Effects of attentional/ hyperactive and oppositional/ aggressive problem behaviour at 14 months and 21 months on parenting stress

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Background: To evaluate effects of attentional/ hyperactive (Att/Hi) and oppositional/ aggressive (Opp/Agg) behaviours of children at 14 and 21 months of age on parenting stress at 21 months. **Method:** 107 children from the general population with low, intermediate, and high levels of disruptive behaviours at 14 months, as evaluated by parents on a 55-item checklist, participated. Parents completed the Child Behaviour Checklist 1.5–5 and the Dutch version of Parenting Stress Index (NOSI) at 21 months. Effects of problem behaviours were examined in a 2 (Att/Hi and Opp/Agg) by 2 (not high versus high) by 2 (14 and 21 months) multivariate design with parental stress as dependent variable. **Results:** Oppositional/ aggressive behaviour at 14 months had a strong main effect on parenting stress, but not at 21 months. There was a significant interaction between parenting stress and Att/Hi behaviour at 14 and 21 months, indicating that increase in these behaviours over time was associated with parenting stress. Both Opp/Agg behaviour and an interaction between Att/Hi behaviour and parenting stress contributed to maternal role restriction and social isolation. Oppositional/ aggressive behaviour led to higher scores for parental competence and depression, whereas Att/Hi behaviour led to lower scores for attachment. **Conclusions:** Early Opp/Agg and Att/Hi behaviour had differential effects on parenting stress at 21 months. The increase in parenting stress associated with early Opp/Agg behaviour may be linked to overall feelings of parental competence, whereas the course of Att/Hi behaviour may be associated with increased demands on parent-child interactions and attachment. Our results have implications for development of early intervention programmes.

Key Practitioner Message:

- Early oppositional/aggressive and attentional/hyperactive behaviours have differential effects on parenting stress
- Increase over time of attentional/hyperactive behaviours is associated with increased impact on parent-child interactions and attachment
- Higher levels of oppositional/aggressive behaviours are linked with maternal role restriction and social isolation

Keywords: Infants; disruptive problem behaviour; parenting stress

Introduction

It is increasingly evident that family factors and disruptive disorders such as attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder (CD) reflect a reciprocal and transactional process (Anastopoulos et al., 1992; 2009; Johnston & Mash, 2002). Children with these problem behaviours have a direct or indirect impact on their environment, probably causing considerable stress in the family. For example, the parents of children with disruptive behaviours report high levels of conflicts, being less satisfied with their parenting skills, and rate themselves as being less competent (Mash & Johnston, 1983; De Wolfe et al., 2000). Their children appear to be more time and energy consuming (De Wolfe et al., 2001) than other children and have a more disruptive influence on family relationships; these parents also report high levels of negative affect toward their children (Buss, 1981; Johnston & Mash, 2002; Mash & Johnston, 1982). Also, high levels of parental stress are associated with poor sleep quality in parents for children with developmental disabilities or typically developing children (Gallagher et al., 2010), indicating that increased demands on parental care giving may disrupt the normal functioning of parents, which could contribute to the maintenance or exacerbation of behavioural problems (Anastopoulos et al., 1993).

Parent factors also influence child problem behaviour. For example, maternal responsiveness, inconsistent parenting styles, and higher levels of parenting stress are associated with disruptive problems in children and adolescents (Anastopoulos et al., 2009; Campbell, 1995; Carlson et al., 1995; Shaw et al., 1994; Taylor et al., 1991). Indeed, poor maternal coping was the best predictor of hyperactivity in a community sample of preschool boys (Keown & Woordward, 2002). The mothers of these boys were less efficient in their anticipation of problems and had fewer skills for dealing with problematic behaviour. Also, the quality of mother-child interaction varied by the levels hyperactive/ inattentive problems of their preschoolers (Healey et al., 2010) showing less dyadic synchrony when reporting more behaviour problems. At school-age, parents with a more controlling style towards their ADHD children reported higher levels of parenting stress and children's performances were associated with lower academic achievements then more supportive parenting styles of involvement (Rogers et al., 2009). The relationship between problem behaviour and parenting has been studied extensively in school-age children but less is known about this association in very young children. Mash and Johnston (1983) reported that the mothers of preschoolers with ADHD showed higher levels of parenting stress than the mothers of typical preschoolers. Moreover, the parent-child relationship of parents with preschool children with ADHD was more stressful and less rewarding than that of parents with typical children (DeWolfe et al., 2001); however, these parents did not perceive their family as being negatively affected in terms of overall functioning. In a more recent study by Briggs-Gowan and her colleagues (2006), in which behaviour problems were followed up from 12 up to 48 months of age, problem behaviours were found to be associated with higher levels of parenting distress. This indicates that the co-occurrence of these parenting factors is highly associated with the persistence of social-emotional and behavioural problems.

