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Parents of children with enduring epilepsy: Predictors of parenting stress and parenting

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Abstract

Objective. The goals of the work described here were (1) to predict parenting stress and parenting from stressors, resources, and parental coping behaviors in parents of children with epilepsy, and (2) to determine whether parenting stress mediates the effects of these predictors on parenting.

Methods. Participants were 91 parents of children with epilepsy (mean age of children = 8 years, 5 months). Parental perceptions of stressors, resources, parental coping behaviors, parenting stress, and parenting were assessed by means of questionnaires. Regression analyses were used to analyze the unique and combined power of the predictors to predict parenting stress and parenting. Sobel tests were used to identify the mediational role of parenting stress.

Results. Evidence was found for direct effects of stressors, resources, and coping behaviors on parenting stress and parenting, with relatively large effects for stressors. The mediational role of parenting stress was largest in the domain of parental behavioral control.

Conclusions. In the context of pediatric epilepsy, parenting stress mediates both disruptive and resilient family factors for their effects on parenting. Parents of children with epilepsy may benefit from parent training programs that, to reduce parenting stress, address epilepsy education, the management of difficult child temperament, building social support networks, and the modification of inadequate parental coping behaviors.

Keywords: Childhood epilepsy; Parenting stress; Parent–child relationship quality; Parenting; Mediational effects

1. Introduction

Research into family factors in childhood epilepsy, one of the most common neurological disorders in childhood [1,2], has been expanding in the last decade [3]. It has become apparent that, besides the neurological and medication factors, family factors play a substantial role in the development or maintenance of child psychopathology [4]. Although parent–child relationship quality [5–9] and parenting [10] have been found to be important contributors to child psychopathology, less is known about the determinants of parenting.

The parents of a child with a chronic condition have to cope with the burden of daily care related to the illness and the constant adjustment to the changing demands of the chronic condition [11]. Consequently, parental adjustment has been extensively researched in children with chronic conditions, including children with epilepsy [e.g., [12–14]]. An important aspect of parental adjustment, parenting stress, has received considerably little attention, notwithstanding that parents of children with chronic conditions

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experience higher levels of parenting stress [e.g., [15–17]]. Higher levels of parenting stress have also been reported in fathers [18] and in both fathers and mothers of children with epilepsy [19].

Parenting stress is an important concept because it is considered to be a determinant of dysfunctional parenting [20–22]. It is a type of stress that is uniquely perceived by parents and that follows from the demands inherent to being a parent [22]. Through internal working models of themselves as a parent, parents evaluate the threats and benefits in the parenting role [20]. From this it can be deduced that parents' appraisal of such threats and benefits is crucial in the development or maintenance of parenting stress. Therefore, assuming that parenting stress is an important determinant of dysfunctional parenting and assuming that parenting is most proximally related to the child [6,23], examination of the factors that influence parenting stress is essential. This may shed light on the mechanisms that increase parenting stress in families with a child with a chronic condition such as epilepsy and, consequently, their impact on parenting.

To study the predictors of parenting stress and parenting we made use of the ABCX model of family adaptation. In this model, based on stress and coping theory [24], stress (X) results from family *stressors* and *demands* (A), family *resources* and *strengths* (B), and *coping behaviors* (C) [25]. From stress and coping theory we can deduce that coping processes are essential to shaping reactions to stress and that these processes are influenced by environmental and individual variables [26]. In other words, stress and coping are interrelated in an ongoing process that balances demands, on the one hand, and available resources, on the other. As a consequence, examining stressors, demands, and resources within the ABCX model of family adjustment may provide evidence for both disruptive and resilient contributors to parenting stress [27].

The purpose of the present study was to determine the factors associated with parenting stress. In other words, we examined whether stressors, resources, and parental coping behaviors contribute to parenting stress in parents of children with epilepsy. Subsequently, based on the assumption that parenting stress contributes to dysfunctional parenting [20–22], we tested whether parenting stress mediates the effects of stressors, resources, and parental coping behaviors on different dimensions of parenting.

Factors that have been proven to be associated with parenting stress in child developmental and family literature [20–22] were selected for inclusion into the ABCX model. Abidin [20] stressed that maternal perceptions about the child's behavior contribute significantly to stress in parent–child interaction. As child illness is one of the contributors to parenting stress [21], in the context of chronic illness, it may then be assumed that *parental perceptions* of the child's *functional status* may affect parenting stress. Therefore, functional status was included in the first block of factors, which consisted of stressors and demands (A). Functional status is a construct that was developed to measure condition severity in the way it impacts age-appropriate child development [12,28,29] and was conceptualized as a noncategorical illness characteristic rather than a categorical, diagnosis-specific measure of condition severity [29–31]. Although functional status has been examined extensively in relation to maternal psychological symptoms, less is known about its relationship with parenting. To our knowledge, this is the first study that assesses the child's functional status in children with epilepsy in relation to parenting stress and parenting.

Despite the widespread attention given to the study of child temperament in relation to parenting stress and parenting in the literature regarding normally developing children [20–22,32,33], pediatric chronic illness literature, including pediatric epilepsy literature, has paid relatively little attention to the role of *child temperament* [34]. However, it has been shown conclusively that especially more *difficult* child temperament is a source of stress for parents [21]. *Parental depression* is the third important stressor. It has received considerable attention in the child developmental literature and the pediatric psychology literature, including the research on children with epilepsy. Consistent evidence has been provided that parental depression contributes to parenting stress [e.g., [35]]. Abidin [20] theorized that the contribution of parental depression to dysfunctional parenting occurs through higher levels of parenting stress.

For the second block of contributors to parenting stress, consisting of resources (B), we selected *social support*. Social support has frequently been researched in pediatric psychology literature [36,37]. The presence of social support and perceived social support is beneficial for parental adjustment. However, relatively few studies have focused on the possible effects of social support on different dimensions of parenting and whether social support effects on these dimensions are mediated by parenting stress [38]. Nevertheless, it has been demonstrated that social support directly affects parenting [39]. Therefore, it is assumed that in the context of pediatric epilepsy, social support may serve as a resource that reduces parenting stress and, subsequently, exerts beneficial effects on parenting. *Family cohesion* reflects the level of emotional bonding between family members. It has been suggested that a higher level of family cohesion can be viewed as an adaptive reaction to the presence of chronic illness [40,41]. From this it is hypothesized that family cohesion may contribute to lower levels of parenting stress in the context of a chronic condition. The third resource that was included in this study was *marital satisfaction.* Parents of children with chronic conditions have been found to experience marital role strain related to role frustration and conflicts about childrearing issues [42]. Considering that the marital relationship is a major support resource for parents, which spills over into their parenting practices [43] and which also affects parental emotional well-being, marital satisfaction can be equally assumed to relieve parenting stress and, in turn, to positively impact parenting.

