

**The added value of a family-centered
approach to optimize infants' social-
emotional development: A quasi-
experimental study**

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Submitted

Abstract:

Importance Family-centered care has been related to positive healthcare outcomes in pediatric care. It is unknown whether family-centered care also contributes to the identification of social-emotional problems and risks for developing these.

Objective: To assess whether a family-centered approach contributes to the early identification of social-emotional problems and risks for developing these.

Design: In a quasi-experimental study in Preventive Child Healthcare (PCH), we compared those regions in which a family-centered approach was implemented (FCA) to those regions with “care-as-usual” (CAU). In all regions, PCH professionals performed well-child visits (2-18 months) and assessed social-emotional problems, or risks developing these, by rating outcomes of assessments as “*not optimal*” or as “*a problem*.” We compared FCA and CAU regarding the rates of newly identified (risks for) social-emotional problems, the pace of identification over time, and the child’s psychosocial wellbeing at eighteen months as measured by the Child Behavior Checklist (CBCL). For participants that received extra care, we compared FCA and CAU regarding the severity of parent-reported problems.

Setting: Routine Preventive Child Healthcare (PCH) in the Netherlands.

Participants: 5658 parents (68%) agreed to participate in the study before their child was 3 months of age. 4358 parents (80%) filled in the CBCL.

Interventions: A family-centered approach that aims to enhance children’s social-emotional development and to identify early any risks regarding social-emotional problems.

Main outcome measures: The rates of newly identified (risks for) social-emotional problems, the pace of identification over time, and CBCL scores at eighteen months. For participants who received additional care, the severity of parent-reported problems was compared.

Results: In the FCA group, risks were identified more frequently, though differences were small (24.7% versus 22.0%, $p=.02$, Cohen’s $W=.03$). Risks were also identified earlier ($p=.008$), and additional care was provided to more severe cases than in CAU. CBCL scores did not differ between groups.

Conclusions and relevance: The family-centered approach contributes to more and earlier identification of risks for social-emotional problems and to the identification of families that need additional care, but not to fewer psychosocial problems for the child at 18 months of age.

Introduction

The importance of children's social-emotional wellbeing for later life has been widely recognized.¹⁻³ As a consequence, multiple studies have focused on the identification of social-emotional problems in children.⁴⁻⁶ If social-emotional problems do exist, children and their families may benefit from early intervention.⁷⁻⁹ However, the identification of social-emotional problems in children, and subsequently providing care, remains sub-optimal.^{4,5,10}

Family-centered care may help to optimize the early identification process. The key elements of family-centered care according to the American Academy of Pediatrics are described in Table 1.¹¹ This care may optimize the early identification process by a number of characteristics. First it takes into account the expert view of parents about their child.^{12,13} This may stimulate parents to express their view concerning the child's development, and thus to disclose their concerns easier, which can be beneficial for identification.¹⁴ Second, family-centered care may optimize early identification by taking into account the child within his/her context. This can be beneficial since, in addition to their genetic and biological make-up, children's development depends on the context they grow up in.¹⁵ Furthermore, family-centered care may also promote children's social-emotional wellbeing generally through empowerment of the parents, which can enhance parents' confidence and parenting skills. This in turn optimizes the child's developmental context, which subsequently may contribute to the child's social-emotional wellbeing.¹⁶

Family-centered care has been adopted as pivotal for quality of care by preventive pediatrics, as reflected in guidelines like *Bright Futures* of the American Academy of Pediatrics.^{17,18} In the Netherlands, a family-centered approach (FCA) has been implemented in Preventive Child Healthcare (PCH). PCH is similar to well-child visits in the US, but is free of charge for all families and has a wide reach (>90%). The implemented FCA consists of a family-centered way of communicating with parents (as further detailed in the Methods section), in combination with a checklist of questions regarding the child's social-emotional wellbeing and developmental context. However, it is unknown whether the FCA contributes to the early identification of (risks for) social-emotional problems and to children's social-emotional wellbeing in general. Therefore, in this study our aim was first to assess whether the FCA leads to more and earlier identification of (risks for) social-emotional problems, i.e. social-emotional problems and risks for developing these, as compared to care-as-usual (CAU). For participants that received extra care, we compared FCA and CAU regarding the severity of parent-reported problems. Second, we assessed whether the FCA is associated with children's social-emotional wellbeing at the age of 18 months.

