generation	4 (7.0%)		2 (11.1%)	
Educational type				
Regular	42 (77.7%)		14 (77.8%)	
Special needs	12 (22.3%)		4 (22.2%)	
Educational level				
Primary	41 (76.0%)		15 (83.3%)	
Prevocational	12 (22.3%)		2 (11.2%)	
Preacademic	0 (0.0%)		1 (5.5%)	
Vocational	1 (1.9%)		0 (0.0%)	
Psychiatric diagnosis				
No	26 (51.0%)		8 (61.5%)	
Single	18 (35.3%)		3 (23.1%)	
Multimorbid	7 (13.7%)		2 (15.3%)	
Prior services				
Yes	54 (94.7%)		13 (76.5%)	
No	3 (5.3%)		4 (23.5%)	
Simultaneous services				
Yes	52 (91.2%)		16 (88.9%)	
No	5 (8.8%)		2 (11.1%)	

Note: Percentages are based on observed cases.

version of the SDQ for children in the general population. Furthermore, other psychometric properties such as inter-informer correlations and concurrent validity measures were sufficient (Goodman, 2001; Van Widenfelt et al., 2003). The reliability of the SDQ in this study was acceptable for the coach report ($\alpha = .76$) and good for the parent report ($\alpha = .83$).

Quality of the pedagogical environment was measured using the Best Interests of the Child Questionnaire (BIC-Q; Zijlstra et al., 2012). This questionnaire consisted of 14 pedagogical environmental conditions

that are prerequisites for healthy child development. For each condition coaches were asked to rate the quality in the environment of the child (e.g., *Is the direct physical environment of the child safe?*). All conditions were scored as *insufficient* (1), *moderate* (2), *sufficient* (3), or *good* (4). The 14 categories in the questionnaire were as follows: (1) Adequate physical care, (2) safe direct physical environment, (3) affective atmosphere, (4) supportive and flexible childrearing structure, (5) adequate exemplary behaviour by parents, (6) interest in the child, (7) continuity in upbringing conditions, (8) safe wider physical environment, (9) respect,

(10) social network, (11) education, (12) contact with peers, (13) adequate examples in society, and (14) stability in life circumstances. The sum score of all these categories resulted in a scale for quality of the pedagogical environment (range 14 to 56). The scale was also divided into two subscales that measure the quality of the family environment (category 1 to 7) and the wider environment (category 8 to 14). Zijlstra et al. (2012) showed the interrater reliability ($\kappa = .65$), intrarater reliability ($\kappa = .74$), and scale reliability (Rho = .94, Cronbach $\alpha = .84$) of the BIC-Q were high. Some minor changes were made to adapt the questionnaire to the context of home-visiting care for FECMP. The reliability of the BIC-Q in this study was good ($\alpha = .87$).

Reasons for case closure were identified for all indicated and non-indicated children who participated in the CYC programme. Based on contact with coaches and case files we identified whether care goals were achieved, whether children were placed out of home, and whether children were referred to continued care services after case closure.

2.4 | Procedure

This study received approval from the Ethics Committee of the Child and Family Welfare department at the University of Groningen (2016). Data were collected between June 2016 and June 2020. The first weeks of CYC trajectories were characterized as a starting period. After 6 weeks, the first care plan was written and services became more focused on working towards care goals (Salvation Army, 2019; Van Assen et al., 2019). During the first weeks, coaches gathered the information about the child and its family that was needed to reliably fill out the questionnaires. Therefore, a baseline measurement was taken between 4 and 6 weeks after intake. Measurements were repeated 6, 12, and 18 months after intake. Information on the reason of case closure was collected by contacting the child and youth coach.

2.5 | Statistical analysis

2.5.1 | Baseline comparison: Target group and service characteristics

Descriptive statistics (percentages, means, standard deviations) were used to describe demographic characteristics and service use. Furthermore, prevalence of problems in multiple problem domains was reported. Missing data rates were low for demographic characteristics (0–8%), but somewhat higher for the problem domains (6–29%).

2.5.2 | Multilevel models for change during services

Multilevel models were estimated to assess change of the indicated and nonindicated CYC groups throughout the programme. Models were fitted for psychosocial skills, emotional and behavioural problems, and quality of the pedagogical environment. First, an empty

model was estimated to assess variance at the measurement level (e_{0ij}) and individual level (U_{0j}). To model change over time, fully multivariate models (Snijders & Bosker, 2011) with random scores at three discrete measurement moments (baseline, 6 months, 12 months) were used. A dummy variable was used to model differences between indicated and nonindicated trajectories at baseline. An interaction-effect of the group-dummy and measurement-dummies was used to model differences in change between groups over time. Because of the small sample sizes, no other covariates (e.g., case characteristics) were included in the models. The comparison between indicated and nonindicated trajectories was included in the multilevel models because exploratory analysis showed practically relevant differences in the case characteristics and questionnaires of these groups. By comparing baseline scores for cases with missing data at follow-up, data for these first three measurements were assumed to be missing-at-random (MAR). Measurements at 18 months were not included in the models as they were only available for a small number of cases. The results predominantly focused on the outcomes of the total scores of the questionnaires, subscales were only reported where relevant differences were observed. Complete model specifications are included in the appendices. Furthermore, percentages of children with scores above the clinical threshold on the SDQ and QPS were reported.

