

Parental Personality, Parenting and Toddlers' Externalising Behaviours

C. VAN AKEN^{1*}, M. JUNGER¹, M. VERHOEVEN², M. A. G. VAN AKEN¹,
M. DEKOVIĆ¹ and J. J. A. DENISSEN¹

¹Utrecht University, The Netherlands

²University of Amsterdam, The Netherlands

Abstract

This study examined the mediating role of parenting on the relation between parental personality and toddlers' externalising behaviours. Participants were 112 boys and their parents. The data were analysed using multilevel modelling and moderated mediation analyses. Several associations were found between parental personality and parenting dimensions. Additionally, several parenting dimensions were associated with children's externalising behaviours. Emotional stability was the only parental personality trait that was related to children's externalising behaviours. The effect of maternal emotional stability on children's aggressive behaviours appeared to be mediated by maternal support. For fathers, there appeared to be a direct effect of emotional stability on children's aggressive behaviours. In addition, for both mothers and fathers, emotional stability was directly related to children's attention problems. Copyright © 2007 John Wiley & Sons, Ltd.

Key words: antisocial behaviour; family and marriage; personality types; multilevel analysis

INTRODUCTION

Externalising behaviours in early childhood are often reported to persist (Broidy et al., 2003) and to predict continued problems in later life (Tremblay, 2002). These results highlight the importance of examining the development of early behaviour problems in order to understand their determinants. In trying to disentangle possible risk factors for children's negative behavioural outcomes, researchers have often turned to parental characteristics, which are acknowledged to constitute one important part of the 'ecology' of child development (Belsky, 1984; Bronfenbrenner, 1986).

*Correspondence to: C. van Aken, MA, Department of Developmental Psychology, Utrecht University, PO Box 80140, 3584 CS Utrecht, The Netherlands. E-mail: c.vanaken@uu.nl

Received 5 October 2006

Revised 1 March 2007

Accepted 23 April 2007

While there is an extensive literature on how parenting behaviours and parental psychopathological characteristics influence young children's externalising behaviours (Brook, Zheng, Whiteman, & Brook, 2001; DeKlyen, Speltz, & Greenberg, 1998; Gartstein & Fagot, 2003; Phares, 1996), only few studies have explored the role that parental personality characteristics play in predicting these externalising behaviours (Kochanska, Clark, & Goldman, 1997; Kurdek, 2003; Nigg & Hinshaw, 1998) and to which extent their effects are mediated by parenting behaviours (Kochanska et al., 1997; Prinzie, Onghena, Hellinckx, Grietens, Ghesquiere, & Colpin, 2004; Prinzie, Onghena, Hellinckx, Grietens, Ghesquiere, & Colpin, 2005). That is surprising, especially since already in 1984 Belsky proposed that parents' personality characteristics must affect parenting and children's behavioural outcomes (Belsky, 1984). From this point of view, it would be reasonable to hypothesise that parenting behaviours fully or partially mediate the effects of parental personality traits on children's externalising behaviours. This would also be in line with Patterson's assumptions that the impact of parental personality/psychopathology on children's adjustment is mediated by its disruptive impact on dysfunctional parenting practices (Patterson, 2002; Patterson, Reid, & Dishion, 1992).

Therefore, the present study investigates the mediating role of paternal as well as maternal parenting on the relation between parental personality traits and toddlers' attention problems and aggressive behaviours. This study focused on five parenting dimensions that have been associated with externalising behaviours in the literature: Support, Positive Discipline, Psychological Control, Lack of Structure and Physical Punishment (Brook et al., 2001; Feldman & Klein, 2003; O'Leary, Smith Slep, & Reid, 1999; Stormshak, Bierman, McMahon, & Lengua, 2005). For measuring parental personality, the Big Five Model was used (Goldberg, 1992), comprising of the following five traits of personality: extraversion, agreeableness, conscientiousness, emotional stability and openness to experience.

RELATIONS BETWEEN PARENTING AND EXTERNALISING BEHAVIOURS

Parental support (i.e. the degree to which parents are responsive to their child's needs and have positive interactions with their child) and *positive discipline* (i.e. the degree to which parents reinforce good behaviour of their child and make use of disciplinary techniques such as induction), are consistently reported to have a positive effect on children's functioning. Feldman and Klein (2003) reported maternal sensitivity and warm control (i.e. showing positive affect while providing limits, using encouragement, redirection of attention and negotiation) to predict toddlers' compliance to the caregiver. In addition, a study by Stormshak et al. (2000) showed that low levels of positive interactions were particularly characteristic of parents of children with elevated levels of disruptive behaviours. Furthermore, Kerr, Lopez, Olson, and Sameroff (2004) found inductive discipline (i.e. reasoning, reminding children of rules and explaining the impact of children's behaviours on others) to be associated with fewer externalising problems. A possible explanation for these results might be that when parents are sensitive to their child's needs, when they express warm feelings and when their requests are reasonable and understandable to the child, children are likely to feel secure and accepted and, thereby, to follow parents' suggestions (Chen et al., 2003). *Psychological control* refers to disciplinary

techniques such as verbal punishment and withdrawal of attention and/or affection when a child misbehaves. Parents who frequently make use of these techniques, are reported to have children with elevated rates of diverse disruptive behaviour problems (Danforth, Barkley, & Stokes, 1991; Kuczynski, Kochanska, Radke-Yarrow, & Girmius-Brown, 1987; Stormshak et al., 2000). A psychologically controlling environment manipulates and exploits the parent–child relationship, and consequently limits the child’s opportunities to develop a healthy awareness and perception of the self, hereby constraining the development of socially accepted behaviour (Barber, 1996). In addition, children of parents who show high levels of verbal punishment are exposed to models of aggressive and unregulated behaviours (Bandura, Ross, & Ross, 1961; Campbell, Shaw, & Gilliom, 2000). Practices belonging to the parenting dimension *lack of structure* (i.e. laxness, overreaction, inconsistency) have also been linked with elevated levels of externalising behaviours (O’Leary et al., 1999; Prinzie, Onghena, Hellinckx, Grietens, Ghesquiere, & Colpin, 2003). Stormshak et al. (2000) put forward two possible explanations for these associations. The first explanation was offered by Patterson (1986), who noted that parental failure to be consistent and to follow through with commands may result in reinforcement of non-compliance. An alternative explanation was offered by Wahler and Dumas (1986), who suggested that children whose parents are inconsistent and unpredictable, engage in oppositional and defiant behaviours in order to elicit predictable responses of their parent. Finally, *physical punishment* (i.e. the degree to which parents use spanking as a discipline technique) was found in several previous studies to be associated with increased behaviour problems (Brook et al., 2001; Stormshak et al., 2000; Strassberg, Dodge, Pettit, & Bates, 1994). This might be explained from a social learning perspective: physical punishment models aggression and might make children expect that hostile and aggressive behaviours have successful outcomes (Campbell et al., 2000). Furthermore, according to Gershoff (2002) physical punishment is thought to prevent internalisation of parents’ values and those of the society by eroding the attachment bond between the parent and the child. Finally, experience with harsh treatment from parents is expected to bias children’s information processing such that harshly treated children will be hypervigilant to hostile cues, attribute hostile intentions to others and access more aggressive potential responses (Gershoff, 2002).

RELATIONS BETWEEN PARENTAL PERSONALITY, PARENTING AND EXTERNALISING BEHAVIOURS

In contrast to the relation between parenting and children’s externalising behaviours, there is a relative dearth of literature focused on parental personality traits in relation to parenting behaviours and children’s externalising behaviours.

With regard to the relation between parental personality traits and children’s behaviour problems, studies consistently show that high parental neuroticism (or low emotional stability) is an important risk factor for children’s externalising behaviours (Kurdek, 2003; Nigg & Hinshaw, 1998; Prinzie et al., 2004, 2005). In addition, some studies showed maternal lack of conscientiousness to be a significant contributor to children’s externalising behaviours (Nigg & Hinshaw, 1998; Prinzie et al., 2005; van Aken, Junger, Verhoeven, van Aken, & Dekovic, 2007). With regard to parental agreeableness, results are mixed. Some studies (e.g. Kochanska et al., 1997) showed that low scores on agreeableness were

predictive of increased levels of children's behaviour problems, whereas Prinzie et al. (2004) reported maternal agreeableness to be positively related to externalising problem behaviours in elementary-school-aged children.