Table 1**Core principles of family-centered care according to the American Academy of Pediatrics**

1. Respecting each child and his or her family
2. Honoring racial, ethnic, cultural, and socioeconomic diversity and its effect on the family's experience and perception of care
3. Recognizing and building on the strengths of each child and family, even in difficult and challenging situations and respecting different methods of coping
4. Supporting and facilitating choice for the child and family about approaches to care and support
5. Ensuring flexibility in organizational policies, procedures, and provider practices so services can be tailored to the needs, beliefs, and cultural values of each child and family
6. Sharing honest and unbiased information with families on an ongoing basis and in ways they find useful and affirming
7. Providing and/or ensuring formal and informal support (eg, family-to-family support) for the child and parent(s) and/or guardian(s) during pregnancy, childbirth, infancy, childhood, adolescence, and young adulthood
8. Collaborating with families at all levels of health care, in the care of the individual child and in professional education, policy making, and program development
9. Empowering each child and family to discover their own strengths, build confidence, and make choices and decisions about their health

Methods*Design and setting*

We conducted a non-blinded quasi-experimental within a Dutch PCH organization, which implemented a family-centered approach in some parts, but not in others. This led to an intervention region (FCA) and a care-as-usual (CAU) region. Randomization was not possible since professionals worked only in one of both regions and also children were bound to the region in which they lived. The Medical Ethics Committee of the University Medical Center Groningen approved our study and all participants provided written informed consent. Further details are described elsewhere.¹⁹

Participants

Parents were eligible if they had sufficient mastery of the Dutch language and visited PCH in the regions concerned (parts of the Dutch provinces of Drenthe and Overijssel) with their newborn child. Between October 2009 and June 2011, before the well-child visit at the child age of 3 months, PCH professionals, i.e. nurses and medical doctors, asked 8280 (84%) of all eligible parents to participate. Of those asked, 5658 (68%) agreed to participate. No large differences were found in either group between parents who were or were not invited to participate, or between participants and non-participants regarding

background characteristics and the child's social-emotional status (Cramer's $V = .05$ to $.13$). At 18 months, 5478 families (97%) were still participating.

Intervention group

The FCA aims to enhance children's social-emotional wellbeing in PCH. It was used during all routine well-child visits (from 2 until 18 months). The FCA strongly focuses on building rapport with parents. PCH professionals attune their care where possible to the unique needs and wishes of each family by taking their point-of-view as basis for the well-child visit, and treat them as equal partners and experts on their child. Through empowering communication, PCH professionals try to enhance parents' confidence and parenting skills, and, with that, the child's developmental context. Furthermore, the FCA provides a guideline for conversation with parents on five domains associated with children's social-emotional development (see Appendix 1). For each domain, professionals can register in the child's medical record *not discussed*, *protective*, *indistinct*, or a *risk*, and additional free text. After assessment of all domains, PCH professionals jointly decide with parents to rate the situation as "*fine*," "*not optimal*" indicating that no additional care is needed currently, or "*a problem*" i.e. an additional activity needs to be provided by PCH. For the well-child visit at eight weeks, 15 minutes extra were allotted (30 minutes in total).

Before using the FCA, PCH professionals participated in four days of training. After this, they had to videotape two well-child visits which needed to be certified as sufficient by a trainer using standardized guidelines.²⁰ This procedure was repeated until performance was rated as adequate. PCH professionals attended supervisory sessions every three months.

Care-as-usual group

In the CAU group, PCH professionals monitored children's general health and social-emotional development during routine well-child visits according to the guidelines of the National Center for Child Health.²¹ These guidelines mention PCH professionals' communication skills and children's development context as generally important, but in the CAU group, professionals were not trained in these family-centered care elements.

Procedures

PCH professionals in both groups assessed whether they identified new social-emotional problems or risk factors for developing these. They did this during nine routine well-child visits (child ages 2, 3, 4, 6, 7.5, 9, 11, 14, and 18 months) by rating the situation as "*fine*," "*not optimal*," or "*a problem*". If specific ratings were missing, these were substituted by

those of the subsequent visit. This was done only if that rating contained a note that nothing had changed since the previous visit.

Participants receiving additional care were asked to participate in an additional research-interview which comprised several questionnaires regarding the child's social-emotional development and developmental context (see Appendix 2). In the FCA group, 114 parents were asked to fill in the additional questionnaires (3.8% of total) and 87 (76% of those asked) agreed to this. Of these, three families were seen twice and two families were seen three times because additional care was provided more than once). In the CAU group, 71 parents were asked (2.6% of total) and 61 (86% of those asked) agreed to this (one family was seen twice and for two cases we could not verify whether an additional activity had taken place).