2.5.3 | Case closure

Descriptive statistics were provided for case closure of the CYC trajectories. Cases were categorized based on the achievement of care goals, out-of-home placement, and referral to other services.

3 | RESULTS

3.1 | Target group characteristics and service use

At intake of the CYC programme, children in the indicated group were on average older ($M = 11.0$ years; $sd = 2.9$) than children in the nonindicated group ($M = 9.2$ years; $sd = 3.5$). The age difference was mostly due to the fact that the youngest group of eligible children (3–6 years old) were less often indicated for CYC. Families of indicated children were larger ($M = 3.0$ children; $sd = 1.7$) than those of nonindicated children ($M = 2.4$ children; $sd = 0.9$). Both groups consisted of a considerable group of single parent families or blended families. Children in the indicated group (12.3%) less often had a migration background (i.e., at least one parent born abroad) than children in the nonindicated group (22.2%). In both groups most children attended primary school. Children attending high school were mostly enrolled in prevocational education (Dutch: VMBO). In both groups, 22% of the children attended special needs education. The prevalence of psychiatric diagnoses was high in both groups (indicated 49%; nonindicated 38%). The most prevalent diagnoses were Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD). Only a small part of the diagnoses consisted of internalizing psychopathology (e.g., anxiety

or depression) (see Table 1). In both groups, most families were involved in other services before entering the CYC programme (indicate 94.7%; nonindicated 76.5%) and simultaneous with the CYC programme (indicated 91.2%; nonindicated 88.9%). These services mainly consisted of mental health services for either parents or children. The mean duration of CYC trajectories in the indicated group was 13.2 months (= 8.1). Trajectories in the nonindicated group on average had a shorter duration of 10.4 months (sd = 9.1) (see Table 1).

3.1.1 | Problem domains

Emotional and behavioural problems and problems with social development were most prevalent in the indicated group. Problems in other child domains were less prevalent but still present in a substantial minority of cases. Problems with cognitive development were reported more frequently in the nonindicated group. Many families experienced problems in the daily child-rearing structure (e.g., daily routines and household management). Furthermore, many families experienced socio-economic problems such as debt, unemployment, and/or (partial) dependence on government financial support (see Table 2).

3.2 | Psychosocial skills

3.2.1 | Coach reports

At intake coaches on average reported poor psychosocial skills in the indicated group ($b_{baseline} = 112.2$; 95% CI [107.7; 116.7], $p < .001$). There was no significant difference of psychosocial skills at baseline between indicated and nonindicated children ($b_{group} = 0.3$; 95% CI

[-8.7; 9.3], $p = .94$). Both groups were characterized by a high number of cases in the clinical range of psychosocial skills at intake (75.7% indicated; 76.9% nonindicated). In the indicated group, a significant improvement of psychosocial skills was observed in the first 6 months of coaching ($b_{6\ months} = 8.3$; 95% CI [3.8; 12.8], $p < .001$). After 12 months, coach reports of psychosocial skills were similar to those at 6 months. The estimates of psychosocial skills in the nonindicated group were higher than in the indicated group after 12 months, but group differences in change were not statistically significant ($b_{12\ months+group} = 6.5$; 95% CI [-6.0; 19.0], $p = .32$). Although the number of children in the clinical range decreased, a considerable group of children still scored in the clinical range at case closure (indicated 46.7%; nonindicated 44.4%).

3.2.2 | Parent reports

Parents in the indicated group rated the psychosocial skills of their children higher than the coaches ($b_{baseline} = 118.6$; 95% CI [111.4; 125.9], $p < .001$). The psychosocial skills in the nonindicated group was estimated considerably higher than in the indicated group, but the difference was not statistically significant ($b_{group} = 11.4$; 95% CI [-1.9; 24.7], $p = .10$). The estimated psychosocial skills in the indicated group were higher after 12 months, but the change was not significant ($b_{12\ months} = 5.2$; 95% CI [-3.8; 14.2], $p = .26$). Similar to the coach reports, parents in the nonindicated group reported greater increases in psychosocial skills. However, the difference in change between groups was not statistically significant ($b_{12\ months+group} = 8.4$; 95% CI [-17.6; 26.4], $p = .37$). The estimated psychosocial skills based on the models for coach and parent are depicted in Figure 2. Full model specifications are reported in Appendix A.

TABLE 2 Prevalence of problem domains for children and families

	Child domains			Family domains	
	Indicated $n = 57$ (%)	Nonindicated $n = 18$ (%)		Indicated $n = 57$ (%)	Nonindicated $n = 18$ (%)
Externalizing behaviour	77%	63%	Daily structure	69%	50%
Internalizing behaviour	77%	46%	Debt	67%	75%
Social development	53%	59%	Financial support	65%	63%
Aggressive behaviour	51%	33%	Social network	57%	44%
Physical development	35%	33%	Physical unsafety	42%	38%
Cognitive development	34%	63%	Neglect	41%	50%
Sexual development	24%	14%	Supervision order	40%	43%
Intellectual disability	14%	33%	Unemployment	35%	69%
			Justice system	30%	13%
			Housing problems	28%	41%
			Sexual unsafety	17%	15%

Note: Percentages are based on observed cases. The domains physical safety, neglect, and sexual unsafety refer to the number of cases where professionals reported concerns in this domain, not to the number of substantiated cases.