Problem behaviour is not a static phenomenon but has a variable course, especially in the early years. Research on early disruptive problem behaviour shows that behaviours such as aggression, hyperactivity, and non-compliance are rather common in preschool age children and are often transient, and can thus considered part of normal development (Campbell and Ewing, 1990). But the very same behaviours may also represent early symptoms of psychiatric disorders in later childhood and adolescence. For example, difficult temperament at age 3 (Caspi et al., 1996) or behaviour problems at age 2 are strong predictors of psychiatric disorders at a later age (Keenan et al., 1998). Moreover, there is substantial evidence that disruptive problem behaviours are persistent over time in approximately 50% of preschool infants (Campbell and Ewing, 1990; Lavigne et al., 1998) or in even younger infants (Beernink et al., 2007; Mathiesen and Sanson, 2000). This persistence of problematic behaviour probably adversely affects parenting. In a high-risk sample of 20-month-old children, the mothers of children with persistent behavioural problems had significantly more conflicts with their children than did the mothers of control children (Leadbeater, Bishop & Rave, 1996). In turn, Campbell and colleagues (1996) observed that

4-year-old children with mothers that tended to control them in a more negative manner were more likely to display disruptive behaviour when they were 9 years old. This underscores the ongoing effect of behavioural problems over time if the parent-child relationship remains negative and if there is a high level of stress in the family (Campbell et al., 1991; 1994). The first aim of the present study was to estimate the association between child behaviour and parenting stress very early in life, taking the course of problem behaviour into account.

The second aim was to examine whether different types of disruptive behaviour in young infants affect parenting stress differently. Several studies suggest that ADHD, ODD, and CD have different effects on family functioning. For example, combined attention deficit with hyperactivity has more influence on family function than attentional problems alone (Lewis, 1992), and ADHD with comorbid ODD is associated with more family problems than ADHD alone (Anastopoulos et al., 1992). Woodward and colleagues (1998) found that parenting and family factors were more strongly associated with conduct disorder problems than with hyperactive problem behaviours in children with conduct disorders with or without hyperactivity. Although the effects of attentional/ hyperactive (A/H) behaviour, with or without oppositional/ aggressive (O/A) problem behaviour, on levels of parenting stress have been studied, the differential effects of these problem behaviours in very young children remain to be investigated (Johnston & Mash, 2002). Therefore, we investigated the individual effects of early attention/ hyperactivity symptoms and oppositional/ aggressive behaviours on parental stress.

Thus the overall aim of this study was to examine the influence of disruptive problem behaviour in young children at the ages of 14 and 21 months on maternal parenting stress at 21 months. Two specific questions were addressed, what is the relationship between the course of problematic disruptive behaviour and parenting stress; and what are the effects of either inattentive/hyperactive or oppositional/aggressive problem behaviour on maternal parenting stress.

Methods

Participants

The participants for this study were drawn from a birth cohort (*N*= 6491) of children born between August 2000 and August 2001. The parents of 14 month old children living in the province of Utrecht in the Netherlands were asked to complete a questionnaire about the behaviour of their infant. When the infants were 21 months old, 107 of these parents were asked to complete the CBCL 1.5–5 yrs and the Dutch version of the Parenting Stress Index (Nosi). All of the parents were Caucasian Dutch. More details about this sample can be found elsewhere (Beernink et al., 2007). The descriptive and background characteristics of the participating children (*N*=107) are reported in Table 1.