One week before the child reached the age of 18 months, we sent all participants a Child Behavior Checklist (CBCL) 1.5-5,^{22,23} at their e-mail address (if provided and otherwise on paper), with the request to fill in the questionnaire after the routine well-child visit at 18 months. If parents did not return the questionnaire within two weeks, they received a reminder, and, after two weeks, parents were approached by phone. After three phone calls, they received a printed version. 4358 parents returned the questionnaire (response rate 80%), 42 of which were not used because of too much missing data. All participants received a small gift for their participation.

Measures

The identification of (risks for) psychosocial problems was the primary outcome. This was measured by the assessments of PCH professionals that were rated as “*not optimal*” or “*a problem*”, leading to a group in which both identified risks that needed additional care and risks that not needed additional care were represented.

The second primary outcome was the parent-assessed psychosocial development of their child by the Dutch version of the CBCL 1.5-5.^{22,23} The CBCL 1.5-5 consists of 99 problem items which are scored as 0 (not true), 1 (somewhat or sometimes true), or 2 (very true or often true), and can be used to compute an Internalizing, Externalizing, and Total problems score.

For the subsample of participants for whom PCH professionals provided additional care (N=148), we used several questionnaires (see Appendix 2) to assess the severity of the identifications.

We assessed the following background characteristics: *parental age, educational level, working participation, and country of birth*, and furthermore the *family composition, having one or more children, birth weight and weeks of gestation*. We obtained this

information from the child's medical record or, if data lacked, from the baseline questionnaire. Educational level represents the highest level obtained by one of the parents and was divided into low (primary school or less, lower vocational or lower general secondary education), medium (intermediate vocational education, intermediate or higher secondary education) and high (higher vocational education or university).

Analyses

First we described baseline characteristics per group, and assessed differences by using Chi-square tests. Second, we compared the FCA and CAU group regarding the rates of identified (risks for) social-emotional problems using logistic regression. We adjusted these analyses for potential confounders (as listed in Table 2). Third, we performed Kaplan-Meier survival analyses to compare both the FCA and CAU group regarding the chance for a child to have risks or problems identified over time, i.e. pace. Fourth, for those participants for whom PCH professionals provided additional care, we assessed the severity of the detected cases based on questionnaires covering the FCA domains (see Appendix 2). We compared groups using independent t-tests or, in case of skewed data, Mann-Whitney tests. Finally, we compared the FCA and CAU group regarding CBCL scores (total, externalizing and internalizing problems scores), crude and adjusted for potential confounders as listed in Table 2, using regression analyses. We repeated these analyses for children for whom PCH professionals had assessed the situation during any of the well-child visits from 2-18 months as being "*not optimal*" or "*a problem*" and next for those participants for whom PCH professionals had provided additional care.

Analyses were done using SPSS20, the cut-off for statistical significance was set at .05. Outcomes in analyses were restricted to first identifications.

Results

Background characteristics

Table 2 shows participants' baseline characteristics. In the FCA group, parents had a slightly lower educational level, and children lived somewhat less frequently with both parents, or with one parent and a partner, as compared to the CAU group. Differences were small (Cramer's V .12 and .03).

Table 2 Characteristics of participants in the Family-centered approach (FCA) and Care-as-usual (CAU) group

	Family-centered approach	Care-as-usual	<i>P</i> Value
Child's gender (male)	1466 (50.2%)	1382 (52.5%)	.084
Highest education level of one of the parents			
Lower	125 (4.8%)	88 (3.6%)	<.001
Secondary	1138 (43.3%)	802 (32.9%)	
Higher	1366 (51.9%)	1547 (63.5%)	
Parental age			
Mother			
< 20	16 (0.6%)	15 (0.7%)	.801
20 – 40	2420 (96.8%)	2223 (97.1%)	
40 and over	63 (2.5%)	51 (2.2%)	
Father			
< 20	5 (0.2%)	6 (0.3%)	.356
20 – < 40	2151 (89.3%)	1987 (90.5%)	
40 and over	252 (10.5%)	202 (9.2%)	
Employment status parent (at least one parent works)	1247 (94.3%)	1430 (94.8%)	.557
Country of birth parent (at least one parent born in the Netherlands)	2534 (99.3%)	2423 (99.1%)	.542
Family composition (both biological parents, or biological parent and partner)	2100 (96.6%)	2020 (97.7%)	.042
Number of children (one child)	1253 (42.9%)	1084 (41.2%)	.198
Birth weight (<2500 grams)	103 (3.9%)	78 (3.5%)	.440
Gestational age (<37 weeks)	150 (6.0%)	110 (5.2%)	.258