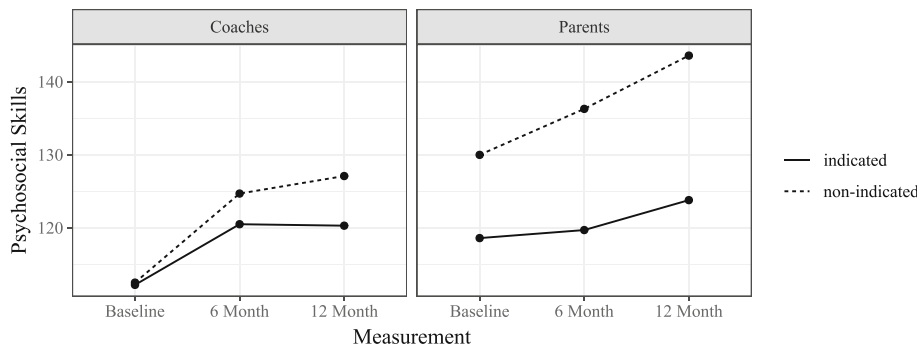


FIGURE 2 Psychosocial skills of children with indicated and nonindicated CYC

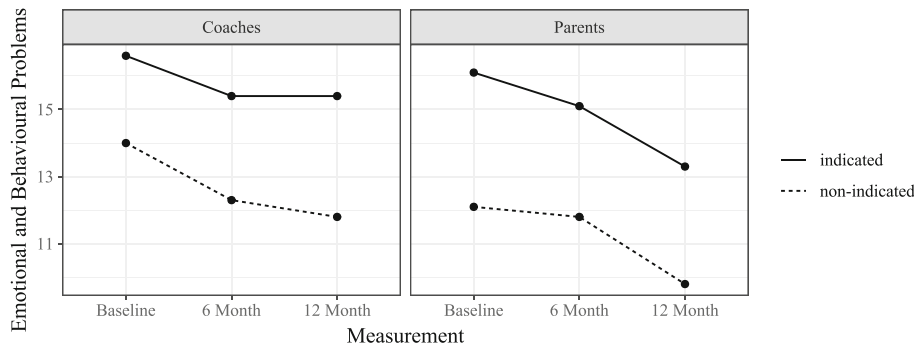


FIGURE 3 Emotional and behavioural problems of children with indicated and nonindicated CYC

3.3 | Emotional and behavioural problems

3.3.1 | Coach reports

At intake, coaches in the indicated group on average reported emotional and behavioural problems in the clinical range ($b_{baseline} = 16.6$; 95% CI [14.6; 18.6], $p < .001$). Coaches of children in the nonindicated group on average reported less emotional and behavioural problems. However, the difference between groups at intake was not significant ($b_{group} = -2.6$; 95% CI [-6.5; 1.3], $p = .20$). In both groups, a considerable number of children scored within the clinical range for emotional and behavioural problems at intake (52.8% indicated; 54.5% nonindicated). The estimates of emotional and behavioural problems after 12 months were slightly lower than at intake, but the change was not statistically significant ($b_{12\ months} = -1.2$; 95% CI [-3.0; 0.6], $p = .19$). There was no significant difference in change between indicated and nonindicated children ($b_{12\ months*group} = -1.0$; 95% CI [-4.9; 2.9], $p = .62$). Although there were less children with scores in the clinical range at case closure, the number of children with persistent clinical problems was still considerable (36.7% indicated; 20.0% nonindicated).

3.3.2 | Parent reports

At baseline, parent reports of emotional and behavioural problems in the indicated group were similar to those of coaches ($b_{baseline} = 16.1$; 95% CI [13.4; 18.8], $p < .001$). On average, parents in the nonindicated

group reported less problems, but the difference was not statistically significant ($b_{group} = -4.0$; 95% CI [-8.9; 0.9], $p = .12$). Estimates of emotional and behavioural problems after 12 months were slightly lower, but the difference was not significant ($b_{12\ months} = -2.9$; 95% CI [-8.6; 2.8], $p = .32$). Parents in the nonindicated group reported similar changes over time ($b_{12\ months*group} = 0.5$; 95% CI [-11.5; 12.5], $p = .94$). The outcomes of the parent and coach model for emotional and behavioural problems are depicted in Figure 3. For full model specifications, see Appendix B.

