



Relations between parenting and externalizing and internalizing problem behaviour in early adolescence: Child behaviour as moderator and predictor

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Abstract

In this longitudinal study we investigated relations between parenting and externalizing and internalizing problem behaviour during early adolescence. First, we examined parenting effects on problem behaviour, including child behaviour as a moderator. Second, we examined child behaviour as predictor of parenting, also including moderator effects. A total of 650 13- to 14-year-olds filled out the Youth Self-Report and questionnaires about parenting at two times within a one-year interval. Relations between parenting and problem behaviour appeared to be stronger for externalizing than for internalizing problem behaviour. Both parenting effects and child effects were found. Parenting significantly predicted an increase in externalizing problem behaviour one year later. Adolescent's previous level of problem behaviour predicted changes in parenting (involvement and decisional autonomy granting). In addition, parental and child characteristics interacted in predicting outcome.

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Introduction

The parent–child relation is created by two people interacting over time, and the behaviours of both persons are intertwined in cycles of reciprocal causality (Lollis & Kuczynski, 1997). This

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interactional nature of relations has long been described in existing models (e.g., the Transactional Model; Sameroff, 1975) and theories (e.g., Patterson, 1982). Still, the predominant focus of research has been on the unidirectional relation from the parent to the child.

It is reasonable to assume that child's problem behaviour interacts with parenting in predicting developmental outcome. The studies that included interaction effects, however, mostly focus on child characteristics such as gender, temperament, or personality as moderator variables, instead of problem behaviour of the child (Bates, Pettit, Dodge, & Ridge, 1998; O'Connor & Dvorak, 2001; Prinzie et al., 2003). Furthermore, most studies that examined moderator effects are conducted during childhood instead of adolescence (Campbell, Pierce, Moore, & Marakovitz, 1996; Lytton, 1990).

Pomerantz (2001) included problem behaviour of the adolescent as a moderator, but only to be "ensured that the effect of the target interaction was not due to a concurrent interaction involving children's depressive symptoms at Wave 1" (p. 516). The study was thus not aimed at the specific interaction between parenting and problem behaviour, where it is assumed that parenting may have varying effects on children who exhibit different levels of problem behaviour. High levels of problem behaviour may increase adolescent's vulnerability to parenting; high levels of problem behaviour can strengthen the relation between negative parenting and subsequent levels of problem behaviour. The present study extends previous studies by examining parenting effects on adolescent problem behaviour, including moderator effects of adolescents' previous levels of problem behaviour.

In addition to the examination of child behaviour as a *moderator*, we also examine child behaviour as *predictor*. In (correlational) studies where relations between parenting and problem behaviour are examined, it is almost always assumed that causality rests with parents (e.g., Fletcher, Darling, Steinberg, & Dornbusch, 1995) and child effects are often neglected. Some studies that explicitly investigated both parent and child effects, found evidence for reciprocal relations between parenting and adolescent problem behaviour (Ge, Conger, Cadoret, & Neiderhiser, 1996; Rueter & Conger, 1998; Stice & Barrera, 1995). In general, it seems that studies examining child effects show diminishing levels of positive parenting behaviours and an increment of negative control behaviours over time in response to the antisocial behaviour of children.

Using an adoption design, Ge et al. (1996) found that antisocial behaviours of the adoptee and disciplinary practices of the mother were mutually influenced, whereas only child effect on disciplinary practices of the father were found. Their design, however, was cross-sectional, which makes it impossible to address the developmental significance of child effects. Stice and Barrera (1995), using a longitudinal design, showed reciprocal relations between parental support and control, on the one hand, and adolescent substance use, on the other hand. For externalizing problem behaviour, however, only child effects were found. Whereas Stice and Barrera (1995) used a high-risk sample of adolescent children of alcoholics, some researchers found evidence for reciprocal relations in a community sample of adolescents. Jang and Smith (1997) showed bidirectionality between parental supervision (knowledge) and urban adolescent delinquent behaviour. Kerr and Stattin (2003), on the other hand, found more support for child effects (delinquency) on parent's monitoring strategies than vice versa. These findings stress the importance of examining more than just parenting effects. Although several researchers are starting to examine child effects, it is still a fairly new research area which needs and deserves more attention.

In spite of a growing body of research on reciprocal relations between parenting and adolescent *externalizing* problem behaviour, evidence on reciprocity between parenting and *internalizing* problem behaviour is scarce. Studies examining child effects regarding parenting and internalizing problem behaviour are mostly conducted during childhood (e.g., Belsky, Rha, & Park, 2000; Rubin, Hastings, Stewart, Henderson, & Chen, 1997). We found only one study, conducted during adolescence, of Buist, Deković, Meeus, and Aken (2004) who showed reciprocal negative effects between parent–adolescent attachment and internalizing problem behaviour. It is still unclear, however, whether internalizing problem behaviour of the adolescent is reciprocally related with other types of parenting like responsiveness and parental knowledge. In the present study, both adolescent externalizing as well as internalizing problem behaviour will be examined as predictor of parenting. Once again, interactions between parenting and problem behaviour will be included to examine moderator effects.

