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The reciprocal relationship between early adolescent attachment and internalizing and externalizing problem behaviour

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Abstract

The aim of the present study is to examine the reciprocal relationship between parental attachment and adolescent internalizing and externalizing problem behaviour. In this longitudinal study, 288 adolescents (mean age 13.5 years) reported on their attachment relationships with their parents and on problem behaviour three times, with 1-year-intervals between measurement waves. Results show that attachment and both indicators of adolescent problem behaviour remain stable over time, although there were differences in stability between constructs. Reciprocal negative effects were found between attachment and internalizing problem behaviour, and between attachment and externalizing problem behaviour.

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Introduction

Adolescence is generally viewed as a period in which many changes take place in the lives of children and their families. Although traditionally viewed as a time of severe storm and stress, this appears to be more exception than rule (Coleman, 1993; Steinberg, 2001). Nevertheless, adolescents are faced with many challenges, the resolution of which could prove to be influential on their subsequent development. One of the most important of these challenges is to renegotiate their position within the family, while maintaining a warm and supportive relationship with their parents (Laible, Carlo, & Rafaelli, 2000). An important factor determining successful resolution of this task is quality of adolescent attachment to parents.

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From its origin over half a century ago to the present day, attachment has grown from a concept used primarily to describe the affectional bonds between infants and their mothers to a broader concept, theorized to be influential throughout the entire life span (Bowlby, 1982; Lopez & Gover, 1993). It is theorized that during early childhood, children form an internal working model of attachment, based on attachment experiences with several attachment figures (Bowlby, 1982; Colin, 1996). These internal working models are thought to incorporate two separate yet related components: (1) a model of the self which reflects one's sense of lovability and worth; and (2) a model of the social world which reflects one's sense of the trustworthiness and dependability of important others (Lopez & Brennan, 2000). If an individual shows high quality of attachment, he or she is likely to see him- or herself as worthy of love, and to view of the world as dependable, predictable and positive. Conversely, if an individual's working model of attachment is low in quality, he or she is more likely to view him- or herself as unlovable and to view his or her social environment as untrustworthy, unpredictable or even hostile.

In addition to internal working models of attachment, specific attachment relationships and affectional bonds also keep their influence throughout the life span. The influence of these affectional bonds seems to be particularly salient during times of stress and life change (Colin, 1996; Lopez & Brennan, 2000). Because of the presence of many possibly stressful changes in adolescence, attachment relationships are therefore especially relevant during this period.

The relevance of parental attachment during adolescence is illustrated by numerous studies linking attachment to several indicators of adolescent psychosocial functioning, such as identity development (Lapsley, Rice, & FitzGerald, 1990; Samuolis, Layburn, & Schiaffino, 2001), and well-being (Armsden & Greenberg, 1987; Barnas, Pollina, & Cummings, 1991; Raja, McGee, & Stanton, 1992). In addition, attachment seems to have an inhibiting influence on deviant development, such as general problem behaviour (Leadbeater, Kuperminc, Blatt, & Hertzog, 1999). Several studies have showed that adolescents who have warm, loving, intimate relationships with their parents are less likely to exhibit problem behaviour (LeCroy, 1988; Barnes & Farrell, 1992; Deković, 1999). Conversely, low quality of attachment has been associated with higher incidences of problem behaviour (Raja et al., 1992; Marcus & Betzer, 1996; Laible et al., 2000).

The above-mentioned studies examined problem behaviour as a general construct, without making a clear distinction between two different types of problem behaviour: internalizing (depression and anxiety) and externalizing problem behaviour (aggression and delinquency). Adolescence is the developmental period in which both internalizing and externalizing problem behaviour show an increase in prevalence (Roberts, Andrews, Lewinsohn, & Hops, 1990; Moffitt, 1993). Studies that did differentiate between these two types of problem behaviour have focused on either internalizing, or externalizing problem behaviour (Mathijssen, Koot, & Verhulst, 1999), so it remains unclear whether the patterns of influence between attachment and these two types of problem behaviour are similar or different. In the present study, we will examine this issue.

Based on the assumption that low quality of attachment is connected to views of the self as unlovable, one would expect a negative relationship between attachment and *internalizing* problem behaviour, such as depression, anxiety and withdrawal (Allen, Moore, Kuperminc, & Bell, 1998). Indeed, empirical studies have shown that adolescents with a low quality of attachment to their parents report higher levels of depression (Raja et al., 1992; Laible et al., 2000) and anxiety (Raja et al., 1992).