In general, parental personality traits may directly be related to children's development through two possible mechanisms (Kochanska et al., 1997). First, children may inherit certain personality characteristics that may lead to elevated levels of externalising behaviours. For instance, low conscientious parents are characterised by traits as low self-discipline and the tendency to act before thinking (Costa & McCrae, 1992). Their children may inherit a tendency of low inhibitory control and consequently show increasing levels of externalising behaviours. Second, parents with certain personality traits may model aggressive and unregulated behaviours to their child, and subsequently their child may imitate these behaviours (Bandura et al., 1961; Campbell et al., 2000). For instance, behaviours of low conscientious parents may be characterised by impulsive and poorly regulated acts. Aggressive and inattentive behaviours of young children might be imitations of these behaviours.

In addition to direct associations between parental personality and children's problem behaviour, this relation can at least partly be assumed to be mediated by parenting behaviour (Belsky, 1984; Patterson, 2002). Studies using the Five Factor Model of personality indeed showed that parental personality is related to parenting. More specifically, previous studies revealed that parents with high scores on extraversion, agreeableness, conscientiousness, emotional stability (or low neuroticism) and openness displayed more positive supportive and responsive parenting and less negative, controlling parenting (Belsky & Barends, 2002; Belsky, Crnic, & Woodworth, 1995; Clark, Kochanska, & Ready, 2000; Losoya, Goldsmith, Callor, & Rowe, 1997; Metsäpelto & Pulkkinen, 2003; Verhoeven, Junger, van Aken, Dekovic, & van Aken, in press). In contrast, parents high in negative emotionality and disagreeableness appeared to show more negative affect and more power-assertive and less nurturant parenting (Kochanska et al., 1997), whereas neuroticism was found to be associated with less sensitive, less affective and less stimulating parenting (Belsky et al., 1995).

However, as stated before, research that explicitly investigates to which extent parenting mediates the effects of parental personality on children's behavioural outcomes, is very scarce. Kochanska et al. (1997) found that parenting variables (a constellation of power assertion, responsiveness/warmth and adaptive parenting) partially mediated the relation between maternal negative emotionality and mother-reported children's adaptive outcomes. The same study also showed that the effect of maternal disagreeableness on both observed and mother-reported outcomes of children was fully mediated by parenting behaviours. The authors suggest that these links may stem largely from the negative affective component of hostility in disagreeableness. A more recent study by Prinzie et al. (2004) on the direct and indirect effects of parent and child personality characteristics found the contrary: they reported a positive association between parental agreeableness and children's externalising behaviours that appeared to be partially mediated by parental coercion. In addition, their results indicated that the negative association between parental emotional stability and children's externalising behaviours was partially mediated by parental overreactivity. However, above and beyond the mediating effects, personality traits were also directly linked to externalising problem behaviours in these elementary-school-age children. A later study by Prinzie et al. (Prinzie et al., 2005) on the same sample of children supported these results, and reported that the effects of parental personality traits were mediated by negative parenting behaviours, while paternal

and maternal emotional stability, conscientiousness and autonomy (a shortcut for openness) were also directly related to children's externalising behaviours.

THE CONTRIBUTION AND UNIQUENESS OF THE PRESENT STUDY

The above-mentioned studies by Kochanska et al. (1997) and Prinzie et al. (2004, 2005) provide important knowledge about the mediating role of parenting behaviours on the relation between parental personality traits and children's externalising behaviours. The present study extends this knowledge in four ways.

A first way in which the present study extends previous research concerns the way parenting was measured. Kochanska et al. (1997) combined different parenting dimensions into a global conceptualisation of parenting, without considering the effects of specific parenting behaviours, while Prinzie et al. (2004, 2005) focused on negative parenting behaviours only. Consequently, these studies did not pay attention to the multidimensional nature of parenting (Davidov & Grusec, 2006). In contrast, the present study makes it possible to obtain a more comprehensive view of the specific (mediating) effects of different dimensions of parenting, by including several positive as well as negative parenting dimensions, which are considered to cover a broad range of parenting behaviours.

Second, the present study focuses on the role of mothers as well as fathers, instead of mothers only, as in the study by Kochanska et al. (1997). In previous work most attention has been paid to the role of mothers in externalising behaviours in children, with only very incidental attention to the role of fathers. However, in the last few decades, the interest in the role that fathers play in child development has grown. Previous research indicates that the father-child relationship is distinct from the mother-child relationship. For instance, children preferably seek mothers to comfort and sooth them (Lamb & Lamb, 1976), but prefer fathers as playmates (Clarke-Stewart, 1978). In addition, research has shown that mothers are more responsive and warm in their parenting (Calzada, Eyberg, Rich, & Querido, 2004), whereas fathers are found to be more restrictive (Metsäpelto & Pulkkinen, 2003).

Third, the present study takes into account the interdependence of fathers' and mothers' characteristics. Fathers and mothers from the same family are supposed to resemble each other more than parents from different families (Kenny, 1996). This non-independence of fathers and mothers from the same family can be a result of the fact that they were similar on certain characteristics when they were paired together (i.e. assortative mating) or they resemble each other more because they subsequently influenced each other's personality characteristics and parenting behaviours (Kenny, 1996). While many studies circumvent the issue of interdependence by conducting separate analyses for fathers and mothers from the same family (Campbell & Kashy, 2002), we accounted for this by using the parental dyad as the unit of analysis instead of the individual parent. In addition, to formally test whether mediation effects of parenting differed across fathers and mothers, moderated mediation analyses were conducted (Muller, Judd, & Yzerbyt, 2005).

Finally, the present study extends previous studies by distinguishing attention problems and aggressive behaviours as separate child outcome variables. Both the studies by Kochanska et al. (1997) and by Prinzie et al. (2005) focused on broadband patterns of problem behaviours. However, past research suggests that hyperactive/inattentive behaviours may be associated with somewhat different aetiological factors than aggressive behaviours (Frick et al., 1993; Hoge & Andrews, 1992). For example cognitive control

deficits have been implicated as key factors underlying the behaviour problems of hyperactive/inattentive children (Barkley, 1990). In addition, evidence of direct genetic influences is stronger for overactivity/inattention behaviours than for antisocial/externalising behaviours (Rutter, Silberg, O'Connor, & Simonoff, 1999). This points to the relevance of focusing on specific types of problem behaviours instead of aggregating them into one outcome.

HYPOTHESES

We expect that, in accordance with previous studies (Kochanska et al., 1997; Prinzie et al., 2004, 2005), the effects of parental personality traits on children's externalising behaviours are partly mediated by their impact on parenting behaviours. At the same time, we hypothesise direct effects of these personality traits. Because of the relatively strong genetic component of overactivity/inattention behaviours, we expect more direct effects of parental personality for children's attention problems than for aggressive behaviours. Especially parental emotional stability and conscientiousness are expected to be directly related to children's attention problems: parents who score low on emotional stability are characterised by having difficulties controlling urges and coping with various stressors (Costa & McCrae, 1992), while low conscientious parents are characterised by a low self-discipline and the tendency to act before thinking (Costa & McCrae, 1992). Both personality traits may be inherited by children, which may lead to elevated levels of attention problems.

Furthermore, since previous studies suggest that attention problems might be less determined by parenting dimensions than aggressive behaviours (Barkley, 1990), we expect parenting to be more strongly related to aggressive behaviours than to attention problems. At the same time, some studies (Campbell, Pierce, March, & Ewing, 1991; Stormshak et al., 2000) indicate that children's highly active and impulsive behaviours may elicit negative/psychological control from parents, which subsequently evokes even higher levels of these impulsive behaviours. Therefore, while we expect that aggressive behaviours might be related to all parenting dimensions, we hypothesise that attention problems are related to psychological control only.

METHOD

Sample and procedure

Only boys were included in this study since externalising behaviours are more common among boys than girls (Webster-Stratton, 1996). The sample for this study was drawn from Infant and Toddler Clinics in three cities in The Netherlands. In The Netherlands, these clinics follow up all children from birth up to 4 years of age and they systematically check the child's growth and development. So, the sample is considered to be a community sample of typically developing children. A recruitment letter explaining the goals of the project was sent to 192 families and followed up by a telephone call. Of these 192 families, 117 (60.9%) agreed to participate. Frequent reasons for not participating were: failure to reach a family (approximately 25% of the non-participants), a lack of time or a lack of interest in the topic of the project. Four measurement waves were used with a 6-month

interval. The attrition rate during the study was minimal: of the 117 families that started in the study, 112 participated in the final wave.