An important issue regarding the relationship between parenting and adolescent problem behaviour concerns the multidimensionality of parenting. In general, there is overall agreement that there are two key dimensions of parenting relevant for adolescent problem behaviour, namely *support* (i.e., involvement, attachment, warmth) and *control* (i.e., monitoring, supervision, discipline) (Baumrind, 1991a; Maccoby & Martin, 1983; O'Connor, 2002).

Parental support can be seen as an umbrella, under which a variety of related phenomena might be grouped together, including responsiveness, warmth, acceptance, support, and nurturance (Barnes & Farrell, 1992; Stice & Barrera, 1995; Stice, Barrera, & Chassin, 1993). Studies using different measures of support have found consistently negative relations with different types of problem behaviour. High levels of attachment (Laible, Carlo, & Raffaelli, 2000), warmth (Greenberger, Chen, Tally, & Dong, 2000), and family bonding (Anderson & Henry, 1994), for instance, are all related to lower levels of externalizing and/or internalizing problems.

Nowadays, there seems to be a general agreement that parental control consists of two dimensions, behavioural control and psychological control (Barber, 1996; Galambos, Barker, & Almeida, 2003; Pettit, Laird, Dodge, Bates, & Criss, 2001; Pomerantz, 2001). *Behavioural control* refers to parenting behaviours that attempt to regulate, supervise, and manage behaviour of adolescents. An important component of behavioural control is parental knowledge of adolescent's whereabouts, activities, and companions (Brown, Mounts, Lamborn, & Steinberg, 1993; Kerr & Stattin, 2000; Patterson, Reid, & Dishion, 1992). Overall, higher levels of parental knowledge are related to lower levels of delinquency (Jacobson & Crockett, 2000; Reid & Patterson, 1989) and depression (Barber, Olsen, & Shagle, 1994; Jacobson & Crockett, 2000).

Level of strictness, defined as the amount of parental autocratic domination of the parent–adolescent relationship (Fuligni & Eccles, 1993), can be considered as another component of behavioural control (Barber et al., 1994). Although parental knowledge seems to have a positive effect on adolescent adjustment, restrictive parenting, on the other hand, appears to have a negative effect. High levels of strictness during adolescence do not seem to be appropriate in that period, for strict parenting appears to restrict the psychosocial development of adolescents (Baumrind, 1991a). For example, overly restrictive parenting has been found to be related to adolescent withdrawal and depression (Maccoby & Martin, 1983).

A second dimension of control, *psychological control*, refers to control attempts that keep the adolescent emotionally dependent on the parent by intruding or interfering with adolescent's development of independence or autonomy. From this perspective, the opposite of psychological

control might be viewed as the relative degree of emotional autonomy that parents allow. In general, higher levels of parental psychological control are related to more internalizing problem behaviour of the adolescent (Barber et al., 1994; Baumrind, 1991b) or, alternatively, higher levels of emotional autonomy granted to the adolescent by his or her parents are associated with less internalizing problems (Garber & Little, 2001; Gray & Steinberg, 1999). Some studies also found these relations for externalizing problem behaviour (Garber & Little, 2001; Pettit et al., 2001).

In addition to this affective dimension, another dimension of autonomy granting can be distinguished that concerns behaviour rather than emotion: the degree to which parents allow adolescents to make independent decisions (Beyers & Goossens, 1999; Bosma et al., 1996). High levels of decisional autonomy granting in adolescence have been found to predict greater deviance and lower academic competence and school grades (Beyers & Goossens, 1999; Lamborn, Dornbusch, & Steinberg, 1996).

Few studies have examined three or more parenting dimensions simultaneously, as unique predictors of adolescent problem behaviour (e.g., Galambos et al., 2003). These studies find distinct associations between support and control dimensions, on the one hand, and problem behaviour, on the other hand. These findings suggest that it is important to examine several dimensions of parenting as unique predictors of problem behaviour, instead of studying them in isolation or combining them into parenting styles. The present study attempts to discern the relative and unique effects of different parenting dimensions on adolescent externalizing and internalizing problem behaviour. Furthermore, child effects on multiple parenting dimensions are also examined.

Although parental support and control dimensions are often treated as orthogonal constructs, different measures of these dimensions may correlate with each other. Constructs like relationship quality, limit setting, and positive involvement are sometimes found to be highly interrelated (Patterson et al., 1992). Dishion and McMahon (1998) conceptualized a 'parenting triad' where motivation, parental monitoring, and behavioural management are embedded within the parent–child relationship. Because of the possible relations between support and control measures, we will examine the structure of the different parenting dimensions prior to the subsequent analyses regarding the link between parenting and problem behaviour.

Hypotheses

We expect that different parenting dimensions uniquely contribute to externalizing and internalizing problem behaviour: measures of emotional autonomy are strongly related to internalizing problem behaviour, and measures of behavioural control are more strongly related to externalizing problem behaviour. Support measures are hypothesized to have an effect on both types of problems. In addition, we expect that the child's level of problem behaviour interacts with parenting in predicting subsequent problem behaviour: adolescents with higher levels of problem behaviour are more vulnerable for less adequate parenting, than adolescents who show lower levels of problem behaviour. When examining child effects we hypothesize that problem behaviour of the adolescent is a predictor of parenting. Also, previous levels of parenting are expected to interact with adolescent's problem behaviour in predicting parenting one year later: higher levels of problem behaviour have negative effects on parenting, especially when parenting is already less adequate.