From a theoretical point of view we would also expect a negative association between parent-child relationships and adolescent externalizing problem behaviour, such as delinquency and aggression, as an adolescent with low quality of attachment would view the social world as untrustworthy and undependable, causing him or her to act out against this hostile environment. Several studies have shown an association between parent-child relationships and adolescent externalizing problem behaviour, such as delinquency and aggression. High quality of attachment has been associated with less or less serious delinquent behaviour (Allen et al., 1998), and less aggressive behaviour (Marcus & Betzer, 1996; Laible et al., 2000). Conversely, adolescents who report low quality of attachment show more problems of conduct (Raja et al., 1992).

Although these studies have indicated the importance of attachment during adolescence as a concomitant of psychosocial (mal)adjustment, they are limited in their ability to determine causal relationships because most of the aforementioned studies are cross-sectional by design. Associations between attachment and internalizing or externalizing problem behaviour were interpreted as showing an influence of attachment on psychosocial adjustment. However, due to design-related limitations, this assumed direction of effects was not tested. Whereas this interpretation might be correct, it is also likely that quality of attachment is influenced by adolescent psychosocial adjustment (Laible et al., 2000). It may well be that the path of influence is the other way around: internalizing and externalizing problem behaviour influence quality of attachment.

There are several reasons to expect both paths. Internalizing problems could influence perceptions of adolescent quality of attachment to their parents. An anxious and depressed adolescent may not view the relationships with his or her parents as very positive. Concerning externalizing problem behaviour, one could imagine the effect of delinquent and aggressive behaviour on parental attachment. Externalizing problem behaviour can be very disruptive for the family. Having a delinquent and/or aggressive child may be so demanding for families that the relationship between adolescent and parent deteriorates considerably (Barnes & Farrell, 1992). And if, for example, the adolescent is punished for his or her transgressions, he or she may view parents as less sensitive and responsive and thus experience a deterioration in quality of attachment to parents.

While some studies have assumed the possibility of influence of psychosocial functioning on quality of attachment, in addition to the influence of quality of attachment to parents on psychosocial functioning, few studies have actually tested this assumption. In the present study we will therefore test the assumption that attachment influences psychosocial functioning as well as the assumption that psychosocial functioning influences attachment.

In conclusion, the aim of the present study is to longitudinally examine the reciprocal relationship between adolescents' parental attachment and internalizing and externalizing problem behaviour, and to determine whether this relationship is the same for the two types of problem behaviour.

Method

Participants

Participants in the study were 288 adolescents between 11 and 15 years of age, from rural as well as urban Dutch municipalities. All adolescents were from two-parent families, with both

parents also participating in the study (for more details see [Buist, Deković, Meeus, & van Aken, 2002](#)). All participating families were of Dutch origin and predominantly from middle class.

Adolescents filled out a questionnaire concerning their attachment relationships with their parents, and concerning their own internalizing and externalizing problem behaviour. They did this three times, with 1-year-intervals between measurement waves.

Mean age of the adolescents was 13.5 years at the time of the first measurement wave, with a range from 11.1 to 15.8 years. Of the total sample, 48.6% were boys and 51.4% were girls. Mean age of mothers in the first wave was 41.6 years and mean age of fathers at the time of the first measurement wave was 43.9 years.

A total of 288 families participated in the first measurement wave, and 285 in the second and third measurement waves. Only 3 families dropped out during the course of the study.

Measures

Attachment

The Inventory of Parent and Peer Attachment (IPPA; [Armsden & Greenberg, 1987](#)) was used to determine the quality of attachment of adolescents to father and mother. The IPPA was designed to measure the affective-cognitive dimension of attachment. It provides an indication of felt security in the relationship with specific attachment figures by measuring the adolescent's trust in the availability and sensitivity of an attachment figure, the quality of communication, which fosters comfort in the relationship with an attachment figure and the extent of anger, alienation and/or hopelessness resulting from an unresponsive or inconsistently responsive attachment figure ([Armsden & Greenberg, 1987](#); [Marcus & Betzer, 1996](#)). The IPPA is a self-report questionnaire using a 5-point Likert scale response format (1 = very untrue to 5 = very true).

Based on results of previous research ([Deković & Meeus, 1997](#)) the two items with the lowest item-total correlation coefficients were deleted from the modified IPPA ([Raja et al., 1992](#)), resulting in a 10-item scale. The IPPA contains three subscales. The Communication scale, containing 3 items, measures to what extent an adolescent experiences having high quality of communication with parents. An example: "If my father/mother knows something is bothering me, he/she asks me". The Trust scale, also containing 3 items, measures the extent to which an adolescent trusts parents to respect and accept his or her feelings and wishes. An example: "My father/mother respects my feelings". The Alienation scale consists of 4 items and measures the degree to which an adolescent experiences negative feelings toward parents. An example: "I don't get much attention from my father/mother". For each of the mother and father relationships, identical items were used. The Alienation scale was recoded. In the analyses, the Communication, Trust and Alienation scales were used as indicators for quality of attachment.