For the present analyses, only data collected at that final wave were used. At that wave, the age of the children ranged from 33 to 37 months ($M = 34.9$ months, $SD = 0.71$ months). Fathers and mothers were asked to fill out questionnaires about their parenting behaviours, personality traits and their children's behaviours. All 112 families, among which 4 families where only the father or only the mother participated, were included in the analyses.

Instruments

All instruments that were originally produced in English and of which no standard translation into Dutch was available were translated into Dutch by means of a back-translation procedure.

Externalising behaviours

To measure externalising behaviours, the Child Behaviour Checklist 1 $\frac{1}{2}$ –5 (Achenbach & Rescorla, 2000) was used. Mothers and fathers were asked to indicate from 0 (*never*) to 2 (*often*) whether items were indicative of the child's behaviour. The broad externalising scale consisted of the two subscales attention problems (five items) and aggressive behaviour (19 items). Cronbach's alpha for maternal as well as paternal reports of attention problems was 0.67. Cronbach's alpha for maternal reported aggressive behaviours was 0.87 and for paternal reported aggressive behaviours was 0.85.

Parental personality traits

The 'Big Five' personality traits (extraversion, agreeableness, conscientiousness, emotional stability and openness to experience) were assessed by a Dutch adaptation (Gerris, Houtmans, Kwaaitaal-Roosen, Schipper, Vermulst, & Janssens, 1998) of 30-adjective Big Five markers selected from Goldberg (1992). Fathers and mothers were asked to judge their own personality by indicating on a seven-point Likert scale how much they agreed with each adjective, 1 = *very untrue* to 7 = *very true*. *Extraversion* is characterised by active engagement, assertiveness and talkativeness. *Agreeableness* includes tender-heartedness, friendliness and willingness to help others. *Conscientiousness* assesses punctuality, order and degree of organisation in goal-directed task behaviours. *Emotional stability* is characterised by the extent to which the person is emotionally stable or vulnerable to distressing emotions. *Openness to experience* includes openness of a person to fantasy, aesthetics and ideas. Cronbach's alphas for extraversion, agreeableness, conscientiousness, emotional stability and openness to experience were 0.84, 0.84, 0.87, 0.79 and 0.80, respectively, for fathers and 0.89, 0.79, 0.90, 0.77 and 0.82, respectively, for mothers.

Parenting

Fathers and mothers were asked to judge their own parenting behaviours by filling out questionnaires. We used a five-fold classification of parenting consisting of the following dimensions: support, positive discipline, psychological control, lack of structure and physical punishment. This model was tested by conducting confirmatory factor analyses using structural equation modelling and found to be measurement invariant across mothers and fathers (Verhoeven et al., 2006). Scores for parenting behaviours were assigned by computing mean scores of all items the scales consisted of.

Support

Two scales were used to assess parental support. The degree to which parents adequately and *responsively* react to the needs, signals and condition of their child was measured by a subscale from a Dutch Parenting Questionnaire (Gerris, Van Boxtel, Vermulst, Janssens, Van Zutphen, & Felling, 1993). Parents rated the frequency of their parenting behaviour on a five-point scale ranging from 1 = *never* to 5 = *always*. The original scale consists of eight items (e.g. 'I know very well what my child feels or needs'). Four of the items are not suitable for toddlers and were consequently deleted from the scale.

The degree to which a parent is involved in *positive interactions* with the child was measured by a five-item adaptation of Strayhorn and Weidman's (1988) Parent Practices Scale. Parents were asked to rate the frequency of their positive interactions with their child on a five-point scale (for example 'How often do you and your child laugh together?'), ranging from 1 = *never* to 5 = *many times each day*.

For mothers, the internal consistency of their reported support was 0.70. For fathers, the internal consistency was 0.79.

Positive discipline

Two indicators of parental use of positive discipline were assessed. Six items derived from the Alabama Parenting Questionnaire (Frick, 1991; Shelton, Frick, & Wootton, 1996) measured *reinforcement of good behaviour*. Parents could indicate how often they praise their child's good behaviour on a five-point scale, ranging from 1 = *never* to 5 = *always*. For example 'I praise my child when he behaves well'.

The second indicator, *induction*, was measured by a subscale from a Dutch Parenting Questionnaire, consisting of four items (Gerris et al., 1993). On a five-point scale, ranging from 1 = *never* to 5 = *always*, parents indicated how often they point out the consequences of the child's misbehaviour. An example-item is 'When my child does not listen to me, I explain to him that it annoys me'.

Cronbach's alpha for this parental behaviour was 0.60 for mothers and 0.66 for fathers.

Psychological control

To assess psychological control two scales were used. Four items measured *love withdrawal* (Gerris et al., 1993). Parents were asked to rate on a five-point scale, ranging from 1 = *never* to 5 = *always*, how often they use withdrawal of attention and/or affection as a technique to discipline their child. One of the four items is, 'When my child misbehaves, I pretend that he is not there anymore'.

With 10 items derived from the Discipline-scale of the Parent Behaviour Checklist (Fox, 1994), *verbal punishment* was assessed. Parents indicated on a five-point scale (1 = *never* to 5 = *always*) how often they raise their voice as a response to their child's misbehaviour. For example 'I yell at my child for being too noisy at home'.

Internal reliability for the composite measure of psychological control was 0.68 for mothers and 0.66 for fathers.

Lack of structure

To assess the degree to which parents provide a structured environment for their child, three scales were used. Two of these scales are from the shortened version of the Parenting Scale (Irvine, Biglan, Smolkowski, & Ary, 1999). The first scale, *laxness*, describes a parent who is permissive and inconsistent when providing discipline. This scale consists of six items presenting discipline encounters ('When my child misbehaves...') followed by two

options that act as opposite anchor points for a seven-point scale, where a high score indicates that parents are lax in their parenting. For example 'If my child gets upset when I say 'no', I stick to what I said—or the opposite—I back down and give in to my child'.

The second scale, *overreaction*, measures parental tendency to react on child's transgressing behaviour in an unstructured, exaggerated manner. This scale consists of four items with two answer options that act as opposite anchor points. One of the four items is 'When my child misbehaves, I handle it without getting upset—or the opposite—I get so frustrated that my child can see I'm upset'. A high score indicates that a parent is often overreacting. The five items of the *inconsistency* scale from the Alabama Parenting Questionnaire (Frick, 1991; Frick, Christian, & Wootton, 1999; Shelton et al., 1996) were used to measure lack of structure in terms of inconsistency in applying discipline. Parents rated themselves on a five-point Likert scale, ranging from 1 = *never* to 5 = *always*. An example-item is 'You threaten to punish your child and then do not actually punish him'.

For mothers, the internal consistency of lack of structure was 0.81, for fathers this was 0.87. Before a score of lack of structure could be assigned, the scales that measured this parenting dimension had to be standardised since they have different rating scales.

Physical punishment

Two scales assessed parental use of physical punishment. Five items were drawn from the Discipline-scale of the Parental Behaviour Checklist (Fox, 1994), the other three are items from Alabama Parenting Questionnaire (Frick, 1991; Shelton et al., 1996). The items measure the frequency in which parents use physical punishment as a manner to discipline their child. On a five-point scale parents had to indicate how often they use spanking as a discipline technique, ranging from 1 = *never* to 5 = *always*. Example-items are 'When my child has a temper tantrum, I spank him', and 'You spank your child with your hand when he has done something wrong'.

Physical punishment was measured with an internal reliability of 0.77 for mothers and 0.80 for fathers.