Method

Sample and procedure

The sample was drawn from three public secondary schools in the Netherlands (8th Grade), located in medium- to large-sized municipalities. Passive informed consent was obtained from the parents. Less than 1% of the adolescents in each of the target schools had their participation withheld by parents. At Time 1 the sample consisted of 650 adolescents between 12 and 15 years old ($M = 13.36$; $s.D. = 0.55$ years). They completed a battery of questionnaires during regular school hours. In 71.5% of the cases, the adolescent was living with both parents, 14.3% with the mother alone, 2% with their father alone, 7.5% with the mother and stepfather, 0.6% with the father and stepmother, 2.4% half the time with their mother and half the time with their father, and 1.7% with someone other than their parents.

After a one-year interval, the same adolescents were tested again. The schools were visited once more and questionnaires were sent to the homes of the adolescents who had left school or could not be reached at school (due to sickness or truancy), including a letter containing instructions and a postpaid return envelope. Nonresponders were called at home to ask whether they could still fill out the questionnaire and send it back. A total of 563 adolescents participated again at Time 2, i.e. the attrition rate was 13%. The sample consisted of predominantly middleclass white (Dutch) adolescents and the distribution of boys and girls for both waves was about equal (T1/T2: N boys = 328/272; N girls = 322/291). The reported self-classification was mostly Dutch (T1 = 88.4%; T2 = 89.5%).

Among the 87 nonresponders, there were more boys than girls (N boys = 56; N girls = 31). Significant differences between the attrition group and the group that participated on both waves were found on one problem scale and three parenting scales: Delinquent Behaviour ($t = 3.72$; $p < .001$), with the attrition group scoring higher, and Parental Knowledge ($t = -2.30$; $p < .05$), Strictness ($t = 2.71$; $p < .01$), and Decisional Autonomy Granting ($t = 2.97$; $p < .01$), with the attrition group scoring lower on the first scale and higher on the latter two scales.

Instruments

Problem behaviour

The Youth Self-Report (YSR; Achenbach, 1991; Verhulst, van der Ende, & Koot, 1997) was used to obtain adolescent reports on their own problem behaviour. The YSR assesses two broad-band syndromes, *Externalizing* and *Internalizing*. The Externalizing syndrome consists of the scales Delinquent Behaviour and Aggressive Behaviour. The Internalizing syndrome consists of Anxious/Depressed, Withdrawn, and Somatic Complaints. All items were rated on a three-point Likert scale where 0 indicates responses of “not true”, 1 “somewhat or sometimes true”, and 2 “very true or often true”. Alphas for this study for Time 1/Time 2 were .67/.69 for Delinquent Behaviour, .82/.82 for Aggressive Behaviour, .84/.87 for Anxious/Depressed, .65/.68 for Withdrawn, and .73/.76 for Somatic Complaints.

In addition, in order to expand the range of externalizing problems with problem behaviours that occur frequently in nonclinical groups during this developmental period, two new scales were developed that conform to the YSR format (Reitz, Deković, & Meijer, in press). The two scales

assess School Problems (e.g., Brack, Brack, & Orr, 1994; Gillmore et al., 1991) and Disobedience (Maggs, Almeida, & Galambos, 1995; Rothbaum & Weisz, 1994). A total of seven items were used to measure School Problems, for example “I have been send out of class for misbehavior” (Gillmore et al., 1991) and “I copy homework from others” (Fletcher, Steinberg, & Sellers, 1999). Alphas of this scale for Time 1/Time 2 were .65 and .74. The second scale, Disobedience of parents, includes eight items. Examples are “I refuse to do domestic tasks” (Peeters, 1994) and “I ignore prohibitions from my parents” (Deković, 1999). The internal consistencies for Time 1/Time 2 were .71 and .74. The items of both scales were also rated on a three-point Likert scale used in the YSR.

Bivariate correlations between the four externalizing problems ranged from .46 to .58 at Time 1 and from .41 to .65 at Time 2. Correlations between the three internalizing problems ranged from .40 to .69 at Time 1 and from .40 to .70 at Time 2. The subsequent factor analyses yielded a two-factor solution on both waves (with factor loadings of .68 and higher) (see for the factor structure of problem behaviour also Reitz et al., in press).

Parenting

Parenting was assessed with instruments that are frequently used in previous studies in the Netherlands (e.g., Gerris et al, 1993), separately for mothers and for fathers. Given the strength of associations between maternal and paternal scores (correlation varied between .46 and .68 at Time 1 and between .44 and .66 at Time 2) in the following analyses their scores were averaged to provide a parental score.

Support

Responsiveness. The responsiveness scale from the Child-Rearing Questionnaire (NOV; Gerris et al., 1993) was used that included eight items measuring the amount of perceived parental warmth and support (e.g., “When I talk to my mother/father about my problems, she/he really helps me”). Adolescents rated their parent on a six-point Likert scale ranging from ‘completely disagree’ (1) to ‘completely agree’ (6). Alphas for Time 1/Time 2 were .92 and .94.