Several reviews of parent-adolescent attachment instruments have found the IPPA to be a valid and reliable measure (e.g., [Lopez & Gover, 1993](#); [Lyddon, Bradford, & Nelson, 1993](#)). In our study, reliability (Cronbach's alpha) of the IPPA was satisfactory, 0.81 for attachment to mother, as well as for attachment to father at Time 1. At Time 2, alphas were 0.84 for attachment to mother, as well as to father, and at Time 3, reliability was 0.85 for both parents.

Problem behaviour

Internalizing and externalizing problem behaviour were assessed by the Nijmegen Problem Behaviour List (NPBL Research version; Scholte, Vermulst, & de Bruyn, in preparation). The total scale consists of 30 items. Items were formulated on the basis of appropriateness for use in a subclinical population, and represent relevant problems in adolescence that cause some concern, but are not serious enough for clinical intervention. The items were rated on a 5-point scale (1=does not apply to me at all to 5=applies to me very well).

We used four scales of the NPBL, Withdrawal (5 items), Anxiety/depression (5 items), Delinquent (5 items) and Aggressive behaviour (5 items). Withdrawal and Anxiety/Depression are indicators of internalizing problem behaviour, and measure the extent to which adolescents tend to respectively withdraw (e.g., "I'd rather be alone than with other people") and experience anxiety and depression (e.g., "I often feel sad and unhappy"). Internal consistencies (Cronbach's alpha) for Withdrawal and Anxiety/Depression, respectively, were 0.73 and 0.74 at Time 1, 0.75 and 0.78 at Time 2, and 0.80 and 0.81 at Time 3. The Delinquent and Aggressive behaviour scales are indicators of externalizing problem behaviour, and measure the extent to which adolescents are involved in respectively delinquent (e.g., "I do things that could get me in trouble with the law") and aggressive behaviour (e.g., "I fight a lot"). Internal consistencies were 0.66 and 0.74 for Time 1, 0.69 and 0.78 for Time 2, and 0.75 and 0.78 for Time 3, for the Delinquency and Aggression scales, respectively.

Data analytic strategies

Measurement model

The reciprocal influences of parent-adolescent attachment and adolescent psychosocial functioning were evaluated separately for each indicator (internalizing and externalizing problem behaviour) in two three-wave, cross-lagged effect models, using structural equation modelling (LISREL 8; Jöreskog & Sörbom, 1993).

In both of the models (attachment-internalizing problem behaviour and attachment-externalizing problem behaviour), attachment to parents was treated as a latent construct, indicated by scores for the IPPA-subscales Communication, Trust and Alienation. Missing data were few, and where appropriate, listwise deletion of missing data was used.

The latent construct Internalizing problem behaviour was indicated by the two separate scales for Withdrawal and Anxiety/Depression, and the latent construct Externalizing problem behaviour by the two separate scales for Delinquency and Aggression. In these two models, the two latent variables (attachment and internalizing or externalizing problem behaviour, respectively) were formulated at all three measurement waves, which results in a total of six latent variables in each basic model. In all models, the measurement errors of the same indicators at different measurement waves were allowed to covary (Farrell, 1994). At this phase of analysis, no paths were formulated between latent variables.

The χ^2 value, corresponding p value, the root mean square error of approximation (RMSEA), and non-normed fit index (NNFI) were taken as indicators for the overall goodness of fit of each

model. Good-fitting models yield non-significant χ^2 , but this measure is sensitive to sample size. If the sample size and thus the power of the test increases, the χ^2 has a tendency to indicate a significant probability level (Schumacker & Lomax, 1996). So, instead of relying on significance of the χ^2 , two fit indices were used to assess goodness of fit of specified models, namely the RMSEA and NNFI. Research has shown that these fit indices are among those least influenced by sample size (Fan, Thompson, & Wang, 1999). Values of the RMSEA less than 0.05 are considered to indicate a very good fit, with values between 0.05 and 0.08 indicating a reasonable fit between model and data (Browne & Cudeck, 1993). The NNFI should be 0.90 or higher for a good fit (Marsh & Hocevar, 1988; Bartle-Haring & Gavazzi, 1996).

The overall fit of the measurement model was tested in a confirmatory factor analysis, and proved to be satisfactory, with $\chi^2(63)=211.46, p<0.01$, RMSEA = 0.09 and NNFI = 0.89 for the model concerning attachment and internalizing problem behaviour and $\chi^2(63)=176.32, p<0.01$, RMSEA = 0.08 and NNFI = 0.92 for the model concerning attachment and externalizing problem behaviour.