Rates of identified risks for social-emotional problems and pace of identification

The rates of identified risks for social-emotional problems differed significantly between the FCA and CAU group (24.7% and 22.0% for the FCA and CAU group respectively, $p=.02$), though the effect was small (Phi .03). The effect became slightly larger when adjusted for potential confounders. Figure 1 shows the outcomes of the Kaplan-Meier survival analysis; in the FCA group (risks for) social-emotional problems were assessed at an earlier stage compared to the CAU group (Tarone-Ware test $p=.008$). Table 3 illustrates the earliest assessment per child rated as “not optimal” or “a problem” per well-child visit.

Figure 1 The likelihood of identification of (risks for) social-emotional problems over time, for children receiving family-centered care or care-as-usual

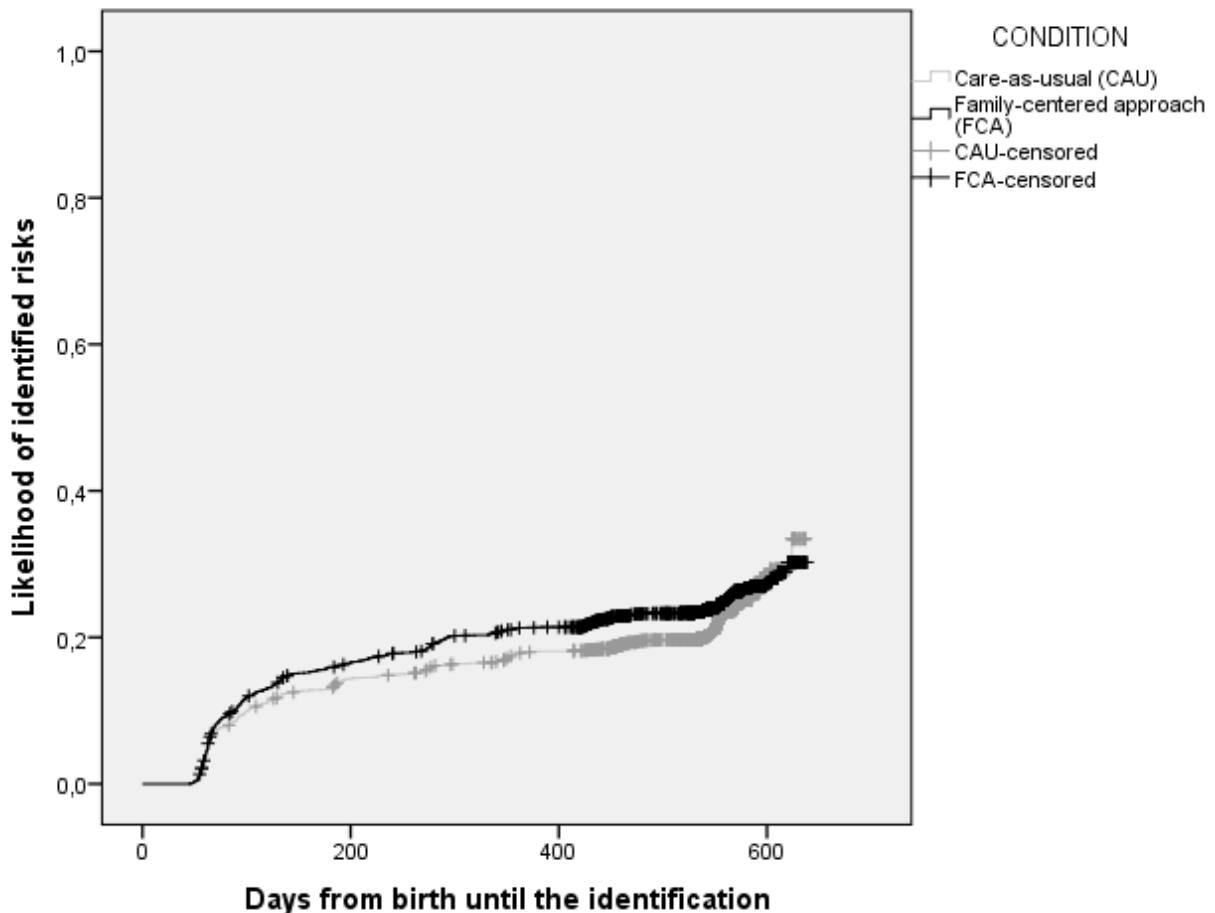


Table 3 Overview of the earliest assessment rated as “*not optimal*” or “*a problem*” per child in the Family-centered approach (FCA) and Care-as-usual (CAU) group