PLAN OF ANALYSIS

Because mothers and fathers are nested within families, fathers and mothers from the same family are likely to resemble each other more than parents of different families (Kenny, 1996). This appeared to be especially the case for parenting dimensions (correlation between fathers' and mothers' scores ranged from $r=0.14$ to $r=0.42$) and to a lesser extent for personality traits (correlation between fathers' and mothers' scores ranged from $r=0.10$ to $r=0.17$). Additionally, also scores of fathers and mothers on children's behaviour problems were moderately correlated ($r=0.52$ for attention problems and $r=0.55$ for aggressive behaviours). To account for the interdependence, the data were analysed using multilevel modelling utilising the linear mixed-effects model (MIXED) procedure in SPSS. Consequently, the parental dyad was used as the unit of analyses and the data were set up as described by Campbell and Kashy (2002). Specifically, we tried to predict parents' perceptions of their children's outcomes by means of their self-perceived parenting and personality levels. We allowed the average level of children's problem behaviours to vary between families (in multilevel terms, we introduced a random intercept component on the between-family level). To facilitate interpretation of effect sizes, all

variables (except gender, which was dummy-coded, father = 0, mother = 1) were standardised prior to analysis.

In testing mediation effects of parenting on the association between parental personality and children's externalising behaviours, we were interested in mediation effects that are similar across fathers and mothers as well as in mediation effects that are different (i.e. specific) for fathers and mothers. In other words, we were also interested in the moderating effect of parental gender on the mediation effects. In the literature this is referred to as *moderated mediation* (Baron & Kenny, 1986; Muller et al., 2005).

Muller et al. (2005) specified four criteria for testing moderated mediation. First, the independent variable (parental personality trait) has to be significantly related to the particular child behaviour outcome. Second, the magnitude of this effect should not depend on the moderator (parental gender). Third, either the effect of the independent variable (parental personality trait) on the mediator (parenting dimension) should depend on the moderator (parental gender) or the effect of the mediator (parenting dimension) on the child behaviour outcome should depend on the moderator (parental gender), or both. Fourth, if only the effect of the independent variable (parental personality trait) on the mediator (parenting dimension) depends on the moderator (parental gender), then there must be an overall effect of the mediator (parenting dimension) on the child outcome. Parallel to this, if only the effect of the mediator (parenting dimension) on the child behaviour outcome depends on the moderator (parental gender), then there should be an overall effect of the independent variable (personality trait) on the mediator (parenting dimension).

In cases where there is no evidence of mediation that is moderated by parental gender (i.e. where there is no evidence of mediation effects that differ across fathers and mothers), we will test whether there exist mediation effects that are *similar* across fathers and mothers. One of the requirements that has to be tested for determining whether there exist mediation effects that are not moderated by gender and thus are similar across fathers and mothers, is that the significant relation between the particular personality trait and children's externalising behaviours is reduced when the effect of the particular parenting dimension is controlled for (Baron & Kenny, 1986). The procedure by Muller et al. (2005) for testing moderated mediation also offers information to test that requirement. If that requirement is met, we also apply the other criteria formulated by Baron and Kenny (1986) to formally test the particular mediation effect. If that requirement is not met, we can already conclude that there is (also) no mediation that is consistent across fathers and mothers and thus the other criteria are not tested.

RESULTS

Descriptive statistics and correlation analysis

Table 1 presents means and standard deviations for child outcomes, parental personality traits and parenting dimensions. As can be seen, mothers in this sample reported significantly more child aggressive behaviours and scored significantly higher on extraversion, conscientiousness, support and positive discipline and significantly lower on emotional stability than fathers.

In order to obtain an indication of the degree to which the sample of the present study is representative, we compared socio-demographic variables, child variables and parental

Table 1. Means and standard deviations for child outcome measures, parental personality traits and parental parenting dimensions

	Mothers		Fathers		T-value (Paired)
	M	SD	M	SD	
Child outcome measures					
Attention problems	0.57	0.38	0.57	0.38	0.06
Aggressive behaviours	0.66	0.32	0.56	0.29	3.62***
Parental personality traits					
Extraversion	5.40	1.02	4.86	1.03	3.96***
Agreeableness	5.76	0.53	5.63	0.68	1.45
Conscientiousness	5.15	1.07	4.83	1.04	2.27*
Emotional stability	4.81	0.93	5.13	0.90	-3.14**
Openness	4.73	1.01	4.92	0.95	-1.44
Parenting					
Support	4.41	0.32	4.17	0.43	5.34***
Positive discipline	4.25	0.36	4.07	0.42	3.51**
Psychological control	1.86	0.44	1.88	0.49	0.01
Lack of structure	0.01	0.53	-0.01	0.62	0.22
Physical punishment	1.31	0.73	1.36	0.43	-1.30

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

personality traits of our sample to the distribution of these variables in the general Dutch population (Branje, van Aken, & van Lieshout, 2004; CBS, 2003; Koot, 1993). Summarising, as can be seen in Table 2, on these indicators the sample of the present study seems to be relatively representative for the Dutch population, except for the level of parental education, for which a bias towards more highly educated families was found.

Table 3 shows the intercorrelations between the variables of interest. For both maternal and paternal reports, children's attention problems and aggressive behaviours appeared to

Table 2. Comparison of data from the present study with Dutch population characteristics

	Present study	Population characteristics
Socio-demographic variables		
Education level college degree or more	65%	30%
Intact families	96%	97%
Child syndrome scores (according to mothers)		
Attention problems borderline clinical range	3.5%	5.1%
Attention problems clinical range	4.3%	3.7%
Aggressive behaviours borderline clinical range	6.1%	4.2%
Aggressive behaviours clinical range	3.5%	4.2%
Parental personality traits (average of mothers and fathers)		
Extraversion	5.13	5.04
Agreeableness	5.70	5.74
Conscientiousness	4.99	4.94
Emotional stability	4.97	4.64
Openness	4.83	4.67

be significantly related. Furthermore, several significant intercorrelations existed between parental personality traits, parenting dimensions and children's externalising behaviours.

The unique contribution of parental personality traits and parenting dimensions to children's behavioural outcomes

We subsequently examined the unique effects of parental gender and each of the parental personality traits and each of the parenting dimensions on children's behavioural outcomes. These unique influences were determined by conducting separate multilevel regression models for personality traits and parenting dimensions (Table 4). To account for possible parental gender differences in predictive associations, interactions between personality/parenting and parental gender were also included as predictors. Because of the dummy character of the parental gender variable (0 = fathers, 1 = mothers), main effects can be interpreted as the coefficients for *fathers*, whereas the corresponding coefficient for *mothers* can be easily calculated by adding the coefficient representing the parental gender interaction to this figure. For example the main effect of extraversion on attention problems is -0.17 and the interaction effect is 0.25 , meaning that the value for fathers is -0.17 and the value for mothers 0.08 (i.e. $-0.17 + 0.25$).

When examining the independent contributions of the parental personality traits, we see that parental emotional stability uniquely predicted both attention problems and aggressive behaviours. Because there was no interaction with parental gender, these effects are consistent across mothers and fathers. None of the other parental personality traits contributed uniquely to the prediction of attention problems or aggressive behaviours.

When examining the independent contributions of parenting dimensions, psychological control appeared to be independently significantly related to attention problems as well as aggressive behaviours. Because there was no interaction with parental gender, these effects are consistent across mothers and fathers. In addition, lack of structure was significantly positively associated with aggressive behaviours, again both in fathers and in mothers. Finally, an interaction effect between support and parental gender was found for the prediction of aggressive behaviours. This effect indicated that for mothers a negative association was found between support and children's aggressive behaviours ($\beta = 0.07 - 0.27 = -0.20$), whereas for fathers no significant association was found ($\beta = 0.07$).

Finally, the parental gender effect for aggressive behaviours in the personality as well as in the parenting model, indicates that mothers rated significantly more aggressive behaviours in their child than fathers.

Parenting dimensions as mediators of the relation between parental personality traits and children's behavioural outcomes

As stated above, according to Muller et al. (2005) the first criterion for testing moderated mediation requires that the parental personality trait is significantly related to the particular child behaviour outcome. As shown in Table 4, emotional stability was the only parental personality trait that was significantly related to children's behaviour outcomes. The second criterion requires that the magnitude of these effects does not depend on parental gender. As can be seen in Table 4, also this criterion holds for the effects of emotional stability.