Quality of parent–adolescent relation. A short version of the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987; Raja, McGee, & Stanton, 1992) was used to determine the perceived quality of affectional bonds between the adolescent and his or her parents. The scale consists of 12 items for each parent and all items are rated on a four-point Likert scale ranging from ‘almost never’ (1) to ‘almost always’ (4). The IPPA measures the quality of communication, the degree of trust, and alienation in the parent–adolescent relationship (e.g., “I tell my mother/father about my problems and worries”). A high score indicates a more positive quality of relation of the adolescent with his or her parents. Alphas for Time 1/Time 2 were .87 and .89.

Control

Parental knowledge. The six-item scale measures the extent to which parents are perceived to have knowledge of the adolescent’s whereabouts and daily activities. The adolescents were asked to indicate on a four-point Likert scale, ranging from ‘almost nothing’ (1) to ‘almost everything’ (4), how much their mother and father know about the adolescent’s whereabouts after school, leisure time, who the adolescent’s friends are, etc. The alphas for Time 1/Time 2 were .87 and .88.

Strictness. The Parental Strictness scale (PS; Fuligni & Eccles, 1993) was used to measure the perceived level of strictness of parents. The scale consists of five items for each parent and items are rated on a six-point Likert scale ranging from ‘completely disagree’ (1) to ‘completely agree’ (6). An example is “My mother/father wants me to follow their direction even if I disagree with their reasons”. Alphas for Time 1/Time 2 were .66 and .66.

Emotional autonomy granting. The autonomy scale from the Child-Rearing Questionnaire (NOV; Gerris et al., 1993) was used, including seven items measuring the degree to which parents are perceived to encourage emotional autonomy. Adolescents rated their mother/father on a six-point Likert scale ranging from ‘completely disagree’ (1) to ‘completely agree’ (6). An example is “My mother/father says that I am personally responsible for what happens to me” and alphas for Time 1/Time 2 were .84 and .86.

Decisional autonomy granting. Items from two different scales (Teen Timetable; Feldman & Rosenthal, 1991, and the Developmental Timetables for Adolescence; Deković, Noom, & Meeus, 1997) were combined to form a decisional autonomy granting scale. Eleven items are rated on a four-point Likert scale ranging from ‘never’ (1) to ‘always’ (4), indicating how many times an adolescent is allowed to make own decisions. Examples are “Decide for yourself what clothes you buy” and “Decide for yourself what time you come home”. Alphas for Time 1/Time 2 were .73 and .67.

Intercorrelations between the six parenting practices were analysed. Examination of the bivariate correlations showed that Responsiveness, Quality of Relation, and Parental Knowledge correlated relatively high with each other both at Time 1 (correlations ranging from .55 to .78) and at Time 2 (correlations ranging from .61 to .82). Because of these high correlations between the three measures, Principal Component Analyses were performed to examine the structure of the six parenting practices. Two-, three-, and four-factor solutions were examined for Time 1 and Time 2. Based on the factor loadings of the rotated factor solutions (varimax), the four-factor structure seemed to be the best interpretable solution on both waves (see Table 1 for the factor loadings).

The three scales Responsiveness, Quality of Relation, and Parental Knowledge loaded on the first factor, which we labelled Involvement. Although parental knowledge is often conceptualized as an aspect of parental control, other studies also found a high association between parental knowledge and the quality of the parent–child relationship (Dishion & McMahon, 1998). The other three parenting measures, Emotional Autonomy Granting, Decisional Autonomy Granting, and Strictness, loaded each on a different factor and were consequently treated as separate constructs. In the subsequent analyses the four parenting variables Involvement, Emotional Autonomy Granting, Decisional Autonomy Granting, and Strictness, and the two problem behaviours Externalizing and Internalizing were used.

Results

Table 2 shows the intercorrelations, means, and standard deviations of all assessed constructs at Time 1 and Time 2. There is a high stability of all six variables over time (correlations ranging from .36 to .70). Perceived parental involvement and adolescent externalizing problem behaviour

Table 1
Structure matrix for factor analysis of parenting at time 1 and time 2

Variable	Involvement		Emotional autonomy		Decisional autonomy		Strictness	
	T1	T2	T1	T2	T1	T2	T1	T2
Responsiveness	.91	.89	.11	.24	-.00	-.11	.18	-.01
Quality of relation	.92	.88	.00	.11	.00	-.01	-.00	-.28
Knowledge	.75	.86	-.00	-.01	-.35	-.17	.01	.14
Emotional autonomy	.01	.11	.99	.98	.01	.01	.01	.00
Decisional autonomy	-.10	-.20	.01	.01	.97	.97	-.00	-.13
Strictness	.10	-.01	.01	.01	-.00	-.13	.99	.98

Note. Boldface factor loadings are the primary variables contributing to each factor.

are negatively related. Both cross-sectionally and longitudinally, higher levels of decisional autonomy granting are related to higher levels of externalizing problems and higher levels of perceived parental strictness are related to higher levels of internalizing problems. Allowing emotional autonomy is unrelated to both externalizing and internalizing problem behaviour.

Since the means and standard deviations for Involvement are based on standardized factor scores we also examined the means for the three underlying scales. It appeared that perceived levels of Responsiveness, Quality of Relation, and Parental Knowledge all decreased over time.