For the third block of the ABCX model, consisting of parental emotion-focused and problem-focused *coping behaviors* (C), two broadband measures of coping behaviors were used: emotion-focused coping behaviors (attempts to avoid or counteract negative emotions associated with the stressor) and problem-focused coping behaviors (active attempts to solve the problem directly related to the source of stress) [24]. To date, relatively few studies have examined associations between parental coping behaviors and parenting behaviors. Emotion-focused coping styles have been associated with lower levels of parental behavioral control (e.g., lax control and coercive parenting) [44], whereas problem-focused coping behaviors have been associated with higher levels of parenting efficacy (maternal adaptation to the new parenting role) [45].

Within this study we conceptualized four parenting dimensions that became apparent from child developmental and family literature [46–48]. These dimensions refer to parent–child relationship quality and parenting. *Parent–child relationship quality* could be defined as the constellation of parental attitudes toward the child that has been built up in the long history between the parent and the child [46]. Parental acceptance and rejection are examples of constructs reflecting parent–child relationship quality. *Parenting* consists of two dimensions: parental support and parental control. Parental support reflects the degree to which parents provide a warm, safe, responsive, and affectionate environment for the child by behaving affectionately and responsively toward the child [49]. On the level of control, with behavioral control, parents provide clear rules and limits for their child and have bidirectional communication with the child [46]. In contrast, with psychological control, parents try to modify their children's behavior by interfering with the child's emotional and psychological developmental needs [50,51].

2. Method

2.1. Sample

Parents of children referred for epilepsy to the outpatient clinic of the Epilepsy Center Kempenhaeghe (Heeze, The Netherlands) completed questionnaires concerning stressors, resources, parental coping behaviors, and parenting stress and parenting. The study was approved by the scientific review committee of Kempenhaeghe, and informed, written consent was obtained from all participating parents. The criteria for inclusion in the study were: (1) an IQ > 70 points and (2) age between 4 and 18 years.

The number of potential family inclusions was 135. About 33% of the families did not participate in the study, because of failure to fulfill inclusion criteria (i.e., IQ < 70, five children); refusal to participate; and nondelivered questionnaires. No information about nonparticipating families was available, unfortunately. In total 91 parents were included into the study. Boys were slightly overrepresented, 58% ($n = 53$). The children had a mean age of 8 years, 5 months ($SD = 2.42$). Most children (86.8%) were younger than 12. Mean child IQ was 90 ($SD = 13.18$). The majority of the children (60.4%) were in primary school, and 20.8% received special educational services.

Epilepsy information was specified on the basis of an inspection of the children's medical files. Definition of seizure syndromes and seizure types was based on the International League Against Epilepsy criteria [52]. The majority of children in the sample had complex partial seizures (44%) and absences (39.6%). The commonest syndrome was generalized idiopathic epilepsy (40.7%), followed by localization-related idiopathic epilepsy (29.7%) and localization related-symptomatic epilepsy (27.5%). Mean age at epilepsy onset was 4 years 1 month ($SD = 2.12$). Children experienced seizures daily (22%), weekly (25.3%), monthly (26.4%), or yearly (24.2%). This is a normal representation of the Epilepsy Center Kempenhaeghe. Because Kempenhaeghe is a tertiary epilepsy center, a slight bias may exist regarding the more severe epilepsies. Moreover, most referred children were in the first phase of diagnosis before the onset of therapy or during the initial phase of treatment, and consequently, the seizures were not yet very well controlled in a large group of the children. A number of children had no antiepileptic drug prescription (19%), the majority of children were on monotherapy (59%), a minority had been prescribed more than one antiepileptic drug (8%), and for 14% of the children, no medication use information was available.

Eighty-one mothers and ten fathers completed the questionnaires. Mothers (mean age = 38.8, $SD = 5.1$) had mainly completed lower secondary vocational education (23.1%), secondary education (18.7%), or senior secondary vocational education (27.5%). Seventy-one percent of the mothers worked at a paid job several hours a week, and 24% did not work outside the home but ran the house (1% unemployed, and for 4% no information was available). Educational training for fathers (mean age = 42.0, $SD = 6.4$) was mainly lower secondary vocational education (27.5%), senior secondary vocational education (20%), or higher professional education (20%). Ninety-two percent of the fathers had a paid job. Parents were overrepresented with respect to the lower and senior secondary educational levels and underrepresented with respect to the higher educational levels, whereas the percentages of mothers and fathers with paid jobs were relatively high when compared with the general population [53]. Most families were intact families with two biological parents (92%), which is considerably higher than the percentage of two-parent families (~75%) in the general population [54]. One child lived in a stepfamily, two children lived in single-parent families with co-parenting, and one child lived in a single-parent family without co-parenting. All children were of Dutch origin. Only 12% of the children were single children; 48% had a brother or sister, and 34% of the children had two or more siblings (for 5.5% no information was available).

2.2. Measures

2.2.1. Parenting stress

Parenting stress was measured with the Parental Burden of Caregiving Scale, a subscale of the Parental Stress Index (PSI) [55–57]. The scale includes four items (e.g., "Being a parent to this child is more difficult than I thought it would be"). Parents rated the items on a 6-point Likert scale, ranging from 1 = "completely disagree" to 6 = "completely agree" ($\alpha = 0.81$).

2.2.2. Stressors (A)

2.2.2.1. Functional status. The child's functional status was measured with the Functional Status II(R) [29,58,59]. This questionnaire consists of two parts: a subscale that measures behavioral problems in general, and a subscale that measures behavioral problems that are due to the child's illness. Parents have to rate the general behavioral problems scale first. This scale consists of 14 items (e.g., "Does he/she eat well?"), scored on a scale comprising 0 = "seldom or never," 1 = "now and then," and 2 = "almost always." For the items rated "seldom or never" or "now and then," parents are referred to the scale that measures whether these *same* behavioral problems are related to the illness, on a Likert scale where 0 = "not at all," 1 = "partly," and 2 = "fully." If parents rate the behavioral problems as "not at all" related to illness (0), the original item on the general behavioral scale is scored as if there is no problem (2). The behavioral scale related to illness was used for the present study. The scale was originally calculated with a higher score reflecting fewer behavioral problems due to illness, but as functional status was conceptualized as a stressor in the present study, the scores were calculated in the reverse direction ($\alpha = 0.81$.)

2.2.2.2. Difficult child temperament. For measurement of difficult child temperament, the Anger/Frustration scale of the Children's Behavior Questionnaire was used (CBQ) [60]. Because of the wide age range in the present study (4–18) and because the CBQ measures temperament of children between 3 and 7, the items were adapted to measure temperament in older children as well. The Anger/Frustration subscale consists of 13 items (e.g., "Becomes angry when told he/she has to go to bed"). Parents had to rate the items on a 7-point scale, ranging from 1 = "does not apply at all" to 7 = "applies completely" ($\alpha = 0.79$).