3.4 | Quality of the pedagogical environment

3.4.1 | Coach reports

Most coaches in the indicated group rated the quality of the pedagogical environment as *sufficient* ($b_{baseline} = 39.4$; 95% CI [37.0; 41.8], $p < .001$). On average coaches in the nonindicated group rated the quality higher than coaches in the indicated group, but the difference was not statistically significant ($b_{group} = 3.3$; 95% CI [-1.2; 7.8], $p = .15$). Estimates of quality of the pedagogical environment were somewhat higher after 12 months, but changes were not statistically significant ($b_{12\ months} = 2.6$; 95% CI [-0.5; 5.7], $p = .12$). The estimated change in quality of the pedagogical environment after 12 months was similar for children in both groups ($b_{12\ months*group} = 0.2$; 95% CI [-5.7; 6.1], $p = .94$). An explorative analysis of the categories of the BIC-Q showed that changes were predominantly observed in the categories related to parenting (i.e., *adequate physical care*, *affective child*

rearing, supportive and flexible child rearing structure, and adequate exemplary behaviour). Outcomes of the model are depicted in Figure 4 and full model specifications are reported in Appendix C.

3.5 | Case closure

Coaches reported that most children in the indicated (66.0%) and non-indicated group (70.7%) achieved their care goals. A considerable group of children were referred to continued services in both the indicated (40%) and nonindicated group (23.6%). Children were referred to other services more often when care goals were not achieved. Often these referrals took place after a short duration of coaching. Two children (4.0%) in the indicated group were placed out of home during their participation in the CYC program. No children in the non-indicated group (0.0%) were placed out-of-home at case closure of the CYC programme (Table 3).

4 | DISCUSSION

4.1 | Discussion

The aim of this study was to investigate the effectiveness of the CYC programme in a dual key worker approach. On average, children in the CYC programme experienced considerable emotional and behavioural problems and had poor psychosocial skills compared to the general Dutch population (Bot et al., 2011; Van Der Ploeg & Scholte, 2013).

Coaches reported considerable improvement in the psychosocial skills of children during the first 6 months of their participation in the CYC programme ($b_{6\text{ months}} = 8.3$; 95% CI [3.8; 12.8], $p < .001$), with no further change in the following 6 months ($b_{12\text{ months}} = 8.1$, 95% CI [1.7; 14.5], $p < .001$). At case closure, most children score in the lower mid-range of psychosocial skills of the general Dutch population (Van Der Ploeg & Scholte, 2013). Although estimates after 1 year were somewhat lower than at intake, there was no significant change in children's emotional and behavioural problems ($b_{12\text{ months}} = -1.2$; 95% CI [-3.0; 0.6], $p = .19$). The estimated quality of the pedagogical environment was also higher after 1 year, but changes were not significant ($b_{12\text{ months}} = 2.6$; 95% CI [-0.5; 5.7], $p = .12$).

Pre-post effect sizes show a considerable improvement in psychosocial skills ($d = .92$, $p < .001$). Effect sizes for quality of the pedagogical environment ($d = .41$, $p = .12$), and emotional and behavioural problems ($d = -.29$, $p = .16$) were smaller and nonsignificant. However, due to drop-out of cases with more severe problems the estimated effect sizes may be biased. Therefore, the models presented in this study were estimated under the assumption of missingness at random and are likely to be more valid than these pre-post comparisons. At case closure only two children (2.9%) were placed out of home. However, several children were referred to other services after care had ended (35.8%). The need for continued services is also reflected by the fact that children still experience considerable problems at case closure of the CYC programme. Meta-analyses by Veerman et al. (2005) and Van Assen et al. (2020) have shown similar findings in analysing emotional and behavioural problems of children participating in intensive home-visiting services.

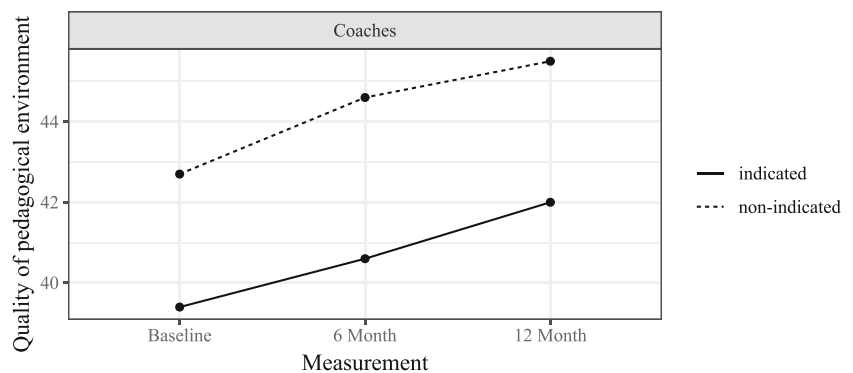


FIGURE 4 Quality of the pedagogical environment of families of children with indicated and nonindicated CYC

TABLE 3 Case closure of CYC trajectories: Goal achievement, referral, and out-of-home placement

	Indicated n (%) n = 57	Nonindicated n (%) n = 18	Total n (%) n = 75
Goals fully achieved			
... no referral	22 (44.0%)	10 (58.9%)	32 (47.8%)
... referral	11 (22.0%)	2 (11.8%)	13 (19.4%)
... placement	0 (0.0%)	0 (0.0%)	0 (0.0%)
Goals not/partly achieved			
... no referral	6 (12.0%)	3 (17.6%)	9 (13.4%)
... referral	9 (18.0%)	2 (11.8%)	11 (16.4%)
... placement	2 (4.0%)	0 (0.0%)	2 (2.9%)
Missing	7	1	8