Parenting effects on problem behaviour and child behaviour as moderator

To test our hypothesis that different parenting dimensions (Time 1) would uniquely contribute to externalizing and internalizing problem behaviour (Time 2), hierarchical regression analyses¹ were used, separately for the two types of problem behaviour. Because we also expected that the adolescent's level of problem behaviour would interact with parenting in predicting subsequent problem behaviour, moderator effects were also included. In the first step, the control variable gender was entered. To examine main effects, the second and the third step included the adolescent's problem behaviour at Time 1 (second step) and the four parenting behaviours at Time 1 (third step). Finally, the interaction terms were computed (problem behaviour at Time 1 with the four parenting behaviours at Time 1) and were entered, one at the time, in the last step²

¹A common approach to examine reciprocal relations across time is to apply structural equation modelling (SEM). In this way a mutual influences model can be tested, which might seem a more plausible model than testing unidirectional models between the parent and the child (Ge et al., 1996). Because we were not only interested in reciprocal relations but also in moderator effects, we decided to apply hierarchical regression analyses instead. Moderator effects are very difficult to specify in SEM, especially when there are also multiple parenting dimensions and problem behaviours. Using a regression approach, we believe that 'less is more' because the analyses permitted us to draw conclusions about various kinds of effects that we otherwise were not able to draw (parenting effects, child effects, and moderator effects).

²Some studies found curvilinear relations between parental support and control measures and adolescent problem behaviour (Baumrind, 1991a; Kurdek & Fine, 1994; Stice et al., 1993). We tested these relations by entering the quadratic effect of the parenting dimensions in the fourth step (one at the time), instead of the interaction effects. No evidence was found for curvilinear parenting effects on problem behavior.

Table 2

Intercorrelations, stability, means, and standard deviations of assessed variables on both waves

Factor	Time 1						Time 2					
	1	2	3	4	5	6	1	2	3	4	5	6
Time 1												
1. Externalizing	—											
2. Internalizing	.33**	—										
3. Involvement	-.32**	-.10	—									
4. Emotional Aut.	.01	-.06	.09	—								
5. Decisional Aut.	.29**	.01	-.24**	.18**	—							
6. Strictness	-.01	.12**	.16**	.16**	-.13**	—						
Time 2												
1. Externalizing	.62**	.17**	-.23**	.09	.26**	.12*	—					
2. Internalizing	.19**	.64**	-.18**	-.06	-.01	.18**	.41**	—				
3. Involvement	-.30**	-.10	.70**	.11*	-.19**	-.14*	-.43**	-.29**	—			
4. Emotional Aut.	.06	-.04	.09	.56**	.10*	.04	.07	-.08	.17**	—		
5. Decisional Aut.	.28**	.03	-.16**	.15**	.53**	-.12*	.34**	.03	-.28**	.07	—	
6. Strictness	-.10*	.12*	.09	-.05	-.12*	.36**	.16**	.23**	-.15*	.04	-.24**	—
Mean ^a	.370	.398	.012	3.52	2.60	3.55	.386	.371	.013	3.59	2.68	3.17
S.D. ^a	.21	.27	.86	.89	.45	.75	.23	.27	.89	.92	.45	.79

Note. Boldface correlations are the stability coefficients of each measure from Time 1 to Time 2. *N*'s range from 563 to 650.

* $p < .05$. ** $p < .01$.

^aMeans and standard deviations for Involvement are based on standardized factor scores.

as recommended by Cohen and Cohen (1993). All the independent terms were standardized, and statistically significant interactions were interpreted by plotting simple regression lines for high ($M + S.D.$) and low ($M - S.D.$) levels of variables (see Aiken & West, 1991). The results of the regression analyses are reported in Table 3.

The previous levels of problem behaviour appeared to be the best predictors of both externalizing and internalizing problem behaviour one year later. Given the high stability coefficients this is not surprising. Whereas the inclusion of parenting at Time 1 significantly increased the percentage of explained variance of externalizing problem behaviour, this was not the case for internalizing problems. Lower levels of perceived parental involvement and higher levels of decisional autonomy granting significantly predicted an increase in externalizing problem behaviour one year later.

Significant interaction effects were found only for internalizing problem behaviour: between internalizing problem behaviour and parental involvement and between internalizing problem behaviour and parental strictness (see Fig. 1). Surprisingly, for adolescents with high levels of internalizing problem behaviour, *higher* levels of perceived parental involvement lead to an increment of problems over time. In contrast, for adolescents with low levels of internalizing problem behaviour, *lower* levels of perceived parental involvement lead to an increment of problems over a one-year period (although the level of problem behaviour remains low) (see Panel a). Parental strictness seems to be especially important for adolescents who exhibit high

Table 3

Hierarchical regression analyses predicting early adolescent externalizing and internalizing problem behavior (PB) from parenting (Pa)

Step		Externalizing T2		Internalizing T2	
		β	ΔR^2	β	ΔR^2
1	<i>Controls</i>				
	Gender	-.06	.01	.07	.06***
2	<i>PB main effects (Time 1)</i>				
	Problem behavior	.52***	.36***	.61***	.36***
3	<i>Pa main effects (Time 1)</i>				
	Involvement	-.12*		-.05	
	Emotional autonomy	.08		-.00	
	Decisional autonomy	.12*		.01	
	Strictness	-.09		.09	
			.05***		.01
4	<i>Interaction effects (Time 1)</i>				
4a	PB \times Involvement	.02	.00	.09*	.01*
4b	PB \times Emotional autonomy	-.02	.00	.07	.01
4c	PB \times Decisional autonomy	.08	.01	-.06	.00
4d	PB \times Strictness	-.01	.00	.10*	.01*

Note. Interactions have been tested separately for each moderator variable in steps 4a, 4b, 4c, and 4d.