Next, tests for measurement equivalence were performed, to see whether there were differences between the measurement waves concerning factor loadings of the same construct. A first model stated equal factor loadings of the same observed variables on the latent variables and equal measurement errors for the observed variables for all three measurement waves. In a second model, factor loadings were equal between the three measurement waves, and measurement errors for the observed variables were estimated separately for each measurement wave. In a third model, factor loadings of the observed variables on the latent variables and measurement errors of the observed variables were all estimated separately. These three models were then compared. Change in χ^2 from first to second model was $\Delta\chi^2(10)=19, p<0.05$ for internalizing, and $\Delta\chi^2(10)=42, p<0.001$ for externalizing problem behaviour. Changes in χ^2 from the second to third model were non-significant for both models, which indicated that factor loadings were equal across measurement waves, and measurement errors of the observed variables were not.

Concluding, no differences were found between measurement waves concerning the factor loadings of the observed variables on the latent variables. Based on these findings, factor loadings were set equal for the three measurement waves, whereas measurement errors were left free to vary. These measurement models were used in consequent analyses that aimed to examine structural relations among latent variables.

Structural model

Based on theoretical and empirical notions, we formulated structural models in which parental attachment and adolescent problem behaviour (internalizing problem behaviour and externalizing problem behaviour, respectively) were hypothesized to show stability over time and also influenced each other. The initial correlation between attachment at Time 1 and problem behaviour at Time 1 was estimated and cross-lagged paths were formulated. Attachment was expected to show stability from Time 1 to Time 2 and to influence problem behaviour at Time 2. Internalizing and externalizing problem behaviour at Time 1 were hypothesized to show stability from Time 1 to Time 2 as well as influence attachment at Time 2. These same paths were formulated for the connection between parental attachment and the two kinds of problem

behaviour at Time 2 and Time 3. After testing the basic models, non-significant paths were dropped from the models, and they were tested again.

The structural models were checked for gender differences. We created four groups based on gender of the adolescent and gender of the parent, and formulated three models. In the first model, all path coefficients, variances and covariances among the error terms were set equal between the four groups (boys–fathers, boys–mothers, girls–fathers, girls–mothers). In the second model, only path coefficients were set equal between the groups, and in the third model, all path coefficients were estimated separately for each group. We then checked whether model 2 or model 3 provided a better fit than the first model in which all paths were set equal (Farrell, 1994). Changes in χ^2 from the first to the second model ($\Delta\chi^2(27)=24, p > 0.05$ for internalizing, and $\Delta\chi^2(27)=16, p > 0.05$ for externalizing problem behaviour) indicate that the first model fits the data better. Changes in χ^2 from the first (and second) to the third model were also non-significant. So, the first model appears to be the best-fitting model for the link between adolescent attachment and internalizing and externalizing problem behaviour. We therefore concluded that there are no gender differences concerning these connections, and reported results are based on analyses in which all path coefficients and error variances and covariances were equal for boys' and girls' and their relationships with mothers and fathers.

Results

Relationships between observed variables

Tables 1–3 show the correlations between the observed variables at each measurement time. Significant correlations among attachment variables (see Table 1), and variables concerning internalizing (see Table 2) and externalizing problem behaviour (see Table 3) at the three measurement waves indicate significant stability for attachment, internalizing and externalizing problem behaviour.

Attachment variables and those concerning internalizing and externalizing problem behaviour are significantly correlated, both within and between measurement waves (see Tables 2 and 3).

Parental attachment and internalizing problem behaviour

Our basic model for the association between adolescent parental attachment and internalizing problem behaviour (with hypothesized stability as well as cross-lagged effects) showed an acceptable fit. Non-significant paths were dropped from the model, after which it was tested again. This resulted in a $\chi^2(342)=597.71, p < 0.01$. The RMSEA (0.07) and the NNFI (0.93) were satisfactory.

Attachment across measurements wave was stable (see Fig. 1), with path coefficients of 0.71 (Time 1–Time 2) and 0.78 (Time 2–Time 3). Internalizing problem behaviour also tends to be stable, with path coefficients of 0.64 (Time 1–Time 2) and 0.84 (Time 2–Time 3). The difference between these two stability path coefficients is significant ($\Delta\chi^2(1)=6, p < 0.05$), indicating an increase in stability over time.