Measures

A behaviour problem questionnaire was sent to the parents of 14-month-old children included 55 items that focused on externalising behaviour, social communication problems and internalising items, and

Table 1. Sample characteristics

	14 months		21 months	
Attentional problem behaviour	*Not-High*	*High*	*Not-High*	*High*
Sex (*N* boys / girls)	42/28	23/14	48/36	17/6
Age (in months) Means ± *SD*	20.5 ± 2.8	21.4 ± .83	20.70 ± 2.6	21.4 ± .78
Cognitive level [a] Means ± *SD*	106 ± 20.1	100 ± 32.3	104 ± 26.8	104 ± 17.1
Birth weight (grams) Means ± *SD*	3510 ± 1016	3547 ± 1009	3530 ± 973.6	3502 ± 1138
Educational level parents [b] (%)				
Low	14	22	15	25
Medium	17	17	16	19
High	69	61	69	56
Oppositional/ aggressive problem behaviour				
Sex (N boys, girls)	41/29	24/13	47/37	18/5
Age (in months) Means ± *SD*	20.5 ± 2.8	21.4 ± .89	20.7 ± 2.6	21.3 ± .822
Cognitive level [a] Means ± *SD*	103.3 ± 22.9	104.7 ± 28.7	102.8 ± 27.3	107.3 ±13.2
Birth weight (grams) Means ± *SD*	3637 ± 1058	3281 ± 856	3675 ±911	3335 ± 1317
Educational level parents [b] (%)				
Low	17	16	16	20
Medium	14	22	16	20
High	69	62	68	60

Notes: [a] Total standard scores of Mullen Scales of Early Learning (1995), [b] Educational level divided in three levels; low educational level means primary school or lower vocational, middle level of education is secondary school or intermediate vocational training, high educational level meaning university or college degree.

scored on a 3-point Likert scale (0 'never', 1 'sometimes', 2 'often'). The questionnaire was used for multiple purposes in our main study (Beernink et al., 2007) and all items had been selected by reviewing instruments for older children (The Infant-Toddler Social and Emotional Assessment, Carter & Briggs-Gowan, 2000; The Child Behaviour Checklist for 1.5–5, Achenbach & Rescorla, 2000; and the Vineland Social-Emotional Early Childhood Scales, Sparrow et al, 1984, 1997) for items than could be used for children younger than 18 months and by drawing on our clinical experience with very young children. Then a multidisciplinary panel of experts with clinical and research experience with infants and toddlers made a final selection of items. The final selection included items that covered attentional problems, hyperactivity, oppositional behaviour, aggressive behaviour, verbal and non-verbal aspects of social communication (such as initiating and responding), and internalising behaviours such as problems with eating or sleeping. In our main study (Beernink et al., 2007) principal component analysis was performed with varimax rotation with eigenvalues >1.5 for two equally sized split half samples which resulted in two very similar solutions. The scree test suggested a seven-factor PCA solution leading to seven factors on behaviour problems as described above (explained variance of 34.6%). In that study the PCA for the 19-month-old children showed the same factors as the analysis at 14 months, with 37.7% of explained variance. Five of the 55 items had higher loadings at 19 months on other factors than at 14 months.

For this study we have used the factors that cover externalising problem behaviour at 14 months old. The factor Oppositional problem behaviour (explained variance 12.4%, Cronbach alpha 0.83) consists of 15 items such as 'stubborn, sullen or irritable', or 'screams a lot', and 'bites, kicks, or hits others.' The factor Attention (explained variance 3.7%, Cronbach alpha 0.64) covers early attentional problems with 6 items such as 'quickly

shifts from one thing to another', or 'sits still during 5 minutes of reading,' or 'plays with toys longer than 5 minutes'. The reader is referred elsewhere for more explicit details on this questionnaire and on participant selection (Beernink et al., 2007).

To assess the severity of problem behaviours at 21 months, parents completed the Child Behaviour Checklist 1.5–5 yrs (Achenbach & Rescorla, 2000). The Dutch version of the CBCL 1.5/5 yrs consists of 99 items covering child problems, varying form disruptive, internalising, and other problem behaviours. The respondent has to indicate whether the item is true (0), not true (2), or somewhat or sometimes true (1). The CBCL yields a total problem score, broadband disruptive and internalizing scores, and narrowband scales. The sum of scores on the narrowband Attention and Aggression scales was used for this study. The Attention factor is comprised of items that cover attentional but also hyperactivity problems. The Aggression factor of the CBCL not only covers early aggressive behaviours, but has also items that involve oppositional behaviours such as 'Stubborn, or Loses temper.' In the interpretation of our results we take this overlap of attentional/ hyperactive and oppositional/ aggressive problem behaviours into account.