* $p < .05$. ** $p < .01$. *** $p < .00$.

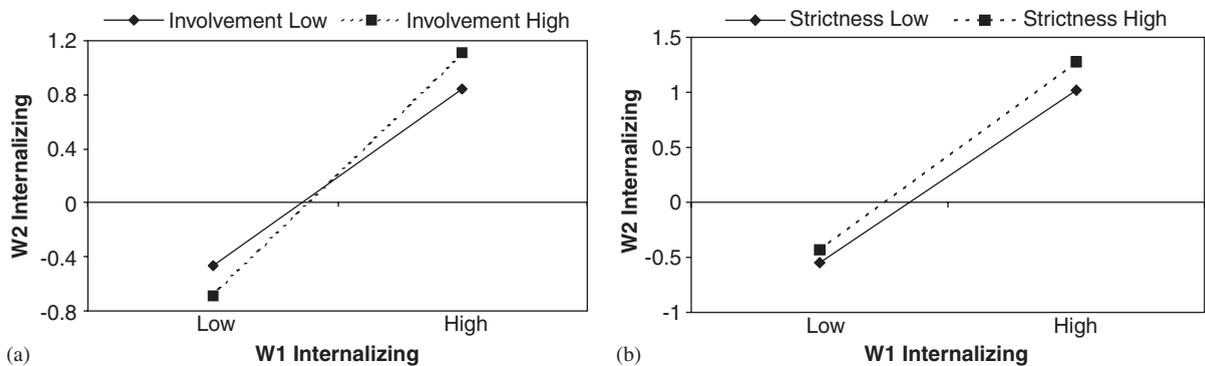


Fig. 1. Interactions between internalizing problem behaviour T1 and involvement T1 (Panel a) and strictness T1 (Panel b) regarding internalizing problem behaviour T2.

levels of problem behaviour. For these adolescents, higher levels of perceived strictness lead to increasing engagement in internalizing problem behaviour over time (Panel b).

Child behaviour as predictor and moderator effects

We not only hypothesized that parenting has an effect on problem behaviour, we also wanted to test whether problem behaviour of the adolescent is a predictor of parenting. Furthermore,

previous levels of parenting were expected to interact with problem behaviour to predict parenting over time. To examine these child- and moderator effects on parenting behaviour, hierarchical regression analyses were conducted separately for each of the four parenting practices. The first step of the regression analyses included the control variable gender. In the second and third step, main effects of parenting at Time 1 (second step) and externalizing and internalizing problems (third step) were entered. The fourth step consisted of the interaction terms (parenting at Time 1 with the two problem behaviours at Time 1), included one at the time. Results can be seen in Table 4.

In all four analyses, previous levels of parenting were a significant predictor of parenting one year later. The inclusion of externalizing and internalizing problem behaviour at Time 1 significantly increased the percentage of explained variance of Involvement and Decisional Autonomy Granting. Lower levels of internalizing problem behaviour and higher levels of externalizing problem behaviour significantly predicted an increase in perceived parental involvement, whereas only higher levels of externalizing problem behaviour significantly predicted an increase in decisional autonomy granting. The inclusion of externalizing and internalizing problem behaviour did not have an effect on perceived parental strictness and emotional autonomy granting.

Significant interaction effects were found for parental involvement and decisional autonomy granting regarding externalizing problem behaviour (Fig. 2). Adolescents who view their parents as highly involved tend to view them less involved over a one-year period, when adolescents show higher levels of externalizing problems, whereas parents who are less involved in the perception of the adolescent tend to become more involved, when adolescents show higher levels of

Table 4
Hierarchical regression analyses predicting parenting (Pa) from adolescent externalizing and internalizing problem behavior (PB)

Step		Involvement T2		Strictness T2		Emotional autonomy T2		Decisional autonomy T2	
		β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
1	<i>Controls</i>								
	Gender	.06	.01	-.03	.00	-.08	.04***	.07	.00
2	<i>PA Main effects (Time 1)</i>								
	Parenting	.71***	.49***	.37***	.14***	.55***	.29***	.47***	.27***
3	<i>PB Main effects (Time 1)</i>								
	Externalizing	.11*		.04		.07		.15**	
	Internalizing	-.17**		.09		-.04		-.09	
			.03***		.01		.00		.02**
4	<i>Interaction effects (Time 1)</i>								
4a	Pa × Externalizing	-.10*	.01*	-.01	.00	.00	.00	-.09*	.01*
4b	Pa × Internalizing	.03	.00	-.05	.00	.00	.00	-.06	.00

Note. Interactions have been tested separately for each moderator variable in steps 4a and 4b.

* $p < .05$. ** $p < .01$. *** $p < .001$.