Table 1

Intercorrelations (cross-sectional and stability coefficients) among indicators of attachment

Attachment									
	Time 1			Time 2			Time 3		
	1	2	3	4	5	6	7	8	9
Time 1									
1 Communication									
2 Trust		0.63**							
3 Closeness		0.44**	0.56**						
Time 2									
4 Communication	0.63**	0.50**	0.43**						
5 Trust	0.48**	0.56**	0.41**	0.67**					
6 Closeness	0.39**	0.43**	0.55**	0.50**	0.59**				
Time 3									
7 Communication	0.52**	0.37**	0.35**	0.66**	0.43**	0.37**			
8 Trust	0.41**	0.51**	0.46**	0.55**	0.92**	0.47**	0.60**		
9 Closeness	0.36**	0.40**	0.51**	0.47**	0.44**	0.68**	0.52**	0.60**	

Note. * $p<0.05$, ** $p<0.01$.

There were significant negative correlations between attachment and internalizing problem behaviour at each measurement time, -0.29 , -0.13 and -0.12 at Time 1, Time 2 and Time 3, respectively. The correlation at Time 1 represents the initial correlation between the two constructs, whereas the correlations at Time 2 and Time 3 represent correlations between the residuals.

Results showed significant cross-lagged paths from Time 1 to Time 2. Internalizing problem behaviour at Time 2 is significantly influenced by quality of attachment 1 year earlier, with a path coefficient of -0.20 from attachment at Time 1 to internalizing problem behaviour at Time 2. Attachment at Time 2 is also significantly influenced by internalizing problem behaviour 1 year previously, with a path coefficient of -0.13 . No significant relationships were found for cross-lagged paths linking Time 2 and Time 3.

Parental attachment and externalizing problem behaviour

Again, the basic model, stating stability of both attachment and externalizing problems as well as reciprocal influences between these two latent constructs, showed a good fit. We adjusted the model by dropping non-significant paths from the model. This resulted in a $\chi^2 (342)=486.86$, $p<0.01$. The RMSEA (0.05) and the NNFI (0.95) were satisfactory.

Quality of attachment and externalizing problem behaviour both show stability (see Fig. 2). Path coefficients of attachment were 0.77 and 0.72 for Time 1–Time 2 and Time 2–Time 3, respectively, and those of externalizing problem behaviour were 0.62 for Time 1–Time 2 and 0.72 for Time 2–Time 3.

Table 2

Intercorrelations (cross-sectional and stability coefficients) between indicators of attachment and internalizing problem behaviour

Internalizing problem behaviour						Attachment									
Time 1		Time 2		Time 3		Time 1			Time 2			Time 3			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Time 1															
1 Withdrawal							-0.32**	-0.21**	-0.30**	-0.22**	-0.24**	-0.29**	-0.26**	-0.24**	-0.31**
2 Depress/Anxiety	0.52**						-0.21**	-0.24**	-0.36**	-0.24**	-0.23**	-0.41**	-0.25**	-0.26**	-0.35**
Time 2															
3 Withdrawal	0.53**	0.40**					-0.31**	-0.28**	-0.33**	-0.40**	-0.36**	-0.48**	-0.33**	-0.29**	-0.43**
4 Depress/Anxiety	0.35**	0.59**	0.59**				-0.23**	-0.27**	-0.35**	-0.27**	-0.35**	-0.58**	-0.23**	-0.26**	-0.41**
Time 3															
5 Withdrawal	0.46**	0.31**	0.65**	0.42**			-0.34**	-0.27**	-0.35**	-0.39**	-0.26**	-0.40**	-0.34**	-0.36**	-0.52**
6 Depress/Anxiety	0.40**	0.50**	0.50**	0.67**	0.66**		-0.26**	-0.24**	-0.33**	-0.33**	-0.38**	-0.50**	-0.34**	-0.41**	-0.56**

Note. * $p < 0.05$, ** $p < 0.01$.

Variables 7, 10 & 13 represent scores on the IPPA Communication subscale.

Variables 8, 11 & 14 represent scores on the IPPA Trust subscale.

Variables 9, 12 & 15 represent scores on the IPPA Closeness subscale.

Table 3

Intercorrelations (cross-sectional and stability coefficients) between indicators of attachment and externalizing problem behaviour

Externalizing problem behaviour						Attachment								
Time 1		Time 2		Time 3		Time 1			Time 2			Time 3		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time 1														
1 Delinquency						-0.13*	-0.29**	-0.37**	-0.13*	-0.26**	-0.31**	-0.16**	-0.23**	-0.32**
2 Aggression	0.52**					-0.16**	-0.32**	-0.42**	-0.17**	-0.29**	-0.31**	-0.16**	-0.29**	-0.27**
Time 2														
3 Delinquency	0.54**	0.37**				-0.23**	-0.30**	-0.43**	-0.25**	-0.35**	-0.48**	-0.20**	-0.30**	-0.42**
4 Aggression	0.39**	0.56**	0.67**			-0.14*	-0.29**	-0.39**	-0.23**	-0.33**	-0.47**	-0.21**	-0.33**	-0.43**
Time 3														
5 Delinquency	0.49**	0.35**	0.59**	0.51**		-0.18**	-0.25**	-0.36**	-0.21**	-0.28**	-0.38**	-0.31**	-0.41**	-0.50**
6 Aggression	0.36**	0.45**	0.47**	0.63**	0.66**	-0.18**	-0.25**	-0.34**	-0.24**	-0.30**	-0.34**	-0.28**	-0.43**	-0.50**

Note. * $p < 0.05$, ** $p < 0.01$.

