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Joyce Akse · William W. Hale III · Rutger C. M. E. Engels · Quinten A. W. Raaijmakers · Wim H. J. Meeus

Personality, perceived parental rejection and problem behavior in adolescence

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Abstract *Background* It has been well documented that adolescents run a heightened risk for developing depression and aggression when they feel rejected by their parents and that parental rejection has different effects for gender in developing depression and aggression. Whether personality in combination with gender plays a role in the association between parental rejection, depression and aggression has not yet received much attention. *Method* This was a cross-sectional study using data from the Conflict and Management of Relationships study (CONAMORE). A total of 1142 early and middle adolescents completed questionnaires about parental rejection, depression, aggression and personality. The associations between the variables were tested in multi-group moderation models using structural equation modeling. *Results:* Perceived parental rejection was associated with depression and aggression in most of the combined personality type and gender groups. Personality type and gender moderated the associations between perceived parental rejection, depression and aggression. Several clear differences between the combined personality type and gender groups were found on these associations. *Conclusion:* Several clear moderating effects of the personality type x gender groups were found on associations between perceived parental rejection, depression and aggression. Future research should focus on these specific combinations instead of using either personality types or gender separately.

Key words personality – resiliency – overcontrol – undercontrol – rejection – depression – aggression

Introduction

It has been well documented that adolescents run a heightened risk for developing internalizing and externalizing problem behavior, such as depression and aggression, when feeling rejected by their parents (Buehler and Gerard 2002; Chang et al. 2003; Chen et al. 2000; Forehand and Nousiainen 1993; Ge et al. 1996; Harold and Conger 1997; Khaleque and Rohner 2002; Koestner et al. 1991; Muris et al. 2001; Rapee 1997; Rothbaum and Weisz 1994). Parental rejection can lead adolescents to negatively evaluate themselves and their future; evaluations which, in turn, can make them vulnerable for depression (Kim et al. 2003; Nolan et al. 2003). Additionally, it has been shown that parental rejection tends to increase a child's learning of socially unacceptable behavior, such as externalizing behavior (Ge et al. 1996; Rothbaum and Weisz 1994). Furthermore, it is known that adolescent problem behaviors such as depression and aggression have a high co-occurrence (e.g., Verhulst 2000; Wenar and Kerig 2000) and that parental rejection has different effects on gender. Girls value engagement in personal relationships more than boys: when feeling rejected, it seems to be that parental engagement is absent and, in these circumstances, girls are more likely to feel depressed (Feinberg et al. 2000; Gjerde et al. 1988). In contrast, boys are more likely to react with externalizing behavior to stressors, such as feelings of rejection, than girls (Ge et al. 1996; Rothbaum and Weisz 1994).

In addition to gender, other variables may play a role in the relationship between perceived parental rejection and adolescent depression and aggression. The personality of the adolescent is a possible moderator in this respect. This is suggested by the findings of O'Connor and Dvorak (2001), which is the first study in which it was shown that personality moderates the association between parental behavior and adolescent problem behav-

J. Akse (✉) · W. W. Hale III · Q. A. W. Raaijmakers · W. H. J. Meeus
Utrecht University, Child and Adolescent Studies
P. O. Box 80.140
3508 TC Utrecht, The Netherlands
Tel.: +31-30/253-7417
Fax: +31-30/253-7731
E-Mail: J.Akse@fss.uu.nl

R. C. M. E. Engels
Catholic University Nijmegen
Pedagogical and Educational Science
Nijmegen, The Netherlands

ior. In some personality types, ineffective parenting did not result in adolescent problem behavior, whereas in other types it did. Moreover, there is recent evidence that parental behavior may have little influence on the development of problems in children with particular personality characteristics (O'Connor and Dvorak 2001; Rothbaum and Weisz 1994).