	Family-centered approach	Care-as-usual
Earliest assessment rated as “<i>not optimal</i>” or “<i>a problem</i>”		
2 months	284 (9.6%)	211 (7.9%)
3 months	93 (3.1%)	76 (2.8%)
4 months	70 (2.4%)	59 (2.2%)
6 months	53 (1.8%)	43 (1.6%)
7.5 months	35 (1.2%)	17 (0.6%)
9 months	66 (2.2%)	39 (1.5%)
11 months	32 (1.1%)	41 (1.5%)
14 months	55 (1.9%)	41 (1.5%)
18 months	46 (1.6%)	65 (2.4%)

Severity of identified (risks for) social-emotional problems in those cases for which PCH undertook additional activities

In the analyses concerning participants for whom PCH professionals had provided additional care, we found that in the FCA group PCH professionals identified more severe cases compared to in the CAU group. Significantly higher scores (i.e., worse outcomes) were found for 6 of the 15 outcomes (see Appendix 2). Effect sizes r ranged from .17 to .22. Cases from the FCA group were significantly older compared to cases from the CAU group (median 6 versus 2 months old, $p < .001$), but did not significantly differ on any other background characteristics.

Psychosocial wellbeing at age 18 months measured by the Child Behavior Checklist

The psychosocial wellbeing of children did not differ between groups; the mean CBCL Total Problems score was 21.4 in the FCA group (N=2208) and 20.8 in the CAU group (N=2108), $p = .20$, nor did we find statistical differences for the Internalizing and Externalizing scores, crude and adjusted. We also did not find differences between groups for comparing children that were identified by PCH professionals as having risks for social-emotional problems by rating assessments as “*not optimal*” or “*a problem*”, or for participants for whom PCH professionals provided additional care.

Discussion

To our knowledge this is the first study that has assessed the effectiveness of a family-centered approach aiming to improve the identification of social-emotional problems and

risks for developing them. We found that a family-centered approach (FCA) contributed to more and earlier identification of risks for social-emotional problems, and to a better identification of families that needed additional care.

The FCA contributed to the identification of more risks and at a faster pace than care-as-usual. A somewhat similar study compared trained to non-trained PCH professionals regarding the identification of psychosocial problems.²⁴ Results showed that trained professionals, who used a structured method to assess psychosocial problems, identified moderate and severe problems more accurately as compared to non-trained professionals.²⁴ However, the children were older (5-6 years) than in our study, making results hard to compare. The most likely explanation for our finding of more risks at a faster pace concerns the structural attention that is given to all potential risks.

The finding that in the FCA group additional care was provided to families with at average more problems (on 6 of the 15 measured outcomes) as compared to the CAU group, indicates that the identifications were also appropriate: interventions seem to be provided to families that actually needed it. The identification of more severe cases in the FCA group may be due to the extensive training of professionals in working with the FCA. Another explanation is that in the FCA group only the more severe cases were asked to fill in the additional questionnaires or that in the CAU group children with more severe risks did not participate in our study, i.e. that selection bias occurred. Non-response analyses do not provide support for the latter, though. A final explanation may be that the FCA empowers parents in such a way that they can handle problems themselves, causing only the more severe cases to still require additional care. This would also explain our finding that the FCA was associated with earlier identification, but that the additional care was provided somewhat later than in the CAU group (as the children from the FCA group who received additional care were significantly older than those in the CAU group).

At 18 months of age, we found no differences between the FCA and CAU group regarding children's psychosocial wellbeing (as measured by the CBCL 1.5-5). We had expected that the FCA would lead to lower CBCL scores for the children with assessments rated as "*not optimal*" or "*a problem*", since earlier identification should diminish child problems. A reason may be that positive effects are simply not yet visible at this age, or that the CBCL is not sufficiently sensitive to detect them. This certainly deserves additional study.

Strengths and limitations

Major strengths of our study are the inclusion of a large group of children with a rather long follow-up in routine PCH care and a small loss to follow up, in a quasi-experimental

design. However, our study also has some limitations. First, background characteristics of the two groups differed somewhat, but differences were small, and were adjusted for in the analyses, making any significant impact unlikely. Second, we had no golden standards for the appropriateness of identifications, but we used the best available valid proxies for this. Third, PCH professionals in the CAU group may have had some knowledge about family-centered care, for example through the Internet. If so, this may have led to an underestimation of the effectiveness of the FCA, but effects are probably small as we avoided any publicity on this project.