Variables 7, 10 & 13 represent scores on the IPPA Communication subscale.

Variables 8, 11 & 14 represent scores on the IPPA Trust subscale.

Variables 9, 12 & 15 represent scores on the IPPA Closeness subscale.

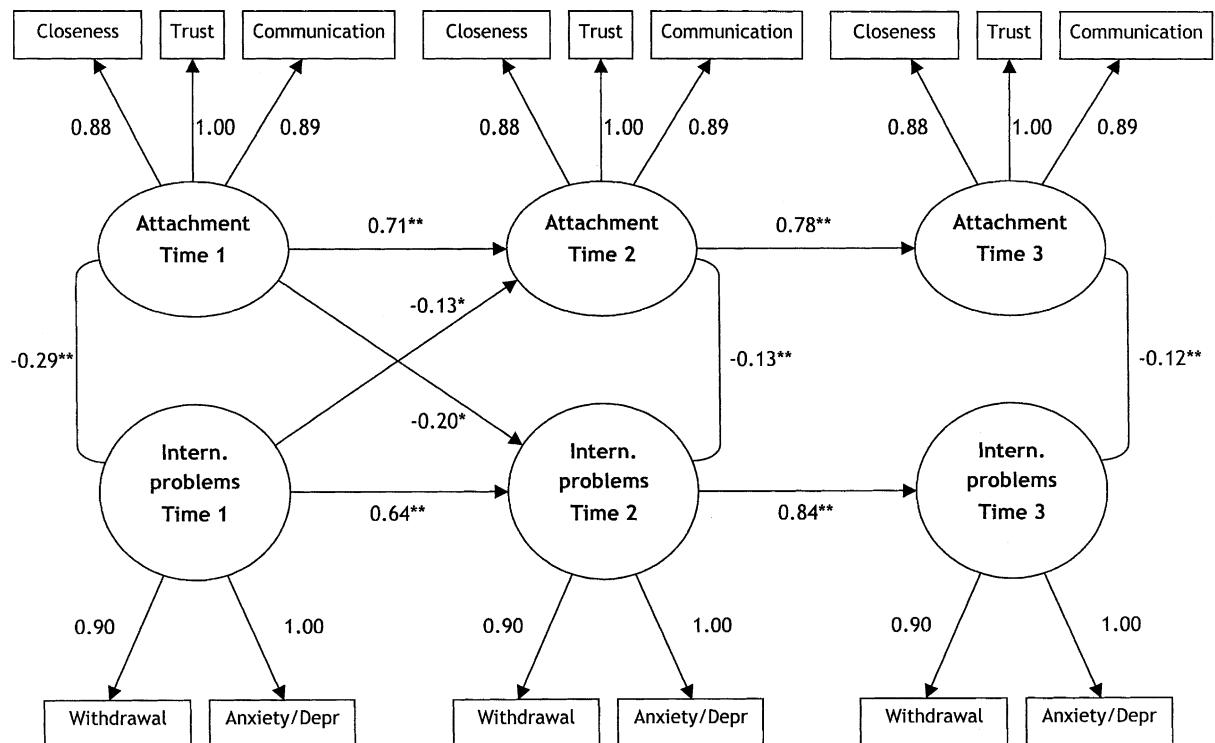


Fig. 1. Path model adolescent parental attachment and internalizing problem behaviour.

There were significant negative correlations between attachment and externalizing problem behaviour at each measurement time, -0.29 , -0.09 and -0.15 at Time 1, Time 2 and Time 3, respectively.

Concerning the cross-lagged paths between the two latent variables, attachment at Time 1 significantly influenced externalizing problem behaviour at Time 2 (path coefficient -0.19). Externalizing problem behaviour at Time 2 in turn significantly influenced attachment at Time 3 (path coefficient -0.12).

Discussion

In the present study we set out to examine the reciprocal relationship between adolescents' parental attachment and problem behaviour using a three-wave longitudinal design. Results showed stability of attachment and both types of problem behaviour, as well as modest yet significant reciprocal cross-lagged relationships between attachment and problem behaviour.