In this study, we use the personality typology of Block and Block (1980) to describe the adolescent's personality. Block and Block described personality in terms of two continuous concepts: ego-control and ego-resiliency. Ego-control refers to the tendency to contain emotional and motivational impulses versus the tendency to express them (undercontrol vs. overcontrol), whereas ego-resiliency refers to the tendency to respond flexibly rather than rigidly to changing situational demands, particularly stressful situations. Block and Block assumed that both extremely high and low levels of ego-control could be related to high and low levels of ego-resiliency (Asendorpf and Van Aken 1999; Block and Block 1980; Dubas et al. 2002; Hart et al. 1997; Robins et al. 1996; Van Lieshout et al. 1998). Since Robins et al. (1996) found ego-resiliency to have an inverted U-shaped relation with ego-control, they identified three personality types: resilient, overcontrollers and undercontrollers. Resilient reflected a high level of ego-resiliency and a medium level of ego-control; overcontrollers and undercontrollers both reflected a low level of ego-resiliency; however, they differed markedly on ego-control.

Robins et al. (1996) not only described the personality types in terms of the personality typology of Block and Block (1980), but also in terms of the Big Five personality dimensions (John et al. 1994) based on the scales of the California Child Q-set (CCQ) (Block and Block 1980). The Big Five personality dimensions represent five personality factors: Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Openness to Experience (Digman 1990; McCrae and Costa 1995). In their study, Robins et al. (1996) found that overcontrollers had lower Extraversion scores than both resilient and undercontrollers; that undercontrollers were less agreeable than both resilient and overcontrollers; that resilient were more, and undercontrollers were less conscientious than overcontrollers; and, finally, that resilient had higher scores on Emotional Stability and Openness to Experience than both overcontrollers and undercontrollers.

Robins et al. (1996) were able to describe the types in terms of the Big Five personality dimensions, thus raising the question of whether it was possible to construct the personality types directly on the basis of the Big Five personality dimensions. Using a k-means clustering procedure or an inverse factor analysis, several studies have shown this to be possible (Asendorpf et al. 2001; Asendorpf and Van Aken 1999; Dubas et al. 2002; Hart et al. 1997; Van Lieshout et al. 1998). Moreover, these studies demonstrated differences in the psychosocial functioning of each of the three personality types. Ado-

lescent resilient exhibited a better psychosocial adjustment as compared to overcontrollers and undercontrollers (Dubas et al. 2002). Adolescent overcontrollers appeared to be more vulnerable to higher levels of internalizing problems and introversion than resilient and undercontrollers (Dubas et al. 2002; Robins et al. 1996). Adolescent undercontrollers were found to be more prone to externalizing problems and moodiness than the other personality types (Hart et al. 1997). Undercontrollers also showed high levels of co-occurrence of internalizing and externalizing problem behaviors (Dubas et al. 2002; Robins et al. 1996; Van Aken et al. 2002).

In the light of the aforementioned, the main goal of this study is to investigate whether personality moderates the association between perceived parental rejection, depression and aggression. In order to meet this goal, we will try to answer the following research questions. The first research question examines whether perceived parental rejection is related to depression and aggression. Since many previous studies have asserted these associations are present, we expect to find perceived parental rejection is associated with depression and with aggression.

Our second research question examines whether the three personality types can be constructed by means of the shortened version of the Big Five questionnaire (Gerris et al. 1998; Goldberg 1992). Given that the construction of the types has been possible with the 100-item version of the Big Five questionnaire (Dubas et al. 2002), we expect that the construction of the types will also be possible by means of the shortened version of the Big Five questionnaire, since the shortened version was highly correlated with the 100-item version ($r > 0.75$; Dubas, personal communication, February 10, 2003). Additionally, we expect that the constructed personality types will be related to problem behavior in the same manner as in the aforementioned studies.

Finally, we will study whether personality moderates the association between perceived parental rejection, depression and aggression. In the light of the findings of O'Connor and Dvorak (2001), we expect that personality will moderate the effects of parental behavior and adolescent internalizing and externalizing problems. However, since they did not specifically study perceived parental rejection, we cannot form any precise hypotheses.

Subjects and methods

■ Participants

Participants in this study were drawn from the Conflict and Management of Relationships study (CONAMORE) (Meeus et al. 2002). CONAMORE is an ongoing longitudinal study of Dutch adolescents that examines their relationships with parents and peers as well as their emotional states (Meeus et al. 2002). The participating adolescents were students from high schools located in the province of Utrecht, The Netherlands.