Table 3. Intercorrelations among parental personality traits, parenting dimensions and children's behavioural outcomes

	1	2	3	4	5	6	7	8	9	10	11	12
1 Extraversion	—	0.36***	-0.14	0.25**	0.20*	0.09	0.13	-0.20*	-0.06	0.03	-0.16	-0.02
2 Agreeableness	0.25*	—	0.08	0.13	0.34***	0.22*	0.38***	-0.03	0.01	0.15	0.11	0.18
3 Conscientiousness	0.03	0.02	—	0.10	-0.05	0.10	0.05	-0.09	-0.09	0.12	-0.01	0.02
4 Emotional stability	0.51***	0.29**	0.08	—	-0.01	0.17	0.18	-0.21*	-0.28**	-0.06	-0.23*	-0.29**
5 Openness	0.28***	-0.02	0.03	0.07	—	0.25*	0.21*	-0.12	-0.07	0.13	-0.01	-0.08
6 Support	0.18	0.22*	0.12	0.23*	0.22*	—	0.40***	-0.33***	-0.43***	-0.17	-0.09	0.03
7 Positive discipline	0.11	0.20	0.11	0.16	0.15	0.35***	—	-0.22*	-0.23*	-0.05	-0.07	0.05
8 Psychological control	-0.13	-0.23**	-0.11	-0.31**	-0.04	-0.24*	-0.03	—	0.57***	0.31**	0.24*	0.35***
9 Lack of structure	-0.24*	-0.20*	-0.18	-0.37***	-0.09	-0.38***	-0.21*	0.45***	—	0.30**	0.15	0.29**
10 Physical punishment	-0.14	-0.20*	0.05	-0.21*	-0.11	-0.12	-0.16	0.37***	0.20*	—	0.08	0.07
11 Attention problems of child	-0.01	-0.13	-0.26**	-0.19*	0.03	-0.33**	-0.27**	0.35***	0.26**	0.27**	—	0.57***
12 Aggressive behaviours of child	-0.01	-0.11	-0.24*	-0.21*	0.11	-0.27**	-0.11	0.43***	0.34***	0.25**	0.62***	—

Note: Correlations for mothers are below diagonal; correlations for fathers are above diagonal.
 * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 4. Examining the unique contribution of parental personality traits and parenting dimensions to children's behavioural outcomes

	Attention problems	Aggressive behaviours
	β	β
Personality Traits		
Parental gender	-0.01	0.25*
Extraversion	-0.17	0.00
Agreeableness	0.13	0.09
Conscientiousness	-0.02	0.01
Emotional stability	-0.20*	-0.26**
Openness	0.04	-0.09
Extraversion \times gender	0.25	0.07
Agreeableness \times gender	-0.15	-0.16
Conscientiousness \times gender	-0.17	-0.18
Emotional stability \times gender	0.07	0.11
Openness \times gender	0.01	0.11
Parenting dimensions		
Parental gender	0.10	0.31**
Support	0.02	0.07
Positive Discipline	-0.05	-0.02
Psychological Control	0.24*	0.28**
Lack of Structure	0.01	0.22*
Physical Punishment	0.05	-0.02
Support \times gender	-0.19	-0.27**
Positive Discipline \times gender	-0.11	0.01
Psychological Control \times gender	-0.02	-0.01
Lack of Structure \times gender	-0.05	-0.11
Physical Punishment \times gender	0.06	0.11

Note: Separate regression analyses were conducted for personality traits and parenting.

Parental gender: Father = 0; Mother = 1.

* $p < 0.05$; ** $p < 0.01$.

In order to test the third and fourth criterion formulated by Muller et al. (2005), for each parenting dimension (in other words, for each possible mediator) two regression models were run. In the first model, emotional stability, parental gender and the emotional stability \times gender interaction were entered as predictors of the particular parenting dimension. In the second model, emotional stability, parental gender, the emotional stability \times gender interaction, the particular parenting dimension and the parenting dimension \times gender interaction were entered as predictors of the particular child behaviour problem (attention problems/aggressive behaviours) (see Table 5).

Mediation analyses for attention problems

Firstly, criterion 3 was tested for the prediction of attention problems. This criterion requires that either the effect of emotional stability on the particular parenting dimension or the effect of the particular parenting dimension on the child behaviour outcome depends on parental gender, or both. Table 5 shows that the emotional stability \times gender interaction did not significantly predict any of the parenting dimensions. In addition, none of the parenting \times gender interactions significantly predicted attention problems. So, criterion 3

Table 5. Moderated mediation analyses for emotional stability

	Unmediated model		Model with support as mediator		Model with positive discipline as mediator		Model with psychological control as mediator		Model with lack of structure as mediator		Model with physical punishment as mediator	
	Y	ME	Y	ME	Y	ME	Y	ME	Y	ME	Y	ME
Prediction of attention problems (Y)												
X (Emotional stability)	-0.21*	0.19*	-0.22*	0.19*	-0.20*	-0.24*	-0.18*	-0.28**	-0.18*	-0.12	-0.19*	-0.19*
MO (Parental gender)	-0.05	0.69***	0.03	0.51***	0.02	-0.12	-0.06	-0.08	-0.04	-0.19	-0.03	-0.03
X × MO (Emotional stability × gender)	0.13	-0.01	0.15	-0.05	0.13	-0.02	0.12	0.02	0.12	-0.09	0.13	0.13
ME (Parenting dimension)			-0.05		-0.09		0.22**		0.10		0.10	0.10
ME × MO (Parenting × gender)			-0.19		-0.11		0.02		0.03		0.06	0.06
Prediction of Aggressive Behaviours (Y)												
X (Emotional stability)	-0.23**	0.19*	-0.26**	0.19*	-0.23**	-0.24*	-0.18*	-0.28**	-0.18*	-0.12	-0.21*	-0.21*
MO (Parental gender)	0.26*	0.69***	0.30**	0.51***	0.28**	-0.12	0.27**	-0.08	0.26**	-0.19	0.28**	0.28**
X × MO (Emotional stability × gender)	0.09	-0.01	0.14	-0.05	0.09	-0.02	0.10	0.02	0.09	-0.09	0.10	0.10
ME (Parenting dimension)			0.07		-0.03		0.29***		0.23**		0.08	0.08
ME × MO (Parenting × gender)			-0.32*		-0.05		0.06		0.01		0.10	0.10

Note: Y, dependent variable; X, independent variable; MO, moderator variable; ME, mediator variable.

Parental gender: Father = 0; Mother = 1.

Values are standardised coefficients.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

does not hold for the association between emotional stability and attention problems and consequently we can conclude that there are no gender-specific mediating effects of parenting dimensions on this association.

Subsequently, we used Table 5 to explore whether there exist mediation effects which are not moderated by gender and thus are *similar* across fathers and mothers. One of the requirements for such mediation is that the relation between emotional stability and attention problems is reduced when the effect of the particular parenting dimension is controlled for (Baron & Kenny, 1986). To investigate whether this was the case, the strength of the association between emotional stability and attention problems in the unmediated model was compared to the strength of this association in the mediated models. Since in all mediation models this association was reduced only very marginally and remained significant after controlling for the parenting dimension, we can conclude that, in addition to the lack of mediation effects that differ across fathers and mothers, there is also no evidence of mediation effects that are similar across fathers and mothers. Thus, for both mothers and fathers emotional stability appeared to contribute directly to children's attention problems.

Mediation analyses for aggressive behaviours

Subsequently, moderated mediation analyses were tested for the prediction of aggressive behaviours. First, criterion 3 was tested. As we already saw above, the emotional stability \times gender interaction did not significantly predict any of the parenting dimensions. However, the support \times gender interaction appeared to significantly predict aggressive behaviours: support was significantly negatively related to children's aggressive behaviours for mothers only. Consequently, criterion 3 was met for the associations between emotional stability, support and aggressive behaviours.

Finally, criterion 4 was tested for the association between emotional stability, support and aggressive behaviours. This criterion requires that, next to the interaction effect of support and parental gender on aggressive behaviours, there is an overall effect of the independent variable (emotional stability) on the mediator (support). This indeed appeared to be the case: emotional stability was significantly positively related to support. Summarising, there appeared to be a mediation effect of support on the association between emotional stability and children's aggressive behaviours for mothers only. Additionally, there was a direct effect of paternal emotional stability on children's aggressive behaviours.