2.2.2.3. Parental depression. Parental feelings of depression were measured with the Self Rating Depression Scale (SDS) [61]. This instrument has 20 items (e.g., "Life is worthless for me"). Parents had to rate items on a 4-point Likert scale, ranging from 1 = "seldom or never" to 4 = "almost always or always" ($\alpha = 0.82$).

2.2.3. Resources (B)

2.2.3.1. Social support. A subscale of the Nijmegen Questionnaire on Child-Rearing Situations [62] was used to measure parental perceptions of social support. This subscale consists of four items (e.g., "I have lots of support and help from people close to me (partner, friends, family, etc.)") and is rated on a 5-point Likert scale, ranging from 1 = "does not apply to me at all" to 5 = "applies to me" ($\alpha = 0.83$).

2.2.3.2. Family cohesion. The Dutch version of the Family Adaptability and Cohesion Evaluation Scales (FACES) [63,64] was used to assess family cohesion. This scale measures the degree of connectedness to each other family members perceive. The scale includes 23 items (e.g., "All the decisions are taken by the whole family"). A higher score reflects higher levels of connectedness. Parents had to rate items on a 4-point Likert scale, ranging from 1 = "never true" to 4 = "always true" ($\alpha = 0.79$).

2.2.3.3. Marital satisfaction. The satisfaction scale of the Interactional Problem Solving Questionnaire (IPOV) [65] was used to measure the degree of marital satisfaction (e.g., "How satisfied are you with the love and affection that you receive from your partner?") and includes four items. A higher score reflects more marital satisfaction. A 5-point Likert scale was used, ranging from 1 = "unhappy" to 5 = "happy" ($\alpha = 0.84$).

2.2.4. Parental coping behaviors (C)

Parental problem-focused coping and emotion-focused coping behaviors were measured with the Utrecht Coping Checklist (UCL) [66]. Problem-focused coping behaviors were computed using a composite measure including active problem-solving behaviors (e.g., "directly interfering in the event of difficulties") and seeking social support (e.g., "asking someone for help") and included 13 items. Parents rated the items on a 4-point Likert scale, ranging from 1 = "seldom or never" to 4 = "very often." Higher scores reflected more use of problem-focused coping strategies ($\alpha = 0.84$). Emotion-focused coping behaviors, also a composite measure to be rated on a 4-point Likert scale, consisted of avoidance (e.g., "Yielding in order to avoid difficult situations"), depressive reaction pattern (e.g., "Feeling totally overwhelmed by problems"), and palliative reaction pattern (e.g., "Searching for cheerful company if you are worried or upset"). The scale included 22 items and reflected more emotion-focused coping behaviors ($\alpha = 0.81$).

2.2.5. Parenting dimensions

2.2.5.1. Parent–child relationship quality. Parent–child relationship quality was measured with the acceptance scale of the Parent Child Interaction Questionnaire Revised (PACIQ-R) [67] and includes nine items (e.g., "I take my time to listen to my child") to be rated on a 5-point Likert scale, ranging from 1 = "does not apply to me at all" to 5 = "applies to me exactly" and from 1 = "never" to 5 = "always" ($\alpha = 0.65$). The higher the score, the more positive the parent felt about the quality of the parent–child relationship.

2.2.5.2. Parental support. Supportive parenting was measured with the responsiveness (8 items) and affection–expression (8 items) scales from the Child-Rearing Questionnaire [68,69]. Subsequently, a composite measure comprising 16 items (e.g., "I see immediately when my child is sad or upset") was computed. Parents rated the items on a 6-point Likert scale, ranging from 1 = "completely disagree" to 6 = "completely agree" ($\alpha = 0.88$).

2.2.5.3. Behavioral control. Behavioral control was measured with the conflict esolution scale of the Parent Child Interaction Questionnaire Revised [67] and includes 12 items (e.g., "My child breaks our house rules daily"). Parents had to rate the items on a 5-point Likert scale, ranging from 1 = "does not apply to me at all" to 5 = "applies to me exactly" and from 1 = "never" to 5 = "always" ($\alpha = 0.60$).

2.2.5.4. Psychological control. Psychological control was measured with the self-pity scale of the Amsterdam version of the Parental Attitude Research Instrument [70,71]. The scale consists of 4 items (e.g., "you have to give up a lot in favor of the happiness of your children"), measured on a 4-point Likert scale, ranging from 4 = "completely agree" to 1 = "completely disagree" ($\alpha = 0.67$).

2.3. Statistical analysis

We conducted an expectation–maximization analysis to impute missing data [72,73]. Using this method, maximum likelihood estimates are computed that subsequently "treat the missing data as random variables to be removed from the likelihood function as if they were never sampled" [72], p.148]. It appeared that missing data were due to (1) failure to answer all items (items that were not related to any other particular items), and (2) failure to complete a part of the questionnaire because was accidentally omitted from the questionnaire ($N = 21$ for acceptance and behavioral control and $N = 11$ for cohesion). As a consequence, we were able to specify that our missing data were missing completely at random, which is required to conduct a missing data analysis [72].

Pearson correlations were computed to investigate the associations among the factors that constituted the ABCX model, that is, stressors, resources, and parental coping behaviors, on the one hand, and parenting stress, parent–child relationship quality, parental support, behavioral control, and psychological control, on the other hand (Table 1).

Next, a series of regression analyses were performed to examine the relative influence of stressors, resources, and coping in predicting parenting stress, parent–child relationship quality, supportive parenting, behavioral control, and psychological control. Within this procedure, each block of predictors was entered in the first step of the regression [23,39]. Subsequently, it was assumed that the effects of stressors, resources, and parental coping behaviors on the different parenting dimensions would be mediated by parenting stress. To perform a test of mediation, the following three criteria have to be met [74]. First, the predictors have to be related to the mediator, that is, parenting stress. Second, the predictors have to be related to the four parenting dimensions. Third, the mediator has to be associated with the parenting dimensions. Evidence for mediation is achieved when the former significant relationship between stressors, resources, coping behaviors, and the different parenting dimensions is reduced to nonsignificance after controlling for the effects of parenting stress. To investigate whether the effects of stressors, resources, and parental coping behaviors were significantly reduced after controlling for parenting stress, Sobel's test of significance was used [75].