The present study only used cross-sectional data from the first

measurement of CONAMORE. From a total of 1329 adolescents, we selected only those students who had completed the questionnaires about depression, aggression, perceived parental rejection and the Big Five questionnaire. The sample consisted of 607 girls (53.2%) and 535 boys (46.8%). Two age groups were represented: 550 early adolescents (48.2%; $M = 12.4$; $SD = 0.56$) and 592 middle adolescents (51.8%; $M = 16.7$; $SD = 0.80$).

■ Procedure

Twelve high schools in Utrecht participated in this study. The students of these high schools received a letter well in advance of the actual test administration. In this letter, the aims of the study were described and the students were informed about the option of not participating. Fewer than 1% of the students decided not to participate.

The administration was performed in the homeroom study period, during which the students could fill in the questionnaire anonymously. The research assistants, who attended the administration, gave verbal instructions about the questionnaires; written instructions were also included. Students who were absent on the day of testing were not assessed. At the end of the homeroom study period, the research assistants collected the questionnaires. These assistants additionally conducted the data entry in order to ensure that the data remained anonymous.

■ Measures

Perceived parental rejection

The questionnaire for perceived parental rejection was derived from the hostile criticism subscale of the Level of Expressed Emotion questionnaire (Gerlsma and Hale 1997; Gerlsma et al. 1992). The study by Gerlsma and Hale (1997) showed that the hostile criticism subscale was predictive of depression in both psychiatric patients and healthy controls. Additionally, it was noted in this study that the hostile criticism subscale is reflective of a person's perception of being rejected by others.

The hostile criticism subscale consisted of three items: My parents 'are very critical of me', 'try to change me' and 'get annoyed when I want something from them' in the last three months. The 3 items were scored on a 4-point scale, ranging from 'false', 'more or less false', 'more or less true' to 'true'. Reliability and construct validity have been shown to be strong (Gerlsma and Hale 1997). The internal consistency of this measure was 0.82.

Depression

The Children's Depression Inventory (CDI) is a self-report questionnaire which is used as a screen for (subclinical) depressive symptomatology in children and adolescents (Kovacs 1985). The CDI consists of 27 items; sample items include: 'I'm sad all the time', 'It will never end right for me' and 'I do everything wrong'. The items were scored on a 3-point scale, ranging from 'false', 'a bit true' to 'very true'. The internal consistency of the CDI was 0.92.

Aggression

Aggression was measured by a self-report questionnaire, originally developed by Björkqvist et al. (1992). Hale et al. (2003) analyzed this questionnaire, which appeared to consist of two subscales: a subscale for aggression and a subscale for withdrawal. In the present study, only the subscale for aggression was used. This subscale consisted of 17 items; examples of these items are: When I'm mad at a classmate, I 'call the other names', 'hit or kick' and 'curse'. The items were scored on a 4-point scale, ranging from 'never', 'sometimes', 'often' to 'very often'. The internal consistency of the aggression questionnaire was 0.93.

Personality

The personality dimensions Extraversion, Agreeableness, Conscientiousness, Emotional Stability and Openness to Experience were measured using the shortened Dutch version of the Big Five questionnaire (Gerris et al. 1998; Goldberg 1992). This questionnaire contained 30 items, such as: talkative (Extraversion), sympathetic (Agreeableness), systematic (Conscientiousness), nervous (Emotional Stability) and creative (Openness to Experience). The adolescents judged whether the 30 items applied to themselves on a 7-point scale, ranging from 'absolutely agree' to 'absolutely disagree'. Internal consistencies were high with alphas of 0.80 for Extraversion, 0.87 for Agreeableness, 0.83 for Conscientiousness, 0.82 for Emotional Stability and 0.77 for Openness to Experience. A factor analysis (Principal Components Analysis, Oblique-rotation) was conducted with which five unique factors were identified, which accounted for 60% of the total variance.