Also here, it could be possible that other parenting dimensions than support mediate the association between emotional stability and children's aggressive behaviours in a way consistent for mothers and fathers. Again, among other requirements, this would require that the association between parental emotional stability and children's aggressive behaviours is reduced when the effect of the particular parenting dimension (positive discipline, psychological control, lack of structure and/or physical punishment) is controlled for (Baron & Kenny, 1986). To investigate whether this was the case, also for aggressive behaviours the strength of the association with emotional stability in the unmediated model was compared to the strength of this association in the mediated models. However, in all mediation models this association was reduced only very marginally or even increased somewhat and remained significant after controlling for the particular parenting dimension. Consequently, there is no evidence of mediation effects of parenting dimensions on the association between emotional stability and aggressive behaviours that are consistent across fathers and mothers.

DISCUSSION

Only few studies have explored the role that parental personality characteristics play in predicting young children's externalising behaviours and to which extent these effects are mediated by parenting behaviours. Therefore, this study aimed to determine the degree to which parenting behaviours mediate the relationship between parental personality traits and toddlers' attention problems and aggressive behaviours. The results of the present study were generally in line with the hypotheses and consistent with results reported by previous studies (Kochanska et al., 1997; Prinzie et al., 2004; Stormshak et al., 2000), even though this study has been conducted in a different culture. Several associations were found between parental personality traits and parenting dimensions and additionally, several parenting dimensions were associated with children's externalising behaviours. Emotional stability appeared to be the only parental personality trait that was related to children's externalising behaviours. The results were partially in line with Patterson's and Belsky's assumptions that the impact of parental personality on children's adjustment is mediated by its impact on parenting practices (Belsky, 1984; Patterson, 2002; Patterson et al., 1992): The effect of maternal emotional stability appeared to be mediated by maternal support for children's aggressive behaviours. However, parental emotional stability also contributed directly to children's externalising behaviours. For fathers, the effect of emotional stability on children's aggressive behaviours appeared to be direct. In addition, for both mother and fathers, emotional stability was directly related to children's attention problems.

Direct and indirect effects of personality traits

As described above, in consistence with previous research (Kochanska et al., 1997; Prinzie et al., 2004), maternal emotional stability appeared to contribute indirectly to children's aggressive behaviours. Emotional stability of mothers influenced toddlers' aggressive behaviours through the impact on support: mothers who were less emotionally stable, provided less support to their child, which subsequently led to elevated levels of children's aggressive behaviours. For fathers, support was not significantly related to children's externalising behaviours, and thus paternal support had no mediating role in the significant association between paternal emotional stability and children's externalising behaviours. The finding that maternal and not paternal support has a (mediating) effect on children's aggressive behaviours is consistent with previous studies that showed that children preferably seek mothers to comfort and sooth them (Lamb & Lamb, 1976) and that mothers, more than fathers, fulfil the role of being responsive and warm to their child (Calzada et al., 2004).

Another hypothesis was that parental personality traits would also directly contribute to children's externalising behaviours. We expected more direct effects of parental personality for children's attention problems than for aggressive behaviours, because of the relatively strong genetic component of overactivity/inattention behaviours (Barkley, 1990; Rutter et al., 1999). Furthermore, we hypothesised that especially parental emotional stability and conscientiousness would to be directly negatively related to children's attention problems. Consistent with the hypothesis of more direct effects on children's attention problems, we indeed found children's attention problems to be directly and aggressive behaviours to be indirectly affected by maternal emotional stability. However, fathers' emotional stability was related directly to both children's attention problems and

aggressive behaviours. Prinzie et al. (2004) also showed parental emotional stability to be directly negatively related to externalising behaviours. In addition to the possibility that parental emotional stability may affect children's development through its heritability (Kochanska et al., 1997; Prinzie et al., 2005), parental emotional stability might be directly related to children's externalising behaviours because of 'modelling'. Parents low on emotional stability have difficulties controlling urges and coping with various stressors (Costa & McCrae, 1992). This may result in uncontrolled reactions to other people. Children may imitate these reactions, resulting in increased levels of externalising behaviours (Prinzie et al., 2005).

With regard to the expected effect of parental conscientiousness, maternal conscientiousness correlated significantly with children's externalising behaviours, but this association was just below significance in the multilevel analyses where we controlled for the other personality traits and the interactions with parental gender.

Effects of parenting

We hypothesised parenting behaviours to be more strongly related to aggressive behaviours than to attention problems, again since other key factors such as cognitive control deficits and direct genetic influences have been implicated to underlie hyperactive/inattentive behaviours (Barkley, 1990; Rutter et al., 1999). This hypothesis was confirmed by the results: for both mothers and fathers more parenting behaviours were significantly related to aggressive behaviours than to attention problems.

Concerning the specific parenting dimensions, we hypothesised psychological control to be positively related to attention problems, since hyperactive/inattentive behaviours might elicit psychological control from parents, which subsequently might lead to even higher levels of these hyperactive/inattentive behaviours (Campbell et al., 1991). In this study, we indeed found a positive association between maternal as well as paternal psychological control and toddlers' attention problems.

Consistent with previous studies, for both fathers and mothers psychological control was also found to be positively related to toddlers' aggressive behaviours (Danforth et al., 1991; Stormshak et al., 2000). As Stormshak et al. (2000) argue, although parental negative commands and threats may have the aim of pushing children to comply, these commands may be ignored by children, which may result in increased non-compliance (Campbell, 1990), or these commands may elicit increased aggressive acts of defiance (Danforth et al., 1991). In addition, children of parents who show high levels of verbal punishment, are exposed to models of aggressive and unregulated behaviours and they may imitate these behaviours (Bandura et al., 1961; Campbell et al., 2000).

Furthermore, maternal and paternal lack of structure were negatively related to children's aggressive behaviours. Possibly, children whose parents are inconsistent and unpredictable, engage in oppositional and defiant behaviours in order to elicit predictable responses of their parent (Wahler & Dumas, 1986). Finally, as described above, maternal support appeared to be negatively related to toddlers' aggressive behaviours, which is in accordance with other studies (Kerr et al., 2004; Stormshak et al., 2000). An explanation might be that children of parents who are responsive and warm to their child, are likely to feel secure and accepted and, thereby, to follow parents' suggestions (Chen et al., 2003).

This study had several strengths. First, as recommended by many studies (Broidy et al., 2003; Campbell & Ewing, 1990), the present study focused on very young children. Gathering knowledge on the development and predictors of externalising behaviours in

such young children is important since externalising behaviours identified in the preschool years, appear to persist and to be moderately stable (Broidy et al., 2003; Campbell & Ewing, 1990). However, it is important to realise that all results have to be considered in the light of the very young age of the participants in this study and we have to keep in mind that the contribution of the specific predictors may change over time. For example it might be possible that the contribution of parenting declines with age, since the relative weight of other factors (i.e. influences by peers) might increase as children grow older. A second strength of the present study concerns the fact that it acknowledged the multidimensional nature of parenting, by considering a broad range of parenting behaviours with a focus on negative as well as positive parenting. Third, parental personality traits were measured in terms of the comprehensive Big Five, a measure that has been shown to capture much of the variation in individual differences (John & Srivastava, 1999). Fourth, both mothers and fathers filled out questionnaires on personality traits, parenting behaviours and children's behavioural outcomes. As noted by Mangelsdorf, Schoppe, and Buur (2000), mothers and fathers observe their child in different social contexts and at different times of the day and there is evidence suggesting that child behaviour differs systematically across interaction with fathers and mothers. This highlights the importance of using fathers as well as mothers as a source of information regarding child behaviour. Finally, the present study takes into account the interdependence of fathers' and mothers' characteristics. While many studies circumvent this issue of interdependence by conducting separate analyses for fathers and mothers from the same family (Campbell & Kashy, 2002), we accounted for this by applying a multilevel application. Furthermore, we applied moderated mediation analyses, that allowed for formally testing whether mediation effects of parenting differed across mothers and fathers.

Limitations

Several limitations of the present study should also be noted. First, a cross-sectional design was used, which limits the scope for drawing firm conclusions about the direction of effects. For parental personality characteristics in particular we can be relatively sure about the direction of influence: since the Big Five personality measures are shown to exhibit considerable continuity over time (McCrae & Costa, 1994), it may seem unlikely that young children's externalising behaviours influenced parental personality characteristics. On the other hand, van Aken, Denissen, Branje, Dubas, and Goossens (2006) recently found that worries about children's problem behaviour did lead to fluctuations in personality in the parents of adolescents. Furthermore, associations between toddlers' externalising behaviours and parenting behaviours cannot be assumed to mirror unidirectional influences of parents on children. More specifically it is also probable that externalising behaviours evoke or select negative reactions. This pattern was expected in particular for attention problems, which were hypothesised to elicit more psychological control from parents. Consequently, longitudinal analyses should verify the causal direction of the effects.