3. Results

3.1. Associations among stressors (A), resources (B), parental coping behaviors (C), and parenting stress (X) and parenting dimensions

All stressors and resources were related to parenting stress in the expected direction: higher levels of parenting stress were

Table 1
Intercorrelations among stressors, resources, coping behaviors, parenting stress, parent–child relationship quality, and parenting dimensions

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Functional status	18.44	13.37	—												
2. Child temperament	4.78	0.94	0.25*												
3. Depression	1.68	0.37	0.34**	0.17	—										
4. Social support	4.26	0.76	−0.24*	−0.30**	−0.47***	—									
5. Cohesion	3.17	0.25	−0.11	−0.24*	−0.32**	0.19	—								
6. Marital satisfaction	4.25	0.81	−0.23*	−0.23*	−0.45***	0.70***	0.33***	—							
7. Problem-focused coping	2.62	0.44	−0.11	0.05	−0.09	0.11	−0.03	0.04	—						
8. Emotion-focused coping	1.86	.29	0.17	0.24*	0.47***	−0.33**	−0.23*	−0.39***	0.19						
9. Parenting stress	3.12	1.40	0.39***	0.44***	0.38***	−0.35***	−0.35***	−0.32**	−0.12	0.39***	—				
10. Relationship quality	4.15	0.35	−0.38***	−0.34***	−0.31**	0.31**	0.27*	0.32**	0.23*	−0.14	−0.46***	—			
11. Parental support	5.30	0.54	−0.31**	−0.24*	−0.19	0.22*	0.26*	0.22*	0.19	−0.14	−0.43***	0.66***			
12. Behavioral control	4.16	0.36	−0.35***	−0.40***	−0.37***	0.39***	0.16	0.23*	0.06	−0.39***	−0.54***	0.54***	0.41***		
13. Psychological control	1.51	0.45	0.21*	0.26*	0.31**	−0.30**	−0.14	−0.21*	−0.18	0.31**	0.43***	−0.23*	−0.16	−0.20	—

* $P < .05$.
** $P < .01$.
*** $P < .001$.

associated with the child's functional status, parental depression, and difficult child temperament (Table 1). In contrast, higher levels of social support, family cohesion, and marital satisfaction were correlated with lower levels of parenting stress. Of the parental coping behaviors, only emotion-focused coping behaviors were related to parenting stress.

The associations between stressors, resources, and coping behaviors, on the one hand, and four parenting dimensions, on the other hand, generally followed the same pattern, with coping behaviors being less consistently related to the parenting dimensions than family stressors and resources. The correlation between social support and marital satisfaction was relatively high. Although almost all stressors, resources, and emotion-focused coping behaviors were interrelated, the magnitude of the correlations indicates that each factor offers unique information about stressors, resources, and coping behaviors, respectively.

Parenting stress was significantly related to each parenting dimension: higher levels of parenting stress were associated with lower levels of parent–child relationship quality, parental support, and behavioral control and higher levels of psychological control. Parenting dimensions appeared to be interrelated, but the magnitude of the associations indicates that each parenting dimension offers unique information about parenting and parent–child relationship quality.

3.2. Predicting parenting stress, parent–child relationship quality, parental support, behavioral control, and psychological control: The relative contribution of stressors, resources, and parental coping behaviors

When the relative influence of stressors, resources, and parental coping behaviors on parenting stress was examined by entering each block of predictors in the first step in a series of regression analyses, all predictors, except marital satisfaction, were found to have significant effects (Table 2). Stressors contributed most to parenting stress. At the level of individual β coefficients, a relatively strong effect emerged for emotion-focused coping behaviors.

Entering each block of predictors in the first step of the regression analysis to determine their relative influence on the four parenting dimensions (Table 2) revealed that each block of predictors contributed significantly to parent–child relationship quality, parental support, behavioral control, and psychological control. Stressors explained most of the variance in predicting parent–child relationship quality, parental support, and behavioral control when compared with the relative contribution of resources and parental coping behaviors. At the level of individual predictors, the child's functional status was a significant predictor of parent–child relationship quality and parental support. Difficult child temperament was predictive of parent–child relationship quality and behavioral control, whereas parental depression contributed significantly to both behavioral and psychological control. Individual predictors reflecting resources were less frequently significant: cohesion contributed significantly to parental support, whereas social support contributed significantly to behavioral and psychological control. β coefficients for marital satisfaction did not reach significance for any of the parenting dimensions. Problem-focused coping behaviors were predictive of three parenting dimensions, whereas emotion-focused coping behaviors contributed significantly to behavioral and psychological control.

3.3. Does parenting stress mediate the relationship between stressors, resources, coping, and parenting dimensions?

The next series of regression analyses were carried out to test whether parenting stress mediates the influence of stressors, resources, and parental coping behaviors on the

Table 2
Examining the relative influence of stressors, resources, and parental coping behaviors on parenting dimensions

Predictor	Parenting stress		Relationship quality		Parental support		Behavioral control		Psychological control	
	β	R^2	β	R^2	β	R^2	β	R^2	β	R^2
Stressors		0.33***		0.24***		0.13***		0.28***		0.15**
Child functional status	0.22*		−0.26**		−0.24*		−0.19		0.08	
Child temperament	0.34***		−0.25*		−0.17		−0.30**		0.19	
Parental depression	0.24*		−0.18		−0.07		−0.25**		0.25*	
Resources		0.20***		0.15**		0.10*		0.17***		0.10*
Social support	−0.26*		0.19		0.14		0.46***		−0.31*	
Family cohesion	−0.29**		0.19		0.21*		0.12		−0.09	
Marital satisfaction	−0.04		0.12		0.05		−0.13		0.04	
Coping		0.19***		0.09*		0.07*		0.17***		0.16***
Problem-focused	−0.20*		0.27**		0.23*		0.17		−0.25*	
Emotion-focused	.43***		−0.20		−0.18		−0.42***		0.36***	

* $P < .05$.
** $P < .01$.
*** $P < .001$.

respective parenting dimensions. To test the mediational model, it is necessary to prove first that predictors (stressors, resources, and coping), the mediator (parenting stress), and the outcomes (parenting dimensions) are interrelated [74]. We already demonstrated that stressors, resources, and coping behaviors were related to parenting stress (Table 2), that parenting stress was associated with the parenting dimensions (Table 1), and that each block of stressors, resources, and parental coping behaviors established its relative contribution to each respective parenting dimension (Table 2).

In testing the mediational model, in each analysis, parenting stress was entered in the first step of the analysis, followed by stressors, resources, and parental coping behaviors, respectively, thereby controlling for parenting stress. The results (Table 3) indicated that, after controlling for the effects of parenting stress, the relative influence of stressors on parent–child relationship quality and behavioral control remained significant, indicating that stressors at least partly directly influence these parenting dimensions. In the case of supportive parenting and psychological control, previous significant effects were reduced to nonsignificance. The same pattern was noted for the influence of resources on the parenting dimensions: all previous significant effects were reduced to nonsignificance. Moreover, parental coping behaviors were also no longer significant, except in the case of psychological control. From these results it could be deduced that the impact of stressors, resources, and parental coping behaviors may therefore be mediated through the effects exerted by parenting stress on the parenting dimensions. However, before concluding that parenting stress carries the effects of the ABC factors to the particular parenting dimensions, mediation effects should be examined at the level of the β coefficients themselves [74].