The negative relationship between parental attachment and adolescent internalizing problem behaviour within measurement waves is consistent with results found in previous studies

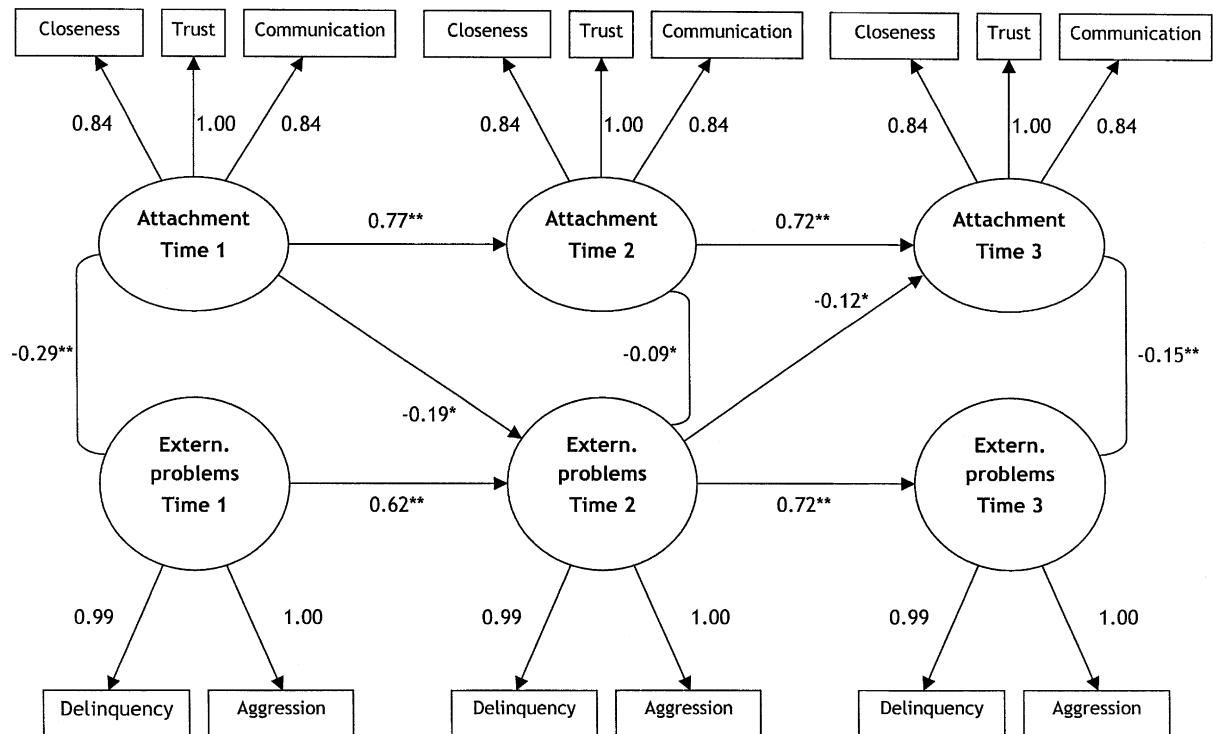


Fig. 2. Path model adolescent parental attachment and externalizing problem behaviour.

(Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990; Raja et al., 1992; Allen et al., 1998; Laible et al., 2000). Attachment and internalizing problem behaviour also seem to affect each other longitudinally, as the cross-lagged paths from Time 1 to Time 2 were found significant. Adolescents who report higher quality of attachment show less internalizing problem behaviour 1 year later. Conversely, adolescents who show more internalizing problem behaviour report a lower quality of attachment 1 year later. Within the relationship with parents, which is characterized by closeness and trust, adolescents are likely to develop a positive self-image and confidence in their ability to cope successfully with the developmental challenges of adolescence (Shreeber, Hops, & Davis, 2001). The fact that the cross-lagged paths from Time 2 to Time 3 were not found significant could perhaps be explained by the fact that internalizing problems seem to be much more stable from Time 2 to Time 3 as compared to their stability from Time 1 to Time 2. It could be that attachment is primarily influential at the onset of internalizing problems in early adolescence, and that once these problems have appeared, they tend to be more stable and resistant to change. More research is needed to illuminate these reciprocal processes from early to late adolescence.