The comparison of characteristics of indicated and nonindicated children at baseline showed some notable differences. In this study most families in both groups experienced problems in child domains as well as family and societal domains. Therefore, these families can be characterized as FECMP and cannot be defined solely by either child problems or societal problems (Bodden & Dekovic, 2010). However, child problems such as behavioural problems were more prevalent in the indicated group. Societal problems such as unemployment and housing problems were more prevalent in the nonindicated group. Most likely this reflects a tendency to predominantly refer children to CYC who experience considerable problems themselves. The longer duration of indicated trajectories possibly reflects the fact that these cases were characterized more by problems in child domains. An explorative study on the indication process showed children were mostly admitted to the CYC programme due to problems in child-domains (e.g., bullying and externalizing behavioural problems), but in some cases due to family problems as well (Homan, 2016).

The observed change in psychosocial skills was considerably larger than the change in emotional and behavioural problems. As FECMP are characterized by a complex accumulated of problems it is likely that, although children have improved their psychosocial skills, there are still other factors that may reinforce existing problems. For example, parental problems such as substance abuse (Van der Meer-Jansma et al., 2019), mental health problems (Boer & Vlask, 2019), or (mild) intellectual disability (Drost et al., 2019) can cause or reinforce problems in children.

Parents rated the psychosocial skills of their children higher than the coaches. The difference between parent reports for indicated and nonindicated children were not significant. Reports of parents and coaches on emotional and behavioural problems were more similar. Although the estimated change of parent reports for psychosocial skills ($b_{12\text{ months}} = 5.2$; 95% CI [-3.8; 14.2], $p = .26$) and emotional and behavioural problems ($b_{12\text{ months}} = -2.9$; 95% CI [-8.6; 2.8], $p = .32$) were similar to those of coaches, the findings based on parent reports were not significant. Based on the available data it is not possible to conclusively explain the differences between reporters. Possibly, the differences between parent and coach report reflect normative differences with regard to desired skills and behaviour. Furthermore, a study on the care process of the CYC programme (Van Assen et al., 2021) has shown that coaches often have incomplete information on the family situation at the start of the programme. This may explain why only parents report differences in the psychosocial skills of indicated and nonindicated children.

Although the estimates suggest there may be some improvement in quality of the pedagogical environment, these findings should be interpreted cautiously. First, the changes in the model were not statistically significant. Second, the ratings of quality of the pedagogical environment were much higher than expected in this target group. Several methodological limitations may have reduced the validity of these results (see Section 4.2). For example, in this study only the coach perspective of quality of the pedagogical environment was taken into account. Earlier studies have shown that perspectives on child well-being and parenting can differ considerably between

parents, children and professionals (Bögels & Van Melick, 2004; Lagattuta et al., 2012). Third, child and youth coaches do not work directly with parents in the CYC programme. Therefore, change in quality of the pedagogical environment cannot be directly attributed to the CYC programme. It is possible that by improving psychosocial skills the CYC programme has indirectly affected the quality of the pedagogical environment improving children's ability to address social situations adequately and consequentially reducing parenting stress. However, research suggests that changes in child behaviour do not necessarily affect change in the family and vice versa (Damen et al., 2021; Tausendfreund et al., 2016). Otherwise, these changes may also reflect the effect of the TF programme that was provided simultaneously with the CYC programme.

4.2 | Strengths and limitations

By using a longitudinal design with multiple measurements, we were able to investigate the development of children's emotional behavioural problems and psychosocial skills over time. The use of multiple outcome measurements allowed for an assessment of the effectiveness of CYC in multiple areas. The measures psychosocial skills and emotional and behavioural problems were chosen in line with the programme theory of CYC (Salvation Army, 2019). As FECMP often are involved with multiple types of services it is important to not only assess services separately, but also take into account other service use (Pannebakker et al., 2018). Therefore, the analysis of data on previous service use, reasons of case closure, and referral to other services was a valuable addition to this study.

An important limitation of the study was the selective nonresponse and drop-out in the selection and allocation procedure. Many nonparticipating families stated they were overburdened, involved with child protection services or referred to specialized mental health care. This implies that the most severely overburdened and unsafe families may not have been included in this study. Therefore, the findings presented in this study may not be generalizable to the families experiencing the most severe problems.