Therefore, on the level of the β coefficients, a series of Sobel tests were conducted to test whether parenting stress mediated, to a significant extent, the influence of the individual stressors, resources, and parental coping behaviors on the respective parenting dimensions [76,77]. This was done for the β coefficients that were shown to be significant when examining (1) their relative contribution to parenting stress (Table 2) and (2) the relative importance of each block of predictors to the parenting dimensions (Table 2). Sobel tests should always be performed when examining mediating effects, because not doing so often leads to false-positive or false-negative conclusions [76]. Sobel tests were performed using Preacher and Leonardelli's Web site [78], where the following statistics had to be entered: (1) the unstandardized β coefficients for the relationships between the independent variables (the predictors) and the mediator; (2) the unstandardized β coefficients for the relation-

Table 3
Effects of stressors, resources, and parental coping behaviors before and after controlling for parenting stress: R^2 values

Predictors	Relationship quality		Parental support		Behavioral control		Psychological control	
	Before	After	Before	After	Before	After	Before	After
Stressors	0.24***	0.08*	0.13**	0.03	0.28***	0.08*	0.15**	0.03
Resources	0.15**	0.04	0.10*	0.02	0.17***	0.06	0.10*	0.03
Coping behaviors	0.09*	0.03	0.07*	0.02	0.17***	0.04	0.16***	0.05*

* $P < .05$.
** $P < .01$.
*** $P < .001$.

ships between the independent variables and the dependent variables after controlling for the mediator; and (3) the standard errors of both unstandardized β coefficients.

The Sobel tests revealed that, on the level of family stressors, parenting stress mediated the effects of functional status on parent–child relationship quality (although its β remained significant) and parental support, the effects of child difficult temperament on parent–child relationship quality and behavioral control, and the effects of parental depression on behavioral and psychological control (Table 4). Family cohesion contributed to lower levels of parenting stress, which, in turn, contributed to parental support. With respect to behavioral control, the β coefficient for social support remained significant; however, its magnitude appeared to be largely reduced after parenting stress was controlled for, and we therefore decided to perform the Sobel test [79], which indicated that social support influenced behavioral control through reduced parenting stress. It was also found that the effects of social support on psychological control were mediated by parenting stress. Finally, although β values remained significant after controlling for parenting stress, Sobel tests indicated that parental emotion-focused coping behaviors were mediated by parenting stress for their effects on behavioral and psychological control.

4. Discussion

The purpose of this study was, first, to determine whether stressors, resources, and parental coping behaviors contribute to parenting stress in parents of children with epilepsy, and, second, to examine whether parenting stress mediates the effects of stressors, resources, and coping behaviors on parent–child relationship quality, parental support, behavioral control, and psychological control.

The results revealed that stressors, resources, and parental coping behaviors were all significant contributors to parenting stress. The factors that were found to increase parenting stress were child's functional status, difficult child temperament, parental depression, and emotion-focused coping behaviors. In particular, parental emotion-focused coping behaviors were a relatively major contributor to parenting stress. Factors that were found to contribute to lower levels of parenting stress were social support, family cohesion, and problem-focused coping behaviors.

A number of contributors were mediated by parenting stress with respect to their effects on the four parenting dimensions. In particular, parental perceptions of the child's functional status were associated with increased parenting stress, which, in turn, affected the degree of supportive parenting and parent–child relationship quality. Thus, it seems that the degree to which parents perceive child behavioral problems due to illness increases parenting stress, which subsequently impacts their affective and responsive parenting behaviors and compromises relationship quality. This may indicate that in the course of epilepsy, parental perceptions of the child's functional status intervene with the emotional atmosphere between parent and child [79]. Putting these effects together, it seems that parental perceptions of the child's functional status are closely related to the more affective side of parenting. This may, in turn, have considerable consequences for child adjustment [79].

The results also indicate that parenting stress mediated the adverse effects of difficult child temperament on parent–child relationship quality and behavioral control. Thus, from the current study, it appears that the effect of difficult child temperament on parenting stress not only leads to poorer parent–child relationship quality, but also affects parents' ability to adequately control the child.

Table 4
Examination of parenting stress as a mediator of the relationship between stressors, resources, parental coping behaviors, and parenting dimensions: Sobel tests

Predictor	Relationship quality		Parental support		Behavioral control		Psychological control	
	β	z	β	z	β	z	β	z
Stressors								
Functional status	−0.23*	−2.32*	−0.17	−2.65**				
Child temperament	−0.15	−2.28*			−0.07	−2.69**		
Parental depression					−0.03	−2.40*	0.18	2.61**
Resources								
Social support					0.23*	2.84**	−0.17	−2.50**
Family cohesion			0.12	2.58**				
Marital satisfaction								
Coping								
Problem-focused	0.18	1.10	0.14	1.09			−0.18	−1.71
Emotion-focused					−0.21*	−3.10***	0.22*	2.51**

* $P < .05$.
** $P < .01$.
*** $P < .001$.

The child developmental literature reveals that infant temperamental irritability negatively impacts mother–child relationship quality [80], and the results of the current study seem to indicate that this may be the case because difficult temperament increases parenting stress levels.

In addition, parental depression was found to impact parental behavioral and psychological control via parenting stress. This is in line with the existing literature, which indicates that depressive mothers exhibit more hostile and intrusive behaviors toward their child and are less involved with their child [e.g., [81]], but also expands the literature by demonstrating that the link between maternal depression and dimensions of control seems to be explained by increased parenting stress.

On the level of family resources, it was found that family cohesion contributed to lower levels of parenting stress, indicating that more connectedness between family members reduces parenting stress, leading to higher levels of parental behavioral control. Furthermore, the presence of social support also reduced parenting stress, which, in turn, contributed to higher levels of parental behavioral control and psychological control. This seems to be in line with the research of Jennings et al. [39], who found that mothers with more personal and maternal networks (networks related to parenting) had warmer relationships with their children and exhibited fewer intrusive behaviors toward their children.

Finally, parental coping behaviors were found to exert both direct and indirect effects on the parenting dimensions. Problem-focused coping behaviors were found to have direct effects on supportive parenting. In contrast, the effects of emotion-focused coping behaviors on behavioral and psychological control were indirectly mediated by parenting stress. It thus appears that emotion-focused coping behavior is an ineffective coping style, leading to increased levels of parenting stress, which, in turn, leads to less behavioral control and higher levels of psychological control. McKee et al. [44] also reported a relationship between ineffective coping styles and inadequate parenting (lax control) and suggested that the link between ineffective coping and parenting may be due to greater stress. This study seems to confirm this suggestion: inadequacy in coping with stress predicted higher levels of stress in parenting.

Taken together, the results indicate that stressors, resources, and coping behaviors significantly and uniquely contribute to parenting stress, parent–child relationship quality, and parenting. Child characteristics predominantly seem to affect parent–child relationship quality, parental support, and behavioral control, whereas parental psychological control seems to depend more on parental (depression, coping) and environmental (social support) characteristics than on child characteristics. Among the parenting dimensions, characteristics of parental behavioral control, in particular, appeared to be affected by the adverse effects of stressors and inadequate parental coping strategies. It is possible that in the context of a childhood chronic condition, the parenting dimension related to parental disciplining is primarily affected because this dimension is especially sensitive to parenting stress.