Second, the present study relied upon questionnaire data only. This might have lead to an overestimation of associations between parental personality, parenting and toddlers' behaviours because of some shared method variance. The results on these associations therefore need to be interpreted with this caveat in mind. Additionally, parental personality traits may affect the parents' appraisal of their child's behaviour (Kurdek, 2003), and therefore the link between parental personality and children's behaviours might partly be an artefact. For instance, parents low in emotional stability are characterised by being

anxious and irritable and they are likely to interpret situations as threatening. Consequently, an alternative explanation for the associations between parental emotional stability and children's externalising behaviours found in the present study, might be that parents who score low on emotional stability, possibly interpret the exuberance of young children as problematic behaviour and subsequently overreport externalising behaviours (Kurdek, 2003). Future studies might include observational data to tackle these problems.

Third, our sample included only boys. In our view, focusing on boys was legitimate since boys are at increased risk for both externalising behaviours. However, data of some studies (e.g. Rubin, Hastings, Chen, Stewart, & McNichol, 1998) suggest that boys and girls may have different vulnerabilities to factors that impact externalising behaviours. As a consequence it is unknown whether the results can be generalised to girls.

Finally, in the present study highly educated parents were overrepresented. Consequently, our sample consisted of families with mostly moderate-to-high socioeconomic status. Probably, the non-responders of this study were mainly families with a low socioeconomic status. Consequently, future studies should establish whether the findings of the present study can be generalised to Dutch families from other social backgrounds.

Despite these limitations, the present study showed that parental personality, specifically emotional stability, is predictive of aggressive behaviours as well as attention problems in very young children already. This implicates that paying attention to parental emotional stability may help to identify very young children at risk for developing problem behaviours. Identifying children at risk as early as possible is very important since interventions targeted at younger children have been shown to be more efficacious than interventions targeted at older children (Reid, 1993). Since the effect of maternal emotional stability on toddlers' aggressive behaviours appeared to be mediated by supportive parenting, assisting mothers low in emotional stability to adjust their parenting towards a more supportive style might be an effective way to prevent persistent behaviour problems in these young children. Moreover, since also other parenting dimensions are predictive for young children's externalising behaviours (psychological control for both attention problems and aggressive behaviours and lack of structure for aggressive behaviours), interventions to prevent escalations of problems might generally focus on supporting parents of young children to apply more adaptive parenting practices.

REFERENCES

- Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA preschool forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *Journal of Abnormal and Social Psychology*, *63*, 575–582.
- Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, *67*, 3296–3319.
- Barkley, R. A. (1990). Attention deficit disorders: History, definition, and diagnosis. In M. Lewis, & S. M. Miller (Eds.), *Handbook of developmental psychology* (pp. 65–72). New York: Plenum.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.
- Belsky, J. (1984). The determinants of parenting: A process model. *Child Development*, *55*, 83–96.

- Belsky, J., & Barends, N. (2002). Personality and parenting. In M. Bornstein (Ed.), *Handbook of parenting: Being and becoming a parent* (Vol. 3, pp. 415–438). Mahwah, NJ, US: Lawrence Erlbaum.
- Belsky, J., Crnic, K., & Woodworth, S. (1995). Personality and parenting: Exploring the mediating role of transient mood and daily hassles.
- Branje, S. J. T., van Aken, M. A. G., & van Lieshout, C. F. M. (2004). Relations between big five personality characteristics and perceived support in adolescents' families. *Journal of Personality and Social Psychology*, *86*, 615–628.
- Broidy, L. M., Nagin, D. S., Tremblay, R. E., Bates, J. E., Brame, B., & Dodge, K. A., et al. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six site, cross-national study. *Developmental Psychology*, *39*, 222–245.
- Bronfenbrenner, U. (1986). Ecology of the family is a context for human development: Research perspectives. *Developmental Psychology*, *22*, 723–742.
- Brook, J. S., Zheng, L., Whiteman, M., & Brook, D. W. (2001). Aggression in toddlers: Associations with parenting and marital relations. *The Journal of Genetic Psychology*, *162*, 228–241.
- Calzada, E. J., Eyberg, S. M., Rich, B., & Querido, J. G. (2004). Parenting disruptive preschoolers: Experiences of mothers and fathers. *Journal of Abnormal Child Psychology*, *32*, 203–213.
- Campbell, L., & Kashy, D. A. (2002). Estimating actor, partner, and interaction effects for dyadic data using proc mixed and hlm: A guided tour. *Personal Relationships*, *9*, 327–342.
- Campbell, S. B. (1990). *Behavior problems in preschool children: Clinical and developmental issues*. New York: Guilford.
- Campbell, S. B., & Ewing, L. J. (1990). Follow-up of hard-to-manage preschoolers: Adjustment at age nine and predictors of continuing symptoms. *Journal of Child Psychology and Psychiatry*, *31*, 871–889.
- Campbell, S. B., Pierce, E. W., March, C. L., & Ewing, L. J. (1991). Noncompliant behavior, overactivity, and family stress as predictors of negative maternal control with preschool children. *Development and Psychopathology*, *3*, 175–190.
- Campbell, S. B., Shaw, D. S., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology*, *12*, 467–488.
- CBS. (2003). *Jeugd 2003, cijfers en feiten*. Voorburg/Heerlen: Centraal Bureau voor de Statistiek.
- Chen, X., Rubin, K. H., Liu, M., Chen, H., Wang, L., & Li, D., et al. (2003). Compliance in Chinese and Canadian toddlers: A cross-cultural study. *International Journal of Behavioral Development*, *27*, 428–436.
- Clark, L. A., Kochanska, G., & Ready, R. (2000). Mother's personality and its interaction with child temperament as predictors of parenting behavior. *Journal of Personality and Social Psychology*, *79*, 274–285.
- Clarke-Stewart, K. A. (1978). And daddy makes three: The father's impact on mother and young child. *Child Development*, *49*, 466–478.
- Costa, P. T., & McCrae, R. R. (1992). *Revised neo personality inventory (neo pi-r) and neo-five-factor inventory (neo-ffi)*. Odessa, FL: Psychological Assessment Resources.
- Danforth, J. S., Barkley, R. A., & Stokes, T. F. (1991). Observations of parent-child interactions with hyperactive children: Research and clinical implications. *Clinical Psychology Review*, *11*, 703–727.
- Davidov, M., & Grusec, J. E. (2006). Untangling the links of parental responsiveness to distress and warmth to child outcomes. *Child Development*, *77*, 44–58.
- DeKlyen, M., Speltz, M. L., & Greenberg, M. T. (1998). Fathering and early onset conduct problems: Positive and negative parenting, father-son attachment, and the marital context. *Clinical Child and Family Psychology Review*, *1*, 3–21.
- Feldman, R., & Klein, P. S. (2003). Toddlers' self-regulated compliance to mothers, caregivers, and fathers: Implications for theories of socialization. *Developmental Psychology*, *39*, 680–692.
- Fox, R. A. (1994). *Parent behavior checklist*. Brandon, VT: Clinical Psychology Publishing Company.
- Frick, P. J. (1991). *The Alabama parenting questionnaire*: University of Alabama.
- Frick, P. J., Christian, R. E., & Wootton, J. M. (1999). Age trends in the association between parenting practices and conduct problems. *Behavior Modification*, *23*, 106–128.