Another limitation of this study was the lack of a control group. The study was originally designed as a partly randomized trial. The randomization procedure in this study was compromised by problems with participant allocation and selective missing data. Due to ethical constraints withholding treatment of the CYC programme for indicated children was not possible. Therefore, we chose to use a design with additional treatment for nonindicated children. However, in recruiting children for additional nonindicated CYC, a substantial group of children dropped out after allocation. Parents and coaches of these children often indicated that families were overburdened and too many professionals were involved. This resulted in selective drop-out, which compromised the randomization procedure and reduced the comparability of the research groups. As both the nonindicated and control group were dependent on the same randomization procedure, the nonparticipation rate in the nonindicated group also affected the recruitment in the control group. To increase the sample size in

the control group, we recruited additional participants in the control group and aimed to analyse the data as a quasi-experimental design. Although the sample size of the control group ($n = 37$) was acceptable, there was considerable drop-out after allocation. This drop-out was partly due to reasons that were observed in the other groups as well (e.g., early case closure and nonresponse). Furthermore, the follow-up measurements in this group were also affected by the COVID-19 pandemic. As a result, the amount of data in the control group was too small to include the group.²

Based on a missing data analysis, we assumed data were Missing at Random (MAR) in both groups on the first three measurements. Especially at follow-up, the drop-out and nonresponse resulted in smaller sample sizes. The lack of statistical power may explain why in some models we observed clinically relevant estimates that were not statistically significant. Due to the small sample size, child and family characteristics were not included as covariates in the multilevel models. As a consequence we were not able to investigate whether treatment effects differed for cases with different characteristics. The problems we encountered in conducting our study reflect issues raised about conducting evaluation studies of services for FECMP (e.g., Boddy et al., 2011).

Due to the lack of longitudinal control group data this study was also unable to distinguish the effects of CYC from TF services. Therefore, the findings in this study only reflect the change of the TF and CYC programmes combined. In an earlier study, Tausendfreund et al. (2015) found no consistent pattern of change in emotional and behavioural problems of children that only received TF services. However, it is unclear to what extent TF services have contributed to the outcomes in this study. It is likely that at least part of the observed effects is due to the influence of the TF programme. Furthermore, the lack of a control group implies that we were not able to account for threats to validity such as regression to the mean or maturation. This study provides an indication of improving psychosocial skills of children participating in the dual key worker approach of the TF and CYC programme, but more research is needed to attribute these effects to these programmes with more certainty.

4.3 | Implications for future research and practice

This study shows that CYC is a promising programme for improving the psychosocial skills of children growing up in FECMP. In future research, other designs such as time-series studies can contribute by attributing observed effects with more certainty to the programme(s). Qualitative studies on care activities of the programme (Van Assen et al., 2021) and experiences of children in the programme (Van Assen et al., in preparation) have identified several aspects of the CYC programme that likely have contributed to the outcomes reported in this paper. For example, children reported activities focused on structuring emotions and behaviours (e.g., ABC-schemes) and practicing social skills were useful for them. Furthermore, children emphasized the importance of a long-term personal relationship with their coach (for

more details see Van Assen et al., in preparation). The findings of this study, combined with earlier studies on the CYC programme (Van Assen et al., 2021, in preparation) suggest child-centred programmes such as CYC show some promise in the improvement of well-being of children growing up in FECMP. In future research connecting care characteristics to outcomes may provide information on which care activities of the programme are effective in achieving positive outcomes. Furthermore, these studies have identified outcomes of the intervention that were not captured in the standardized outcomes in this study such as improved participation in the care process. The findings that a substantial group of these FECMP participated in other types of care before, during, and after their participation in the CYC and TF programmes emphasizes the need to investigate outcomes of children and families over longer periods of time and across multiple services. Although more research is needed to attribute outcomes with more certainty to the programmes, these findings suggest that the combination of the TF and CYC programmes may be promising in improving the psychosocial skills of children growing up in FECMP.

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DATA AVAILABILITY STATEMENT

Raw research data are not shared due to privacy restrictions. More detailed descriptions of the data can be requested from the corresponding author.

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ENDNOTES

¹ https://mc.manuscriptcentral.com/cfsw?DOWNLOAD=TRUE&PARAMS=xik_216KCITNQLyPcWukb3NnuCHwJFFJRCdYiERG9brRtMeL1e8aLoRKcldrYN677AFJRM3PUkjPadKL91WoKCLarZTxQBEGX1Z4vaZ9EHu8Gthe6gr14U65UeGR9LDsNDPWW4g7NVgoXMBW1YJ1p63DCsc6S755TFU1wmk7WjEuM2WRNDEx8os6Xp7XEViDzdf4PNGu9Pp7WWiHWzVqWP7q9zRXdyTDjHDwDLbVKuHNdCtErVrFLlJmU13kf9653xMK4vMyD5#_ftn1.

² https://mc.manuscriptcentral.com/cfsw?DOWNLOAD=TRUE&PARAMS=xik_216KCITNQLyPcWukb3NnuCHwJFFJRCdYiERG9brRtMeL1e8aLoRKcldrYN677AFJRM3PUkjPadKL91WoKCLarZTxQBEGX1Z4vaZ9FEHu8Gthe6gr14U65UeGR9LDsNDPWW4g7NVgoXMBW1YJ1p63DCsc6S755TFU1wmk7WjEuM2WRNDEx8os6Xp7XEViDzdf4PNGu9Pp7WWiHWzVqWP7q9zRXdyTDjHDwDLbVKuHNdCtErVrFLlJmU13kf9653xMK4vMyD5#_ftn2.