It should be noted that the results revealed nonsignificant β coefficients for the relationship between marital satisfaction and both parenting stress and the parenting dimensions, whereas, at the bivariate level, the associations were significant. This may indicate that parents who are satisfied with their marital relationship also perceive social support from their spouses and vice versa. Therefore, future research may benefit from measures that differentiate more between social support and marital satisfaction. Aspects of marital relationships that appeared to be more consistent contributors to parenting behaviors, such as parental alliance [20], should also be measured.

Results of importance to clinical practice are, first, parental perceptions of the impact of the child's illness (functional status). This stressor seems to affect the more affective side of parenting. Because research has indicated that functional status varies as a function of condition severity [82], clinicians treating children with epilepsy should provide parents with sufficient information about the severity of the condition. This may be important in determining whether parents can adequately perceive child behavior problems as due to illness. Second, parents of children with epilepsy may benefit from parenting programs that address issues such as the management of children with difficult temperament and the availability of social support. Third, because coping strategies, especially behavioral and cognitive substrates of coping behaviors, are subject to change [83], the focus should be on parental coping behaviors rather than on sources of stress that are less easily modified. The modification of parental coping behaviors may be especially advantageous in parenting programs that are aimed at helping parents to manage a child with a chronic condition [44,84].

Some limitations of the current study should be addressed. Because of the cross-sectional nature of the study, it is not possible to make causal conclusions about the underlying relationships. The investigation of mediational models should ideally be carried out with longitudinal data so that actual transactional pathways can be identified (e.g., by using the double ABCX model [85]) and alternative explanations can be excluded [76]. Therefore, the results should be considered cautiously.

In this study, only self-report measures were used, following the principles of the "best reporter" method [86]. That is, we assessed constructs relating to parenting by asking the person who is expert in the field: the caregiver. However, it is possible that the results are due to some shared method variance. Therefore, future research should include multisource (i.e., mothers, fathers, the child) and multimethod (i.e., questionnaires, observations) designs [86].

It must be noted that in this study, non-condition-related parenting stress was measured; however, Streisand et al. [87] have argued for the use of measurements that are related to pediatric-specific parenting stress, as this dis-

tinguishes the parents of children with chronic conditions from parents with normally developing children. In other words, in addition to the daily hassles all parents face, parents of children with chronic conditions have to deal with parenting demands specifically related to the chronic condition itself [e.g., [34,88]]. Therefore, it may be worthwhile to examine parenting stress related to non-condition- and condition-related demands.

In addition, it has also been acknowledged that coping behaviors should be examined on the level of the subject of interest; for example, in the context of pediatric chronic illness parental coping behaviors have to be examined in relation to coping with the child's illness [83,89]. The same has been argued for the measurement of social support. Although social support has been related to parenting, parenting support (i.e., support that is directly related to child-rearing practices) has been found to be of special importance to parenting stress and, in turn, adequate parenting [38].

This study demonstrated, through use of the ABCX model of adjustment [25], that stressors, resources, and parental coping behaviors contribute to parenting stress. A number of stressors, resources, and coping behaviors were related to parent–child relationship quality and parenting. In particular, parental perceptions of the impact of the child's illness were a significant predictor of parenting stress, parent–child relationship quality, and parenting, indicating the importance of such a generic illness factor to the domain of parenting. Moreover, a number of stressors, resources, and coping behaviors were associated with increased parenting stress, which, in turn, contributed to dimensions of parenting. Although it was predominantly stressors that affected parenting dimensions through increased parenting stress, the way to help children with epilepsy and their parents seems to be the modification of parental coping behaviors. Clinicians should be aware of these aspects in treating children with epilepsy and their parents.

References

[1] Cowan LD. The epidemiology of the epilepsies in children. Ment Retard Dev Disabil Res Rev 2002;8:171–8.

[2] Kim WJ. Psychiatric aspects of epileptic children and adolescents. J Am Acad Child Adolesc Psychiatry 1991;30:875–86.

[3] Rodenburg HR, Meijer AM, Deković M, Aldenkamp AP. Family factors and psychopathology in children with epilepsy: a literature review. Epilepsy Behav 2005;6:488–503.

[4] Rodenburg HR, Stams GJJM, Meijer AM, Aldenkamp AP, Deković M. Psychopathology in children with epilepsy: a meta-analysis. J Pediatr Psychol 2005;30:453–68.

[5] Pianta RC, Lothman DJ. Predicting behavior problems in children with epilepsy: child factors, disease factors, family stress, and child–mother interaction. Child Dev 1994;65:1415–28.

[6] Rodenburg HR, Meijer AM, Deković M, Aldenkamp AP. Family predictors of psychopathology in children with epilepsy. Epilepsia 2006;47:601–14.

[7] Sbarra DA, Rimm-Kaufman SE, Pianta RC. The behavioral and emotional correlates of epilepsy in adolescence: a 7-year follow-up study. Epilepsy Behav 2002;3:358–67.

[8] Carlton-Ford S, Miller R, Nealeigh N, Sanchez N. The effects of perceived stigma and psychological over-control on the behavioural problems of children with epilepsy. Seizure 1997;6:383–91.

[9] Hodes M, Garralda ME, Rose G, Schwartz R. Maternal expressed emotion and adjustment in children with epilepsy. J Child Psychol Psychiatry 1999;40:1083–93.

[10] Austin JK, Dunn DW, Johnson CS, Perkins SM. Behavioral issues involving children and adolescents with epilepsy and the impact of their families: recent research data. Epilepsy Behav 2004;5 (Suppl. 3):33–41.

[11] Wallander JL, Varni JW. Effects of pediatric chronic physical disorders on child and family adjustment. J Child Psychol Psychiatry 1998;39:29–46.

[12] Dadds MR, Stein REK, Silver EJ. The role of maternal psychological adjustment in the measurement of children's functional status. J Pediatr Psychol 1995;20:527–44.

[13] Shore CP, Austin JK, Dunn DW. Maternal adaptation to a child's epilepsy. Epilepsy Behav 2004;5:557–68.

[14] Silver EJ, Bauman LJ, Ireys HT. Relationships of self-esteem and efficacy to psychological distress in mothers of children with chronic physical illnesses. Health Psychol 1995;14:333–40.

[15] Britner PA, Morog MC, Pianta RC, Marvin RS. Stress and coping: a comparison of self-report measures of functioning in families of young children with cerebral palsy or no medical diagnosis. J Child Fam Stud 2003;12:335–48.