To obtain measures of parenting stress, mothers completed a Dutch version of the Parenting Stress Index (Abidin, 1983), the Nijmeegse Ouderlijke Stress Index (NOSI, Brock et al., 1992). The NOSI has eight scales, namely, parent's appreciation of their level of parental competence (Cronbach alpha .83; sense of competence of the parent during interactions with the child), restrictions in parenting role (Cronbach alpha .76; explains whether the parent feels restricted in his/her freedom, or his/ her personal identity while being a parent), attachment to their child (Cronbach alpha .66; the extent of feeling emotionally disconnected to the child), level of depression (Cronbach alpha .82; the extent of being unsatisfied with the parents and daily

life), general health (Cronbach alpha .70; the extent of feeling healthy), social isolation (Cronbach alpha .64; the extent of feeling isolated from others), and the condition of their spousal relationship (Cronbach alpha .81; the extent of satisfaction on his/ hers relationship with his/ her partner). Reliability, measured by internal consistency in terms of Cronbach's alpha, varied from .64 to .83 (total parenting domain .95). Measures of concurrent and discriminant validity of this questionnaire are reasonable (Block et al., 1992). We found the eight NOSI scales to have a correlation varying from .02 to .79. Those scales with a correlation >.70 were combined into a new variable. This was found to be the case for the association between maternal competence and depression ($r = .79$), which were combined to form a new variable 'Maternal Competence/ Depression'.

Analyses

To compare the effect of attentional problem behaviour with that of oppositional problem behaviours at 14 months, we used a factor 'Attention' (eigenvalue 2.0, with a percentage of explained variance 3.7) and a factor 'Oppositional Problem Behaviour' (eigenvalue 6.8, with a percentage of explained variance 12.4) derived from our problem behaviour questionnaire by principal component analysis with varimax rotation (Beernink et al., 2007). Both sum scores for both factors 'Attention' and 'Aggression' on the Dutch version of the Child Behaviour Checklist 1.5–5 yrs (Achenbach & Rescorla, 2000) were used to obtain information on parent-rated problem behaviour at 21 months. To analyse the effects of children at risk of disruptive problem behaviour, we dichotomised the four factor sum scores (2 behaviour domains each at 2 time points) to enable comparison of the children with scores in the upper 25% with the remaining children.

Multivariate analyses were performed to determine whether levels of parenting stress were associated with the severity and course of disruptive problem behaviour in the child. The dependent variables in the analysis were the six variables measuring different levels of parenting stress: Competence/Depression, Role restriction, Attachment, Health, Social Isolation, and Marriage. The independent factors in the analysis were: attention problems at 14 months (two levels; high versus not high), attention problems at 21 months (two levels: high versus not high), oppositional problems at 14 months (two levels; high versus not high), and aggression at 21 months (two levels; high versus not high). Two interaction terms were also included in the model design: Attentional problems at 14 months by attentional problems at 21 months, and oppositional problems at 14 months by aggressive problems at 21 months. SPSS MANOVA (version 12.0) was used for the analysis. Wilk's Lambda was used to test the likelihood of the data. Effect sizes, expressed as partial eta squared (η^2_p), are reported (small $\eta^2_p = 0.01$; medium $\eta^2_p = 0.06$; or large $\eta^2_p > 0.13$ Cohen, 1988). Sex, age, and levels of cognitive performance were tested as covariates and included if significant.

Results

In a first analysis, the covariates sex, age, and cognitive performance were not statistically significant and were

thus not used in the final analysis. The interaction 'aggressive problems at 21 months × oppositional problems at 14 months' did not contribute significantly to the model (Adjusted R^2 for Competence/ Depression with interaction effect = .300, Adjusted R^2 for Competence/ Depression without interaction effect = .268). Thus the simpler model without the interaction between oppositional/ aggressive behaviour at 14 and 21 months was preferred (Fitzmaurice, 2000).

The Wilk's Lambda criterion indicated that the dependent variables were significantly affected by oppositional problems at 14 months ($F_{6,96} = 3.170$, $p<.007$, $\eta^2_p = .165$), indicating that mothers with infants showing oppositional behaviour at 14 months report high levels of parenting stress. The dependent variables were also significantly affected by the interaction of attentional problems at 14 and 21 months ($F_{6, 96} = 2.619$, $p<.021$, $\eta^2_p = .141$), indicating that an increase in attentional problem behaviour is related with higher levels of maternal concern. Lastly, there was a trend for an effect of attentional problems at 14 months ($F_{6, 96} = 1.991$, $p<.074$, $\eta^2_p = .111$). This study investigated further whether inattentive and oppositional/ aggressive problem behaviour affected similar or different components of parental stress. We found that oppositional problems at 14 months significantly affected maternal Competence/ Depression, Role restriction, and Social isolation. Moreover, the interaction 'attentional problem behaviour × time' also affected maternal Role restriction, Attachment, and Social isolation, indicating that the effect of attentional/hyperactivity on parenting stress is dependent on the developmental course of attentional problem behaviour (Figure 1). The adjusted R^2 (percentage of variance accounted for by the model) was 27% for Competence/Depression, 19% for Role restriction, 1% for Attachment, 15% for Health, 4% for Social isolation and 1% for Marriage (Table 2).