Conclusion

The results of this study can contribute to children's social-emotional wellbeing as it provides some important insights in the early identification of risks for this. The family-centered approach seems to contribute to the identification of more risks at an earlier age. Effects were relatively small, but they apply to all children, thus making potential population effects rather large. Furthermore, the family-centered approach also seems to be associated with a better identification of risks and problems that need additional care. Further research is needed on whether this indeed improves child health outcomes on the long-term.

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Appendix 1: The contents of the family-centered approach

1. Competence of the primary caretaker

- How do you like being a mother (of ... children)?
- Does the situation correspond to what you expected?
- Do you feel uncertain or do you have any difficulties with certain aspects of care? If you have, what kind of aspects are these?
- To what extent do you have time for yourself or for other activities?
- How do you think your health is?

Summarizing: the competence of the parent can be concluded as...

2. Role of the partner

- How does your partner feel about having a child?
- To what extent does your partner contribute to the care of your child?
- To what extent are you satisfied with the contribution of your partner?
- To what extent do you and your partner agree on how to raise and care for children?
- What happens if you and your partner do not agree (about how to raise and care for children)?
- How is the relationship between you and your partner in general?
(in case of no relationship: how do you feel about that?)
- What is the impact of having a child on your relationship?

Summarizing: the role of the partner can be concluded as...

3. Social support

- Who supports you emotionally in caring for your child?
- Who supports you in practical terms in caring for your child?
- Who advises you about caring for your child?
- To what extent do you manage with the support you receive?
- Are you familiar with ways to enlarge your social network?
- To what extent are you in need of contact with other mothers with babies?
- How would you define your relationship with your own parents?

Summarizing: the social support can be concluded as...

4. Perceived barriers or life events within the care-giving context of the child

- Have there been any life events the past year?
If so: To what extent does this influence your contact with (name of the child)?
- How does the combination of work and child care services work for you?
- How is your financial situation?
- How is your housing situation?
- Are there any other circumstances that impact on your family?

Summarizing: the perceived barriers or life events can be concluded as...

5. Wellbeing of the child

- How is (name of the child) doing overall?
- How is (name of the child) developing on a social-emotional level according to you?
- How familiar are you with (name of the child)?
- How does (name of the child) respond to his/her environment?
- To what extent do you recognize different ways of crying?

Summarizing: the wellbeing of the child can be concluded as...

Appendix 2: Questionnaires regarding the various domains of the family-centered care approach

Domain of the Family-centered approach	Criterion	Nr. of items	Measuring	Cronbach's alpha	References
Wellbeing of the child	Ages and Stages Questionnaire Social Emotional (<i>ASQ-SE</i>) (versions 6, 12, and 18 months)	22-29	Social-emotional development of the child	0.59-0.78	26
	Competence of the parent	Dutch Parenting Stress Index (<i>PSI</i>) (4 subscales)	11	Parental competence and attachment	0.83
	Parenting Tasks Checklist or Problem Setting and Behavior Checklist (<i>PSBC</i>)(<i>Setting Self-Efficacy subscale</i>)	14	Perceived ability of the primary caretaker in mastering problem situations	0.87	28
	Parental Sense of Competence scale (<i>PSOC</i>)	16	Competence of the parent	0.85	29-31
	SF-12 Health Survey <i>SF-12 mental</i> <i>SF-12 physical</i>	12	Health status (physical and mental) of the parent	0.68 0.70	32-34
Role of the partner	McMaster Family Assessment Device (<i>FAD</i>) (General Functioning subscale)	12	Emotional relationships within families	0.94	35,36
	Dutch Parental Stress Index (<i>PSI</i>) (subscale partner)	5	Having a child and its effect on the relationship between partners	0.68	27
Social support	Social Support List, short version (<i>SSL</i>) <i>Received</i> <i>Shortage</i>	12	Social support	0.73 0.79	37
	Loneliness score Social Emotional	11	Overall feelings of emotional and social loneliness	0.84 0.85	38
Perceived barriers or life events within the care giving context of the child	Questionnaire on the material or social deprivation of a child due to lack of money (<i>deprivation questionnaire</i>)	15	The material or social deprivation of a child due to shortage of money	0.69	39
	Dutch Parental Stress Index (<i>PSI</i>) (subscale life events)	17	Life events that happened in the past year	not applicable	27