[16] Powers SW, Byars KC, Mitchell MJ, Patton SR, Standiford DA, Dolan LM. Parent report of mealtime behavior and parenting stress in young children with type 1 diabetes and in healthy control subjects. Diabetes Care 2002;25:313–8.

[17] Streisand B, Swift E, Wickmark T, Chen R, Holmes CS. Pediatric parenting stress among parents of children with type 1 diabetes: the role of self-efficacy, responsibility, and fear. J Pediatr Psychol 2005. doi:10.1093/jpepsy/jsi076.

[18] Levin R, Banks S. Stress in parents of children with epilepsy. Can J Rehabil 1991;4:229–38.

[19] Pulsifer MB, Gordon JM, Brandt J, Vining EP, Freeman JM. Effects of ketogenic diet on development and behavior: preliminary report of a prospective study. Dev Med Child Neurol 2001;43:301–6.

[20] Abidin RR. The determinants of parenting behavior. J Clin Child Psychol 1992;21:407–12.

[21] Crnic K, Acevedo M. Everyday stresses and parenting. In: Bornstein MH, editor. Handbook of parenting, 4. Hillsdale, NJ: Lawrence Erlbaum Associates; 1995. p. 277–97.

[22] Ostberg M, Hagekull B. A structural modeling approach to the understanding of parenting stress. J Clin Child Psychol 2000;29:615–25.

[23] Deković M, Janssens JMAM, Van As NMC. Family predictors of antisocial behavior in adolescence. Fam Process 2003;42:223–35.

[24] Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer-Verlag; 1984.

[25] McCubbin HI, Patterson JM. Family stress and adaptation to crises: a double ABCX model of family behavior. In: Olson D, Miller B, editors. Family studies review yearbook. Beverly Hills, CA: Sage; 1983.

[26] Lazarus RS. From psychological stress to the emotions: a history of changing outlooks. Annu Rev Psychol 1993;44:1–21.

[27] Costigan CL, Floyd FJ, Harter KSM, McClintock JC. Family process and adaptation to children with mental retardation: disruption and resilience in family problem-solving interactions. J Fam Psychol 1997;11:515–29.

[28] Lavigne JV, Faier Routman J. Correlates of psychological adjustment to pediatric physical disorders: a meta-analytic review and comparison with existing models. J Dev Behav Pediatr 1993;14:117–23.

[29] Stein RE, Jessop DJ. Functional status II(R). A measure of child health status. Med Care 1990;28:1041–55.

[30] Perrin EC, Newacheck P, Pless IB, et al. Issues involved in the definition and classification of chronic health conditions. Pediatrics 1993;91:787–93.

[31] Stein RE, Jessop DJ. What diagnosis does not tell: the case for a noncategorical approach to chronic illness in childhood. Soc Sci Med 1989;29:769–78.
[32] Belsky J. The determinants of parenting: a process model. Child Dev 1984;55:83–96.
[33] McBride BA, Schoppe SJ, Rane TR. Child characteristics, parenting stress, and parental involvement: fathers versus mothers. J Marriage Fam 2002;64:998–1011.
[34] Wallander JL, Thompson Jr RJ, Alriksson Schmidt A. Psychosocial adjustment of children with chronic physical conditions. In: Roberts MC, editor. Handbook of pediatric psychology. New York: Guilford Press; 2003. p. 141–58.
[35] Webster Stratton C, Hammond M. Maternal depression and its relationship to life stress, perceptions of child behavior problems, parenting behaviors, and child conduct problems. J Abnorm Child Psychol 1988;16:299–315.
[36] Horton TV, Wallander JL. Hope and social support as resilience factors against psychological distress of mothers who care for children with chronic physical conditions. Rehabil Psychol 2001;46:382–99.
[37] Quittner AL, Glueckauf RL, Jackson DN. Chronic parenting stress: moderating versus mediating effects of social support. J Pers Social Psychol 1990;59:1266–78.
[38] Bonds DD, Gondoli DM, Sturge Apple ML, Salem LN. Parenting stress as a mediator of the relation between parenting support and optimal parenting. Parenting Sci Pract 2002;2:409–35.
[39] Jennings KD, Stagg V, Connors RE. Social networks and mothers' interactions with their preschool children. Child Dev 1991;62:966–78.
[40] Meijer AM, Oppenheimer L. The excitation–adaptation model of pediatric chronic illness. Fam Process 1995;34:41–54.
[41] Wamboldt MZ, Wamboldt FS. Role of the family in the onset and outcome of childhood disorders: selected research findings. J Am Acad Child Adolesc Psychiatry 2000;39:1212–9.
[42] Quittner AL, Espelage DL, Opipari LC, Carter B, Eid N, Eigen H. Role strain in couples with and without a child with a chronic illness: associations with marital satisfaction, intimacy, and daily mood. Health Psychol 1998;17:112–24.
[43] Erel O, Burman B. Interrelatedness of marital relations and parent–child relations: a meta-analytic review. Psychol Bull 1995;118:108–32.
[44] McKee TE, Harvey E, Danforth JS, Ulaszek WR, Friedman JL. The relation between parental coping styles and parent–child interactions before and after treatment for children with ADHD and oppositional behavior. J Clin Child Adolesc Psychol 2004;33:158–68.
[45] Levy Shiff R, Dimitrovsky L, Shulman S, Har Even D. Cognitive appraisals, coping strategies, and support resources as correlates of parenting and infant development. Dev Psychol 1998;34:1417–27.
[46] Darling N, Steinberg L. Parenting style as context: an integrative model. Psychol Bull 1993;113:487–96.
[47] Maccoby EE, Martin JA. Socialization in the context of the family: parent–child interaction. In: Hetherington EM, editor. Mussen manual of child psychology. New York: Wiley; 1983. p. 1–102.
[48] Steinberg L, Lamborn SD, Darling N, et al. Over-time changes in adjustment and competence among adolescents from authoritative, authoritarian, indulgent, and neglectful families. Child Dev 1994;65:754–70.
[49] O'Connor TG. Annotation: the 'effects' of parenting reconsidered: findings, challenges, and applications. J Child Psychol Psychiatry 2002;43:555–72.
[50] Barber BK. Parental psychological control: revisiting a neglected construct. Child Dev 1996;67:3296–319.
[51] Barber BK, Harmon EL. Violating the self: parental psychological control of children and adolescents. In: Barber BK, editor. Intrusive parenting: how psychological control affects children and adolescents. Washington, DC: American Psychological Association; 2002. p. 15–52.
[52] International League Against Epilepsy (ILAE). Proposal for revised classification of epilepsies and epileptic syndromes. Epilepsia 1989;30:389–99.
[53] Van der Aart SA, van Baal MD, Blom F, et al. Jaarboek onderwijs in cijfers 2003–2004 (Yearbook education in statistics). Deventer: Kluwer/Centraal Bureau voor de Statistiek; 2004.
[54] Aalders M. Demografie van gezinnen (Demographics of families): Centraal Bureau voor de Statistiek (CBS) (Statistics Netherlands); 2003.
[55] Abidin RR. Parenting stress: index manual. Charlottesville: Pediatric Psychology Press; 1983.
[56] De Brock AJLL, Vermulst AA, Gerris JRM, Abidin RR. Nijmeegse Ouderlijke Stress Index (Nijmegen Parental Stress Index). Handleiding experimentele versie (Manual experimental version). Lisse: Swets & Zeitlinger; 1992.
[57] Groenendaal JHA, Gerrits LAW, Rispens J. Opvoeding en ontwikkeling in de kinderperiode (Parenting and development in childhood). In: Rispens J, Hermanns JMA, Meeus WHJ, editors. Opvoeden in Nederland (Parenting in The Netherlands). Assen: Van Gorcum; 1996.
[58] Post MW, Kuyvenhoven MM, Verheij MJ, de Melker RA, Hoes AW. The Dutch version of 'Functional Status II(R)': a questionnaire measuring the functional health status of children. Ned Tijdschr Geneeskd 1998;142:2675–9.
[59] Stein REK, Jessop DJ. Manual for the functional status II(R) measure. New York: Albert Einstein College of Medicine, PACTS Papers; 1991.
[60] Rothbart MK, Ahadi SA, Hershey KL, Fisher P. Investigations of temperament at three to seven years: the Children's Behavior Questionnaire. Child Dev 2001;72:1394–408.
[61] Zung WW. A self-rating depression scale. Arch Gen Psychiatry 1965;12:63–70.
[62] Wels PMA, Robbroeckx LMH. Handleiding bij de Nederlandse Vragenlijst voor de Opvoedingssituatie (NVOS). (Manual of the Nijmegen Child-rearing Situation Questionnaire (NCSQ). Lisse: Swets & Zeitlinger; 1996.
[63] Buurmeijer FA, Hermans PC. Gezins Dimensie Schalen (Family Adaptability and Cohesion Evaluation Scales). Lisse: Swets & Zeitlinger; 1988.
[64] Olson DH. Circumplex Model VII: validation studies and FACES III. Fam Process 1986;25:337–51.
[65] Lange A. De Interactionele Probleem Oplossings Vragenlijst (Interactional Problem Solving Questionnaire). Deventer Van Loghum Slaterus 1983.
[66] Schreurs PJB, Tellegen B, Van De Willige G, Brosschot JF. De Utrechtse Coping Lijst (the Utrecht Coping List): Handleiding (Manual). Lisse: Swets & Zeitlinger; 1988.
[67] Lange A, Evers A, Jansen H, Dolan C. The Parent Child Interaction Questionnaire—revised. Fam Process 2002;41:709–22.
[68] Gerris JRM, Vermulst AA, Boxtel DAAM, Janssens JMAM, Zutphen v RAH, Felling AJA. Parenting in Dutch families: a representative description of Dutch family life in terms of validated concepts representing characteristics of parents, children, the family as a system and parental sociocultural value orientations. Nijmegen: University of Nijmegen, Institute of Family Studies; 1993.
[69] Gerrits LAW, Deković M, Groendendaal JHA, Noom MJ. Opvoedingsgedrag (parenting behavior). In: Rispens J, Hermanns JMA, Meeus WHJ, editors. Opvoeden in Nederland (Parenting in the Netherlands). Assen: Van Gorcum; 1996. p. 41–69.
[70] de Leeuw ED. Normering van de Amsterdamse versie van de Parental Attitude Research Instrument (A-PARI) (Standardization of the Amsterdam version of the Parental Attitude Research Instrument (A-PARI). Amsterdam: Faculty of Pedagogicial and Educational Sciences, University of Amsterdam; 1986.
[71] Schaefer ES, Bell RQ. Development of a parental attitude research instrument. Child Dev 1958;29:339–61.
[72] Schafer JL, Graham JW. Missing data: our view of the state of the art. Psychol Methods 2002;7:147–77.
[73] Tabachnick BG, Fidell LS. Using multivariate statistics. 4th Ed. Boston: Allyn & Bacon; 2001.