Discussion

The aim of this paper was to focus on the long-term and concurrent impact of early disruptive problem behaviours on parental stress. The relation between early problem behaviour at 14 months and parental stress at 21 months was examined as well as the cross-sectional relationship. Interaction effects were investigated to examine the relation between changes in the severity of early disruptive problem behaviours over time and the effects on parenting stress at 21 months. The first question of this study concerned the relationship between the course of problematic disruptive behaviour and maternal parenting stress. Oppositional behaviour at 14 months had a strong effect on parenting stress, but no additional effect was found at 21 months. Thus, novel to the literature, oppositional problem behaviour as early as 14 months and irrespective of whether these problems are persistent or transient between 14 and 21 months causes such concern that mothers become stressed. In turn, such infant problematic behaviours negatively affect the parent-child interaction, contributing to persistency (Barkley et al., 1991; Campbell & Ewing, 1990; Woodward et al., 1998). Similar results have been reported for the parents of preschoolers with aggressive, hyperactive, attentional, impulsive problem behaviours with additional adaptivity problems. These
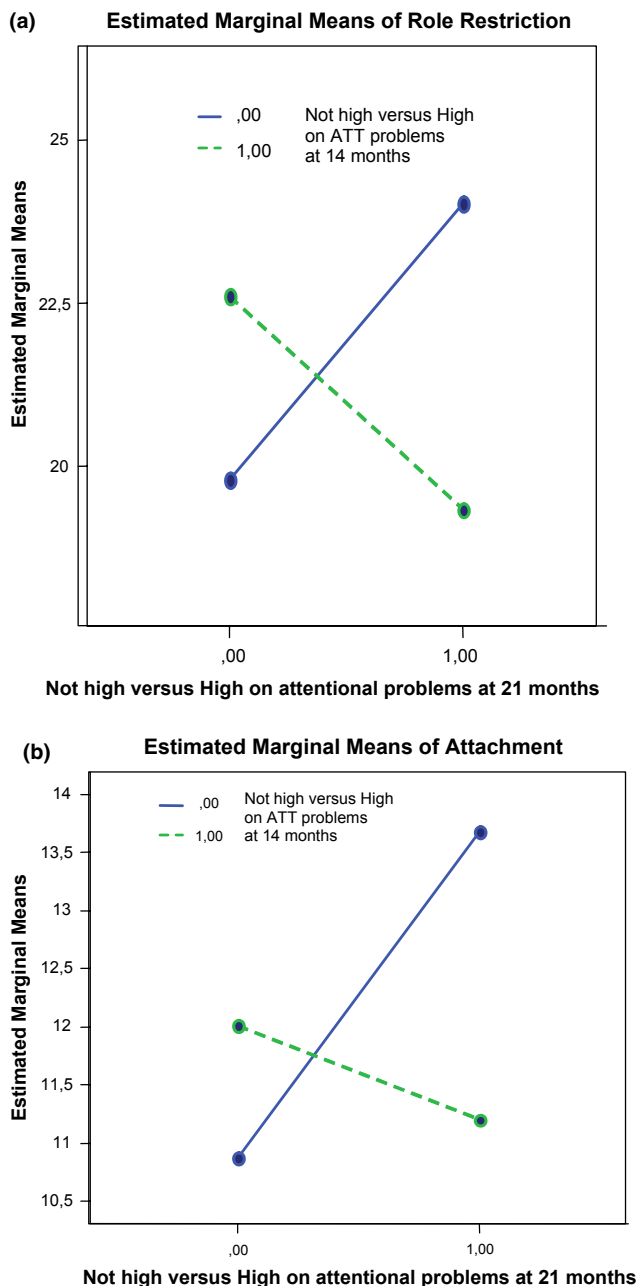
(a)

(b)