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APPENDIX A: MODEL ESTIMATIONS OF PSYCHOSOCIAL SKILLS (QPS)

	Total psychosocial skills				Interpersonal skills	
	Coaches		Parents		Coaches	
	Empty	Group	Empty	Group	Empty	Group
Fixed effects						
Empty model	117.2 (2.0)**		123.4 (2.9)**		59.6 (1.0)**	
Baseline		112.2 (2.3)**		118.6 (3.7)**		57.2 (1.3)**
6 months		+8.3 (2.3)**		+1.1 (3.4)		+4.9 (1.4)**
12 months		+8.1 (3.2)**		+5.2 (4.6)		+4.1 (1.6)**
Group		+0.3 (4.6)		+11.4 (6.8)*		-0.5 (2.5)
6 months * group		+3.9 (4.9)		+5.2 (7.4)		+0.9 (2.9)
12 months * group		+6.5 (6.4)		+8.4 (9.2)		+2.1 (3.3)
Random effects						
Person var (U_{0j})	153.4 (41.3)		270.4 (79.0)		39.6 (11.5)	
Time var (ϵ_{0ij})	103.6 (19.5)	0.0 (0.0)	129.0 (32.5)	0.0 (0.0)	33.8 (6.3)	0.0 (0.0)
Var (U_{1j})		203.5 (40.8)		370.2 (87.1)		61.0 (12.3)
Var (U_{2j})		238.3 (51.3)		388.8 (100.5)		75.0 (16.3)
Var (U_{3j})		298.4 (76.4)		272.8 (96.7)		71.6 (18.3)
Cov (U_{1j}, U_{2j})		137.1 (38.4)		277.6 (80.8)		37.5 (11.7)
Cov (U_{2j}, U_{3j})		231.7 (56.8)		196.0 (84.8)		63.7 (15.7)
Cov (U_{1j}, U_{3j})		127.9 (45.7)		210.6 (84.2)		34.6 (12.3)
Deviance						
Deviance	903.716	875.364	641.659	631.707	770.461	742.875

* $p < .10$. ** $p < .05$.

	Interpersonal skills		Intrapersonal skills			
	Parents		Coaches		Parents	
	Empty	Group	Empty	Group	Empty	Group
Fixed effects						
Empty model	63.5 (1.5)**		57.6 (1.1)**		59.9 (1.5)**	
Baseline		60.7 (2.0)**		55.1 (1.3)**		57.6 (1.9)**
6 months		+1.1 (1.8)		+3.3 (1.2)**		+0.4 (1.9)
12 months		+2.2 (1.8)		+4.0 (1.8)**		+3.3 (2.7)
Group		+6.4 (3.7)*		+1.0 (2.6)		+5.3 (3.5)
6 months * group		+2.3 (3.8)		+2.6 (2.4)		+2.9 (4.2)
12 months * group		+4.5 (3.6)		+3.4 (3.6)		+3.8 (5.5)
Random effects						
Person var (U_{0j})	67.2 (20.6)		56.6 (13.9)		75.5 (22.8)	
Time var (ϵ_{0ij})	37.9 (9.6)	0.0 (0.0)	27.0 (5.1)	0.0 (0.0)	40.4 (10.1)	0.0 (0.0)
Var (U_{1j})		116.0 (26.7)		68.1 (13.6)		96.4 (22.8)
Var (U_{2j})		88.9 (23.3)		74.0 (15.8)		130.3 (33.5)
Var (U_{3j})		71.7 (22.6)		98.4 (26.0)		93.6 (33.1)
Cov (U_{1j}, U_{2j})		70.1 (21.5)		51.8 (12.7)		81.2 (23.9)
Cov (U_{2j}, U_{3j})		28.2 (17.8)		69.1 (18.0)		77.9 (29.2)
Cov (U_{1j}, U_{3j})		75.0 (21.6)		49.1 (15.8)		48.5 (25.5)
Deviance						
Deviance	544.363	530.529	768.894	747.508	550.792	540.737

* $p < .10$. ** $p < .05$.

APPENDIX B: MODEL ESTIMATIONS OF EMOTIONAL AND BEHAVIOURAL PROBLEMS (SDQ)