The pattern concerning adolescent externalizing problem behaviour is similar to that concerning internalizing problems. Besides a connection between attachment and externalizing problems within measurement waves, there is again also a significant inhibiting influence of

parental attachment on externalizing problems one year later. These findings are similar to those of earlier (cross-sectional) studies (Marcus & Betzer, 1996; Allen et al., 1998; Laible et al., 2000). Adolescents with high quality of attachment to parents show less problem behaviour a year later. Relationships with parents that are perceived to be positive by the adolescent seem to diminish his or her tendency to act out and break rules. Conversely, if an adolescent experiences his or her relationship with parents as negative, and characterized by alienation and a lack of communication and trust, he or she is more likely to demonstrate his dissatisfaction by showing more delinquent and aggressive behaviour. Again, not all four cross-lagged effects between attachment and externalizing problems were found significant. Externalizing problem behaviour also tends to become more stable throughout early and middle adolescence, and seems resistant to influences from attachment relationships once the externalizing problems have established themselves. These problems in turn seem to have a negative effect on the adolescent's perception of his/her relationship with parents. It would be interesting to examine whether *parents'* perceptions of the relationship with their adolescent children are likewise influenced by externalizing problem behaviour of the adolescent.

There are several limitations to the current study. We used only two indicators for the two latent variables internalizing and externalizing problem behaviour. It would have been more elegant to use more indicators, but this would also have resulted in more complex measurement and structural models with its associated identification problems.

Another limitation to the study is that we used only self-report measures of problem behaviour in addition to a self-report measure of attachment, which can inflate the strength of connections. However, we had legitimate reasons for doing so. First, attachment is a highly directional as well as internalized relationship, and asking parents to report on the specific attachment relationships their adolescents have with them did not seem fruitful to us. Second, using parent reports concerning internalizing and externalizing problem behaviour of their adolescent offspring also has its downsides. Research has shown that parents report lower frequencies of problem behaviour in their children than the children themselves (Verhulst & Koot, 1995). Especially, internalizing problem behaviour seems to be difficult to recognize for parents since it is less visible than externalizing problems. Additionally, if there is indeed bias or a response set in the adolescent's reports, this could explain the initial correlation between attachment and problem behaviour, but not the cross-lagged effects because the initial correlation is partialled out from these effects.

Finally, we have to keep in mind that our participants were members of relatively well-functioning two-parent, predominantly middle class families. These two-parent families were specifically chosen for other research purposes, for which a round robin design was necessary (see Buist, Deković, Meeus, & van Aken, *in press*). In the total Dutch population, from 1997 through 1999, about 9.4% of marriages ended in divorce after a mean of 12.6 years of marriage (Statistics Netherlands, 2003). Our families, with a divorce rate of 0%, are therefore not an average group. The question whether these findings could be generalized to one-parent families, families from different social backgrounds and those less well-functioning remains to be answered. It would be interesting and insightful to extend the present study to a group of families with adolescents who exhibit more severe problem behaviour.

Notwithstanding these considerations, some conclusions can be drawn. First, despite the relatively high stability of adolescent attachment and problem behaviour over a 3-year period,

significant reciprocal influences between the concepts were found. Second, although there were some minor differences in the relationship between attachment and internalizing problem behaviour on the one hand and attachment and externalizing behaviour on the other hand, the patterns of findings were largely similar. There appear to be no significant differences between internalizing and externalizing regarding the reciprocal relation with quality of attachment. However, more research is needed on this issue.

The present study extends existing research on adolescent attachment and problem behaviour by adopting a short-term longitudinal design. Much of the previous research on this subject has been cross-sectional, which limits the possibility for firm conclusions concerning direction of effects. There have been several longitudinal studies concerning parental attachment and adolescent psychosocial functioning, but in these studies, *infant* quality of attachment was used to predict *adolescent* outcome (Weinfield, Sroufe, & Egeland, 2000; Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). While these studies provide essential insights into the long-term effects of quality of attachment on adolescent adjustment, they do not provide information concerning the reciprocity between the two concepts. By employing a short-term longitudinal design, we have been able to test assumptions about reciprocity and the direction of effects.

The current line of research can be seen as a step forward in grasping the multitude of influences and consequences concerning adolescent problem behaviour by taking the reciprocal effects between family relationships and problem behaviour into account. Future research can deepen our understanding of these processes by extending the focus of attention to a more diverse group of families regarding psychosocial adjustment, by using multiple informants, and by including peer relationships and contextual factors (e.g., stressful life events) which have been shown to be strongly associated with adolescent psychosocial development.

Additionally, the relatively high stability coefficients found in the present study suggest that adolescents tend to maintain the same rank order concerning attachment and problem behaviour across time. It might be insightful to examine individual change patterns in attachment and problem behaviour and their reciprocal influences. Results of studies using this focal point have suggested that it is not the initial level of quality of family relations but the change in quality of family relations that is connected to changes in problem behaviour (Mathijssen et al., 1999). Studying these possibilities would add to our knowledge of the longitudinal connection between family relations and problem behaviour in adolescence. This knowledge could in its turn be an important step in understanding the complexity of influences on adolescent psychosocial, behavioural and developmental outcome, of which parent-child relationships are only one element (Goldberg, 1997).

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