Figure 1. Effect of attentional problem behaviour on scales of maternal parenting stress. (a) Estimated marginal means of role restriction; (b) estimated marginal means of attachment. Note: this figure shows the effect of 2 (not high versus high) x 2 (14 months and 21 months) of attentional problem behaviours on scales of parenting stress

parents experience higher levels of stress, more marital discord, more psychological problems, and are less efficient in parenting roles than the parents of children without these behavioural problems (Shelton et al., 1998). In contrast, we found attentional problem behaviours at 14 months not to be associated with higher levels of maternal parenting stress at 21 months. Perhaps attentional problems (such as 'can't sit still or can't concentrate') cause less hassle or concern than oppositional behaviours (such as 'angry moods') at this young age, because parents may think that their child will learn to sit still or concentrate with time. Similar, Burke and colleagues (2009) also mentioned opposi-

tional behaviours to be a stronger predictor for parenting stress than attentional/ hyperactive problems. However, the significant interaction between attentional problem behaviour at 14 and 21 months indicates that an increase in attentional problem behaviour with time does matter. Apparently, a change in child's attentional problem behaviour rather than the level of attentional problem behaviour gives rise to high levels of parenting stress and more maternal concern. Since approximately half of infants and toddlers show a progressive increase in behavioural problems (Beernink et al., 2007; Briggs-Gowan et al., 2006, Mathiesen and Sanson, 2000), these concerns are perhaps realistic. Our findings accentuate the importance of providing early protocolised parent-child interventions, that have proven to be successful in dealing with early problem behaviours improving parenting qualities and reducing aggressive problem behaviours (Posthumus et al., 2009; Raaij-makers et al., 2009).

This study investigated further whether inattentive and oppositional/ aggressive problem behaviour affected similar or different components of parental stress. First, we found that oppositional/ aggressive behaviour and the interaction effect of attentional problem behaviour affect the same components of parenting stress, namely, role restriction and social isolation. Parents who scored high on role restriction recognized items such as 'Have to sacrifice more than expected to meet the needs of my child', or 'Since I have a child I notice that I hardly can do the things I'd really like to', or 'Since this child I haven't been able to participate in new events.' Overall high scores for role restriction seemed to be associated with parents' feelings of being controlled and dominated by the needs and demands of their child (DeBrock et al., 1992). The mothers of these very young infants experience ambivalent emotions about their child, feeling anger or irritability rather than joy or dedication. They may also feel guilty and question their role as a mother. The parents of preschool children with ADHD reported such a restricted parenting role in addition to feelings of less competence (De Wolfe et al., 2000). This finding implicates the need of parents to be heard and feel understood by professionals in health care organisations. This can take place during regular check-ups, or can take place at local kindergarten centres, where parents can be guided by pedagogic professionals.

Both types of problem behaviour also influenced maternal social isolation. Such behaviours may elicit negative reactions from the environment/surroundings, prompting the mother to withdraw from social life. This withdrawal may result in less perceived support from others, or positive social support, which in turn may augment parental stress (Hill & Hill, 2007). A high score for social isolation can also account for feelings of loneliness and for a distant relationship with the partner (DeBrock et al., 1992).

Oppositional/ aggressive and attentional problem behaviours also exerted different effects on parental stress. We found that oppositional/ aggressive behaviour made mothers feel less competent and increased levels of maternal depressive feelings, whereas attentional problem behaviour affected their thoughts and feelings of attachment towards their child. These findings are consistent with those of Shelton and colleagues

Table 2. Multivariate analyses of variance of attentional/ hyperactive (Att/Hi) and oppositional/ aggressive (Opp/Agg) problems at 14, 21 and 21 x 14 months on Parenting Stress at 21 months

Effect of disruptive problem behaviour (Wilks' Lambda)	Mother			
	F	df		*P* value
Multivariate tests				
Att 21 months	1.723	6		.124
Att 14 months	1.991	6		.074
Agg 21 months	1.187	6		.320
Opp 14 months	3.170	6		.007**
Att 21 by Att 14 months	2.619	6		.021*
Univariate tests	F	df	η^2_p	P value
Opp 14 months				
Competence/depression	13.892	1	.121	.001**
Role restriction	6.052	1	.057	.016*
Attachment	3.071	1	.030	.083
Health	2.858	1	.028	.094
Social isolation	4.779	1	.045	.031*
Marriage	.087	1	.001	.769
Att 21 by Att 14 months				
Competence/depression	11.076	1	.011	.099
Role restriction	4.591	1	.035	.043*
Attachment	3.329	1	.071	.032*
Health	10.909	1	.001	.097
Social isolation	1.525	1	.220	.015*
Marriage	8.048	1	.006	.074