[74] Baron RM, Kenny DA. The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. J Pers Social Psychol 1986;51:1173–82.
[75] Sobel ME. Asymptotic intervals for indirect effects in structural equations models. San Francisco: Jossey–Bass; 1982.
[76] Holmbeck GN. Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. J Pediatr Psychol 2002;27:87–96.
[77] MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. Psychol Methods 2002;7:83–104.
[78] Preacher KJ, Leonardelli GJ. Calculation for the Sobel test: an interactive calculation tool for mediation tests [Computer software]. Available from: http://www.unc.edu/~preacher/soble/sobel.htm.
[79] Bleil ME, Ramesh S, Miller BD, Wood BL. The influence of parent–child relatedness on depressive symptoms in children with asthma: tests of moderator and mediator models. J Pediatr Psychol 2000;25:481–91.
[80] Rothbart MK, Ahadi SA, Evans DE. Temperament and personality: origins and outcomes. J Pers Social Psychol 2000;78:122–35.
[81] Goodman SH, Gotlib IH. Risk for psychopathology in the children of depressed mothers: a developmental model for understanding mechanisms of transmission. Psychol Rev 1999;106:458–90.
[82] Hommeyer JS, Holmbeck GN, Wills KE, Coers S. Condition severity and psychosocial functioning in pre-adolescents with spina bifida: disentangling proximal functional status and distal adjustment outcomes. J Pediatr Psychol 1999;24:499–509.
[83] Somerfield MR, McCrae RR. Stress and coping research: methodological challenges, theoretical advances, and clinical applications. Am Psychol 2000;55:620–5.
[84] Melnyk BM, Alpert-Gillis L, Feinstein NF, et al. Creating opportunities for parent empowerment: program effects on the mental health/coping outcomes of critically ill young children and their mothers. Pediatrics 2004;113:e597–607.
[85] McCubbin HI, Patterson JM. Family adaptation to crises. In: McCubbin HI, Cauble AE, Patterson JM, editors. Family stress, coping, and social support. Springfield, IL: Charles C Thomas; 1982. p. 26–47.
[86] Holmbeck GN, Li ST, Schurman JV, Friedman D, Coakley RM. Collecting and managing multisource and multimethod data in studies of pediatric populations. Pediatr Psychol 2002;27:5–18.
[87] Streisand R, Kazak AE, Tercyak KP. Pediatric-specific parenting stress and family functioning in parents of children treated for cancer. Child Health Care 2003;32:245–56.
[88] Ievers CE, Drotar D, Dahms WT, Doershuk CF, Stern RC. Maternal child-rearing behavior in three groups: cystic fibrosis, insulin-dependent diabetes mellitus, and healthy children. J Pediatr Psychol 1994;19:681–7.
[89] Lazarus RS. Toward better research on stress and coping. Am Psychol 2000;55:665–73.