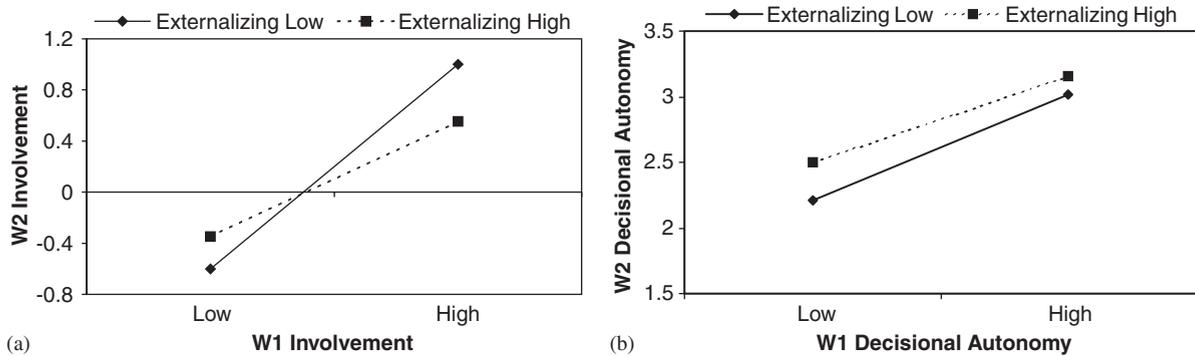


Fig. 2. Interactions between involvement T1 and externalizing problem behaviour T1 (Panel a) and between Decisional Autonomy Granting T1 and externalizing problem behaviour T1 (Panel b) Regarding Involvement and Decisional Autonomy Granting T2.

externalizing problem behaviour (Panel a). In other words, higher levels of adolescent externalizing problem behaviour appears to have different effects on perceived parental involvement, depending on the previous levels of involvement.

Concerning decisional autonomy granting, adolescent's externalizing behaviour problems seems to have more effect on parents who grant less autonomy (Panel b). Perceived decisional autonomy granting of those parents tends to increase over a one-year period when adolescents show high, rather than low levels of externalizing problem behaviour. Parents who are perceived to grant high levels of decisional autonomy, on the other hand, seem to be less affected by the degree of adolescent externalizing problems.

Discussion

In the present longitudinal study, relations were examined between perceived parenting and externalizing and internalizing problem behaviour. First, parenting effects were examined, including child behaviour as a moderator. Second, we examined child behaviour as predictor of parenting, also including moderator effects.

Overall, our findings confirm the existence of parenting effects, child effects, and moderator effects, although different findings are found for the various types of parenting and problem behaviour. As we hypothesized, externalizing problem behaviour was both predicted by and a predictor of perceived parental involvement and decisional autonomy granting. Also confirmed was that internalizing problem behaviour related to parental involvement (both child- and moderator effects were found). Contrary to expectations though, was that emotional autonomy granting showed no relation whatsoever to internalizing problem behaviour (and also not to externalizing problem behaviour). Furthermore, perceived parental strictness was only related to internalizing problem behaviour but not to externalizing problem behaviour.

The magnitude of the relation between parenting and problem behaviour appeared to be larger for externalizing problem behaviour than for internalizing problem behaviour. There are several

possible explanations for this finding. First, externalizing problem behaviour is more visible. Adolescents might perceive more reactions from their parents regarding this type of behaviours than for less visible behaviours like depression and anxiety. Second, the dimensions of parenting assessed in this study are perhaps more important for externalizing problems than for internalizing problems.

Parenting effects on problem behaviour and child behaviour as moderator

Despite the fact that previous levels of problem behaviour were the best predictors of problem behaviour over time, inclusion of parenting still significantly increased the percentage of explained variance of the regression model for externalizing problem behaviour. Lower levels of perceived parental involvement and higher levels of decisional autonomy granting, put the adolescent at risk for externalizing problem behaviour. These results are consistent with findings from previous research (e.g., [Beyers & Goossens, 1999](#); [Laible, Carlo, & Raffaelli, 2000](#)). Whereas no main effects were found for internalizing problem behaviour, two significant interaction effects were found for parental involvement and strictness.

Unexpectedly, it appeared that higher levels of perceived parental involvement *increase* internalizing problem behaviour of adolescents who already show high levels of such problems. This seems to be in contrast with previous research that shows that higher levels of warmth or responsiveness ([Greenberger et al., 2000](#)), attachment ([Laible, Carlo, & Raffaelli, 2000](#)), and parental knowledge ([Jacobson & Crockett, 2000](#)), are related to lower levels of internalizing problem behaviour. These results refer to main effects, however, whereas the finding in our study concerns an interaction effect. Our result seems to suggest that adolescents with high levels of internalizing problems may view their parents as overinvolved, which causes adolescents to react with even higher levels of problems, a result that has also been found during childhood (e.g., [Rubin, Stewart, & Coplan, 1995](#)). This is also in agreement with the Expressed Emotion (EE) model, where high levels of parental EE act as a stressor that increase symptoms in the child. Results of previous studies show that one of the subtypes of EE, emotional overinvolvement of the parent, is particularly related to internalizing problem behaviour of the child ([Hirshfeld, Biederman, Brody, Faraone, & Rosenbaum, 1997](#); [Stubbe, Zahner, Goldstein, & Leckman, 1993](#)). The findings, however, all concern children instead of adolescents. A recent study of [Nelson, Hammen, Brennan, and Ullman \(2003\)](#) did not find a relation between parental overinvolvement and internalizing problem behaviour for adolescents. More research is needed to examine this association in adolescence.