* *p* < .05; ****** *p* < .01

(1998) who reported that mothers of hyperactive and aggressive children experience less satisfaction and efficacy than mothers of children without problem behaviour. Johnston (1996) also reported that the parents of children with ADHD and aggression felt less competent than the parents of children with ADHD without aggression. These parents of children with disruptive behaviours are less confident in dealing with their child's problem behaviour (Sobol et al., 1989) and have a negative parent-child interaction (Mash & Johnston, 1983). However, others did not find differences in parenting competence in families with disruptive disorders (Beck et al., 1990; Johnston and Pelham, 1990).

Other investigators have also reported higher levels of maternal depressive feelings associated with oppositional/ aggressive problem behaviour. For example, the mothers of children with oppositional/ aggressive behaviours report higher levels of depression than the mothers of with children with ADHD. Depression was also found to be a parental risk factor for children with ODD, more than for children with ADHD. The latter do not differ from typical controls (Shaw et al., 2001). However, other authors have not found a difference in depression in the mothers of hyperactive, aggressive, or combined, and non-problem preschoolers (Stormont-Spurgin and Zentall, 1995).

Attentional problem behaviours are associated with a mother's attachment to her child. Our results are in accordance with others who found attachment to play a role in problem behaviour. Clarke and colleagues (2002) reviewed the association between ADHD and attachment and reported results on their study of schoolage boys with ADHD. Higher insecurity was found for the ADHD group, showing an anxious or disorganised attachment style compared to control children. Similar results are found in a study examining school high versus not high oppositional at 14 months, and high versus not high aggressive at 21 months age children with ADHD in relation to temperament, parenting styles and their effect on attachment, children with the combined and hyperactive type of ADHD showed higher scores in anxious and avoidant attachment (Finzi-Dottan et al, 2006). Shaw and Vondra (1995) also found that attachment insecurity was related to behaviour problems when insecurity was maintained for a certain period of time. It is possible that the course of attentional/ hyperactive problems at a young age puts an extra burden on the parent-child interaction, which may adversely affect infant-parent attachment. Therefore, health care and kindergarten centres should focus on parent-child attachment in relation to negative problem behaviours.

In conclusion, inattentive and oppositional/ aggressive problem behaviours in very young infants affect maternal parenting stress but differ in their effect with age and in the specific domains of parental stress affected.

Clinical relevance

This paper accentuates the need to provide extra care to families who deal with early externalising problem behaviours and difficult family functioning. Family factors, such as parenting stress, maternal depression, or social class, have been found to predict the persistence of hyperactive but also aggressive behaviours at age 13 (Campbell & Ewing, 1990; Pierce et al., 1999). Our findings suggest that psychoeducation for parents about the impact of problem behaviour and parenting stress could prove useful when their children are as young as 14 to 21 months of age. Therefore, when

screening for problem behaviour at very young age, special attention should be given to the impact of these problem behaviours on parents, with special notice on the sudden increase on problem behaviour based on the results of our study. Both children and parents are more accessible for guidance and support during these very early years (Campbell et al., 1996). The finding that dyadic interactions effect the child's problem behaviour positively can be of importance when guiding the parent how to respond to their child's cues and desires (Healey et al., 2010). Increased demands on parental control, parent-child relationship, and the influence of negative reactions from outside the family as well as from the social environment have a huge impact on parents. As family factors influence the further development of disruptive problem behaviours, it is of great importance to elaborate and stimulate adequate interventions, such as parent-child training in order to prevent further development of disruptive behaviours (Anastopoulos et al., 2009). There is growing evidence of the effectiveness of these interventions in early ADHD or other externalising disorders (Posthumus et al; 2009; Raaijmakers et al.; 2009; Sonuga-Barke et al., 2001).

Limitations

A limitation of the present study is that the information on parenting stress and problem behaviour came from one source, namely, the mother. Therefore, rater bias must be taken into account. Future research could include other informants to support the mother's point of view. Although the same instrument for measuring problem behaviours was used in our earlier study based on a large community population (Beernink et al., 2007), the respondents were not fully representative of the general population. Our sample included somewhat more parents with a higher socioeconomic status than in the general population. Thus scores for problem behaviours might have been higher in the non-responder group (Beernink et al., 2007). This undoubtedly limits the extent to which these results can be generalized.

Acknowledgements

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