- Frick, P. J., Van Horn, Y., Lahey, B. B., Christ, M. G., Loeber, R., & Hart, E. A., et al. (1993). Oppositional defiant disorder and conduct disorder: A meta-analytic review of factor analyses and cross-validation in a clinic sample. *Clinical Psychology Review*, *13*, 319–340.
- Gartstein, M. A., & Fagot, B. I. (2003). Parental depression, parenting and family adjustment, and child effortful control: Explaining externalizing behaviors for preschool children. *Applied Developmental Psychology*, *24*, 143–177.
- Gerris, J. R. M., Houtmans, M. J. M., Kwaaitaal-Roosen, E. M. G., Schipper, J. C., Vermulst, A. A., & Janssens, J. M. A. M. (1998). *Parents, adolescents, and young adults in dutch families: A longitudinal study*. Nijmegen. The Netherlands: University of Nijmegen, Institute of Family Studies.
- Gerris, J. R. M., Van Boxtel, D. A. A. M., Vermulst, A. A., Janssens, J. M. A. M., Van Zutphen, R. A. H., & Felling, A. J. A. (1993). *Parenting in dutch families*. Nijmegen, the Netherlands: University of Nijmegen, Institute of Family Studies.
- Gershoff, E. T. (2002). Parental corporal punishment and associated child behaviors and experiences: A meta-analytic and theoretical review. *Psychological Bulletin*, *128*, 539–579.
- Goldberg, L. R. (1992). The development of markers of the big-five factor structure. *Psychological Assessment*, *4*, 26–42.
- Hoge, R. D., & Andrews, D. A. (1992). Assessing conduct problems in the classroom. *Clinical Psychology Review*, *12*, 1–20.
- Irvine, A. B., Biglan, A., Smolkowski, K., & Ary, D. V. (1999). The value of the parenting scale for measuring the discipline practices of parents of middle school children. *Behaviour Research and Therapy*, *37*, 127–142.
- John, O. P., & Srivastava, S. (1999). Big five trait taxonomy: History, measurement and theoretical perspectives. In L. A. Pervin, & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 102–138). New York: Guilford Press.
- Kenny, D. A. (1996). Models of non-independence in dyadic research. *Journal of Social and Personal Relationships*, *13*, 279–294.
- Kerr, D. C. R., Lopez, N. L., Olson, S. L., & Sameroff, A. J. (2004). Parental discipline and externalizing behavior problems in early childhood: The roles of moral regulation and child gender. *Journal of Abnormal Child Psychology*, *32*, 369–383.
- Kochanska, G., Clark, L. A., & Goldman, M. S. (1997). Implications of mothers' personality for their parenting and their young children's developmental outcomes. *Journal of Personality*, *65*, 387–420.
- Koot, J. M. (1993). *Problem behavior in dutch preschoolers*. Rotterdam: Erasmus University.
- Kuczynski, L., Kochanska, G., Radke-Yarrow, M., & Girmius-Brown, O. (1987). A developmental interpretation of young children's noncompliance. *Developmental Psychology*, *23*, 799–806.
- Kurdek, L. A. (2003). Correlates of parents' perceptions of behavioral problems in their young children. *Applied Developmental Psychology*, *24*, 457–473.
- Lamb, M. E., & Lamb, J. E. (1976). The nature and importance of the father-infant relationship. *Family Coordinator*, *25*, 379–385.
- Losoya, S. H., Goldsmith, H. H., Callor, S., & Rowe, D. C. (1997). Origins of familial similarity in parenting: A study of twins and adoptive siblings. *Developmental Psychology*, *33*, 1012–1023.
- Mangelsdorf, S. C., Schoppe, S. J., & Buur, H. (2000). The meaning of parental reports: A contextual approach to the study of temperament and behavior problems in childhood. In V. J. Molfese, & D. L. Molfese (Eds.), *Temperament and personality development across the life span* (pp. 121–140). Mahwah, NJ: Lawrence Erlbaum Associates.
- McCrae, R. R., & Costa, P. T. (1994). The stability of personality: Observations and evaluations. *Current Directions in Psychological Science*, *3*, 173–175.
- Metsäpelto, R.-L., & Pulkkinen, L. (2003). Personality traits and parenting: Neuroticism, extraversion, and openness to experience as discriminative factors. *European Journal of Personality*, *17*, 59–78.
- Muller, D., Judd, C. M., & Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology*, *89*, 852–863.
- Nigg, J. T., & Hinshaw, S. P. (1998). Parent personality traits and psychopathology associated with antisocial behaviors in childhood attention deficit hyperactivity disorder. *Journal of Child Psychology, Psychiatry and Allied Disciplines*, *39*, 145–159.

- O'Leary, S. G., Smith Slep, A. M., & Reid, M. J. (1999). A longitudinal study of mothers' overreactive discipline and toddlers' externalizing behavior. *Journal of Abnormal Child Psychology*, 27, 331–341.
- Patterson, G. R. (1986). Performance models for antisocial boys. *American Psychologist*, 41, 432–444.
- Patterson, G. R. (2002). The early development of coercive family process. In J. B. Reid, G. R. Patterson, & J. Snyder (Eds.), *Antisocial behavior in children and adolescents: Developmental theories and models for intervention* (pp. 25–44). Washington, DC: American Psychological Association.
- Patterson, G. R., Reid, J. B., & Dishion, T. J. (1992). *Antisocial boys*. Eugene, OR: Castalia.
- Phares, V. (1996). *Fathers and developmental psychopathology*. New York: Wiley.
- Prinz, P., Onghena, P., Hellinckx, W., Grietens, H., Ghesquiere, P., & Colpin, H. (2003). The additive and interactive effects of parenting and children's personality on externalizing behaviour. *European Journal of Personality*, 17, 95–117.
- Prinz, P., Onghena, P., Hellinckx, W., Grietens, H., Ghesquiere, P., & Colpin, H. (2004). Parent and child personality characteristics as predictors of negative discipline and externalizing problem behavior on children. *European Journal of Personality*, 18, 73–102.
- Prinz, P., Onghena, P., Hellinckx, W., Grietens, H., Ghesquiere, P., & Colpin, H. (2005). Direct and indirect relationships between parental personality and externalising behaviour: The role of negative parenting. *Psychologica-Belgica*, 45, 123–145.
- Reid, J. B. (1993). Prevention of conduct disorder before and after school entry: Relating interventions to developmental findings. Special issue: Toward a developmental perspective on conduct disorder. *Development and Psychopathology*, 5, 243–262.
- Rubin, K. H., Hastings, P., Chen, X., Stewart, S., & McNichol, K. (1998). Intrapersonal and maternal correlates of aggression, conflict, and externalizing problems in toddlers. *Child Development*, 69, 1614–1629.
- Rutter, M., Silberg, J., O'Connor, T., & Simonoff, E. (1999). Genetics and child psychiatry: II empirical research findings. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 40, 19–55.
- Shelton, K. K., Frick, P. J., & Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. *Journal of Clinical Child Psychology*, 12, 317–329.
- Stormshak, E. A., Bierman, K. L., McMahon, R. J., & Lengua, L. J. (2000). Parenting practices and child disruptive behavior problems in early elementary school. *Journal of Clinical Child Psychology*, 29, 17–29.
- Strassberg, Z., Dodge, K. A., Pettit, G. S., & Bates, J. E. (1994). Spanking in the home and children's subsequent aggression toward kindergarten peers. *Development and Psychopathology*, 6, 445–461.
- Strayhorn, J. M., & Weidman, C. S. (1988). A parent practices scale and its relation to parent and child mental health. *Journal of the American Academy of Child and Adolescent Psychiatry*, 27, 613–618.
- Tremblay, R. E. (2002). Prevention of injury by early socialization of aggressive behavior. *Injury Prevention*, 8, 17–21.
- van Aken, C., Junger, M., Verhoeven, M., van Aken, M. A. G., & Dekovic, M. (2007). Externalizing behaviors and minor unintentional injuries in toddlers: Common risk factors? *Journal of Pediatric Psychology*, 32, 230–244.
- van Aken, M. A. G., Denissen, J. J. A., Branje, S. J. T., Dubas, J. S., & Goossens, L. (2006). Midlife concerns and short-term personality change in middle-adulthood. *European Journal of Personality*, 20, 497–513.
- Verhoeven, M., Junger, M., van Aken, C., Dekovic, M., & van Aken, M. A. G. (in press). Parenting during toddlerhood: Contributions of parental, contextual and child characteristics. *Journal of Family Issues*.
- Wahler, R. G., & Dumas, J. E. (1986). Maintenance factors in coercive mother-child interactions: The compliance and predictability hypothesis. *Journal of Applied Behavior Analysis*, 19, 13–22.
- Webster-Stratton, C. (1996). Early-onset conduct problems: Does gender make a difference? *Journal of Consulting and Clinical Psychology*, 64, 540–551.