Higher levels of perceived strictness lead to an increment of internalizing problems over a one-year period. The results support the assumption that overly strict parenting (in the perception of adolescents) is not appropriate during adolescence, a period where adolescents need sufficient space for their psychosocial development ([Baumrind, 1991a](#)).

Child behaviour as predictor and moderator effects

Consistent with the stability coefficients, previous levels of parenting were the best predictors of parenting over a one-year period. Both child main effects as well as interaction effects were found for parental involvement and decisional autonomy granting. Regarding parental involvement,

lower levels of internalizing problem behaviour were related to higher levels of perceived involvement. Higher levels of externalizing problem behaviour, on the other hand, were associated with higher levels of perceived involvement. The significant interaction effect shows that subsequent levels of perceived parenting depend on previous levels of both externalizing problem behaviour and parental involvement. It might be that highly involved parents (in the perception of adolescents) dampen their levels of involvement in response to negative behaviour of the adolescent, whereas externalizing problem behaviour may elicit increased involvement attempts from parents who are less involved over a one-year period.

For decisional autonomy granting, higher levels of externalizing problem behaviour are related to higher levels of decisional autonomy granting. The interaction effect shows that parents who are perceived to grant low levels of decisional autonomy tend to allow more autonomy to adolescents with high, rather than low levels of externalizing problem behaviour. It is found in earlier studies that adolescent decision-making is associated with higher involvement in deviant behaviour and lower academic competence (Baumrind, 1991a; Beyers & Goossens, 1999; Lamborn et al., 1996). When problem behaviour is already high, allowing decisional autonomy will only increase problem behaviour. Thus, low levels of parental control of the adolescent's decision-making might steer the adolescent in a more deviant direction. It should be noted that in the present study decision-making is defined as unilateral decision-making. Adolescents seem to be better adjusted when parents and adolescents make joint decisions. This indicates an open and flexible communication style, which corresponds more with an authoritative parenting style and is associated with less deviance (Lamborn et al., 1996). Further research should investigate how different types of decision-making relate to problem behaviour.

Although previous research suggested that negative relations exist between emotional autonomy granting and problem behaviour (e.g., Garber & Little, 2001; Gray & Steinberg, 1999), in the present study no relation was found between these constructs. It might be that the process of individuation from parents becomes more important during middle adolescence than in early adolescence, when the adolescent becomes more mature and is more striving for independence from parents. Another reason for the differences in results might be the different ways emotional autonomy granting is conceptualized. Some studies conceptualize emotional autonomy granting as the reverse of psychological control, where all or most of the items are reversely scored (Garber & Little, 2001; Gray & Steinberg, 1999). In this study, a high score indicates a high level of emotional autonomy received from parents.

In general, it should be noted that the proportions explained variance that are found in the present study are not high for the significant main- and interaction effects (maximum of 5%; except for main effects of previous levels of the dependent variable, which explain higher proportions of variance). This suggests that other factors might also play a role in influencing problem behaviour (e.g., school, friends) and parenting (e.g., temperament of the child).

The following limitations of the present study are worth noticing. First, all of the data derive from adolescents' self-reports, which makes it difficult to untangle the contribution of method variance to the found relations. Inclusion of multiple sources of data can counteract this problem. The sole reliance on self-reports makes it difficult to determine true parent and child effects, since we based our conclusions on perceived parenting. On the other hand, it has been demonstrated that adolescent reports on how they perceive their family behaviour is not inherently inferior to more objective measures (Chen, Greenberger, Lester, Dong, & Guo, 1998; Steinberg, Lamborn,

Darling, Mounts, & Dornbusch, 1994). Moreover, some authors have argued that children's perceptions of their parents' behaviour are as important influences on their behaviour as are parents' actual behaviour (e.g., Bronfenbrenner, 1979). Still, we were unable to assess whether adolescents' behaviour actually effects parenting versus only the adolescent's perception and more research is needed to examine this issue.

A second limitation considers the attrition group. This group scored higher on delinquent behaviour, lower on parental knowledge, and higher on strictness and decisional autonomy granting than the group of adolescents on which the analyses are based. Attrition of problematic youth has also been a problem in other research: 'dropouts' scored lower on nurturant and involved parenting (Scaramella, Conger, Spoth, & Simons, 2002) and higher on externalizing and internalizing problem behaviour (Aseltine, 1995). Thus, the most seriously troubled youths are underrepresented in the prospective analyses, which might have influenced the results.

Finally, our sample is quite homogenous, consisting of mostly Dutch adolescents. It is therefore not possible to generalize the results to other ethnic groups. Replication of these findings is needed in ethnically more diverse samples.

Regardless of these limitations, this is a prospective study that makes use of a large community sample. The results show that the four dimensions of parenting exert different effects on problem behaviour and that the effects vary for externalizing and internalizing problem behaviour. Parental involvement and strictness seem to be important for both externalizing and internalizing problem behaviour, whereas decisional autonomy granting seems only important for externalizing problem behaviour. Furthermore, both moderator effects and child predictor effects are found, emphasizing the importance of incorporating these factors in future research.

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