	Total problems				Internalizing problems	
	Coaches		Parents		Coaches	
	Empty	Group	Empty	Group	Empty	Group
Fixed effects						
Empty model	15.3 (0.8)**		14.4 (1.0)**		7.2 (0.5)**	
Baseline		16.6 (1.0)**		16.1 (1.4)**		7.5 (0.7)**
6 months		-1.2 (1.0)		-1.0 (1.4)		-0.4 (0.5)
12 months		-1.2 (0.9)		-2.9 (2.9)		-0.2 (0.9)
Group		-2.6 (2.0)		-4.0 (2.5)		+0.0 (1.4)
6 months * group		-0.5 (2.1)		+0.7 (3.1)		-0.4 (1.1)
12 months * group		-1.0 (2.0)		+0.5 (6.1)		-2.7 (1.7)
Random effects						
Person var (U_{0j})	23.7 (6.2)		36.5 (10.6)		9.2 (2.5)	
Time var (ϵ_{0ij})	12.6 (2.5)	0.0 (0.0)	17.4 (4.3)	0.0 (0.0)	5.4 (1.1)	0.0 (0.0)
Var (U_{1j})		35.2 (7.2)		48.2 (11.5)		16.2 (3.3)
Var (U_{2j})		28.7 (6.5)		50.7 (13.2)		12.8 (2.8)
Var (U_{3j})		43.1 (10.9)		70.9 (26.8)		12.8 (4.1)
Cov (U_{1j}, U_{2j})		15.9 (5.5)		31.1 (10.5)		10.3 (2.6)
Cov (U_{2j}, U_{3j})		28.1 (7.4)		23.2 (9.8)		7.4 (2.9)
Cov (U_{1j}, U_{3j})		31.2 (7.8)		18.8 (5.4)		8.4 (3.2)
Deviance						
Deviance	625.205	608.989	497.591	506.934	539.979	533.022

* $p < .10$. ** $p < .05$.

	Internalizing problems		Externalizing problems			
	Parents		Coaches		Parents	
	Empty	Group	Empty	Group	Empty	Group
Fixed effects						
Empty model	6.1 (0.6)**		8.1 (0.5)**		8.3 (0.6)**	
Baseline		7.0 (0.8)**		8.9 (0.7)**		9.6 (0.8)**
6 months		-0.4 (0.9)		-0.4 (0.7)		-0.9 (1.1)
12 months		-1.6 (0.5)**		-0.7 (0.6)		-2.8 (0.7)**
Group		-2.1 (1.5)		-1.7 (1.4)		-2.5 (1.4)*
6 months * group		+1.2 (1.8)		-1.3 (1.5)		+0.5 (2.3)
12 months * group		+1.0 (1.0)		-1.2 (1.3)		+3.3 (1.5)**
Random effects						
Person var (U_{0j})	11.4 (3.4)		11.3 (2.9)		12.0 (3.6)	
Time var (ϵ_{0ij})	5.8 (1.4)	0.0 (0.0)	5.8 (1.2)	0.0 (0.0)	6.7 (1.7)	0.0 (0.0)
Var (U_{1j})		18.0 (4.1)		16.9 (3.5)		15.6 (3.5)
Var (U_{2j})		15.2 (4.0)		16.5 (3.7)		18.5 (5.0)
Var (U_{3j})		16.4 (4.2)		10.2 (2.8)		29.2 (8.1)
Cov (U_{1j}, U_{2j})		9.0 (3.4)		9.2 (3.0)		3.9 (2.0)
Cov (U_{2j}, U_{3j})		11.7 (3.6)		10.1 (2.8)		10.5 (4.2)
Cov (U_{1j}, U_{3j})		15.9 (3.8)		9.9 (2.7)		19.7 (4.9)
Deviance						
Deviance	411.895	397.025	548.030	533.709	419.622	418.868

* $p < .10$. ** $p < .05$.

APPENDIX C: MODEL ESTIMATIONS OF QUALITY OF THE PEDAGOGICAL ENVIRONMENT (BIC-Q)

	Total		Family		Society	
	Empty	Group	Empty	Group	Empty	Group
Fixed effects						
Empty model	41.2 (0.9)**		21.0 (0.4)**		20.2 (0.5)**	
Baseline		39.4 (1.2)**		20.3 (0.6)**		19.0 (0.7)**
6 months		+1.2 (1.1)		+0.0 (0.6)		+1.3 (0.5)**
12 months		+2.6 (1.6)		+1.5 (1.0)		+1.2 (0.6)**
Group		+3.3 (2.3)		+1.1 (1.2)		+2.2 (1.3)
6 months * group		+0.7 (2.2)		+1.7 (1.3)		-1.3 (1.1)
12 months * group		+0.2 (3.0)		-0.7 (1.9)		+0.7 (1.2)
Random effects						
Person var (U_{0j})	27.1 (7.8)		5.2 (2.1)		8.4 (2.2)	
Time var (ϵ_{0ij})	15.7 (3.6)	0.0 (0.0)	6.9 (1.5)	0.0 (0.0)	3.5 (0.8)	0.0 (0.0)
Var (U_{1j})		45.2 (10.1)		12.0 (2.7)		14.1 (3.1)
Var (U_{2j})		37.5 (9.3)		12.0 (3.0)		9.4 (2.3)
Var (U_{3j})		24.4 (7.9)		7.2 (2.3)		8.1 (2.3)
Cov (U_{1j}, U_{2j})		30.2 (8.4)		8.1 (2.5)		8.9 (2.3)
Cov (U_{2j}, U_{3j})		11.2 (7.5)		-2.0 (2.4)		6.9 (2.0)
Cov (U_{1j}, U_{3j})		12.3 (8.3)		-1.7 (2.4)		8.0 (2.3)
Deviance						
Deviance	546.020	535.713	449.323	434.584	428.310	412.005

Note: For the BIC-Q, only coach data are available. * $p < .10$. ** $p < .05$.