Strategy of analyses

In order to answer the first research question, we tested a model in Analysis of Moment Structures (AMOS) by means of structural equation modeling, which was based on maximum likelihood estimation (Arbuckle 1995). On the basis of previous findings (Buehler and Gerard 2002; Chang et al. 2003; Chen et al. 2000; Forehand and Nousiainen 1993; Ge et al. 1996; Hale et al. 2003; Harold and Conger 1997; Khaleque and Rohner 2002; Koestner et al. 1991; Muris et al. 2001; Rapee 1997; Rothbaum and Weisz 1994), we assumed there was an association between perceived parental rejection and depression, between perceived parental rejection and aggression and between depression and aggression.

To answer the second research question, we used the Big Five scale scores to construct the personality types and performed a K-means clustering procedure in the same manner as was conducted by Dubas et al. (2002). Because outliers have been found to have a great impact on the results of a cluster analysis (Lorr 1983), we omitted all the adolescents whose scores were outliers on any of the Big Five subscales in accordance with Dubas et al. (2002). Additionally, in line with Dubas et al. (2002), we set the cluster number to three, converted all personality dimension scores to z-scores and used the same cluster centers. To examine whether the three clusters differed on the Big Five dimensions, we used multivariate analyses of variance (MANOVA) with subsequent post hoc tests on univariate effects.

To answer the third research question, we tested a restricted and a non-restricted six-group moderation model – personality type by gender – in AMOS (Arbuckle 1995). The restricted moderation model, in which no differences between the six groups in the value of the parameter estimates were allowed, differed significantly from the non-restricted moderation model, in which all possible differences between the six groups in the value of the parameter estimates were allowed, as measured by chi-square difference tests. The fit of the model was assessed by several fit indices: χ^2 , GFI, NFI and RMSEA. Values of the Goodness-of-Fit Index (GFI) close to 1 and values of the Normed Fit Index (NFI) close to 0.95 are indicative of a good fit (Bentler 1989). Values of the Root Mean Square Error of Approximation (RMSEA) that are less than 0.05 indicate a good fit (Byrne 2001).

Results

■ Associations between perceived parental rejection, depression and aggression

The means and standard deviations of perceived parental rejection, depression and aggression for the total sample are presented in Table 1. The scores of the total sample on these variables are rather low, which is in line with the fact that it is drawn from a non-clinical population.

The zero order correlations between perceived parental rejection and depression ($r = 0.26$; $p < 0.01$) and

Table 1 Means and standard deviations of perceived parental rejection, depression and aggression for the total sample, gender and personality types

	Total (N = 1142)	Gender		Personality types		
		Boys (N = 535)	Girls (N = 607)	Resilients (N = 403)	Overcontrollers (N = 318)	Undercontrollers (N = 421)
Perceived parental rejection	3.84 (2.08)	4.12 (2.04) ^x	3.59 (2.09) ^y	3.42 (1.82) ^a	3.89 (2.16) ^b	4.20 (2.20) ^b
Depression	31.61 (6.23)	30.98 (6.59) ^x	32.16 (5.85) ^y	29.91 (4.21) ^a	33.39 (6.95) ^b	31.89 (6.84) ^c
Aggression	25.77 (7.40)	27.63 (8.72) ^x	24.14 (5.50) ^y	25.21 (7.13) ^a	24.81 (6.56) ^a	27.04 (8.05) ^b

^{a, b, c} Means with different superscripts are significantly different at $p < 0.01$; ^{x, y} Means with different superscripts are significantly different at $p < 0.001$

between perceived parental rejection and aggression ($r = 0.20$; $p < 0.01$) demonstrate that these variables are significantly associated with each other. When adolescents feel rejected by their parents, it is likely that they also feel depressed and aggressive. Furthermore, depression and aggression are positively related to each other ($r = 0.26$; $p < 0.01$). Adolescents who feel depressed are likely to report aggressive behavior also. The correlations between these constructs are useful for testing our hypotheses further.

We performed structural equation modeling to study the relations between perceived parental rejection and depression ($\beta_1 = 0.20$; $z > 1.96$), between perceived parental rejection and aggression ($\beta_2 = 0.25$; $z > 1.96$) and between depression and aggression ($r = 0.23$; $z > 1.96$) in the total sample, using AMOS (Arbuckle 1995). The model in which depression and aggression are each statistically predicted by perceived parental rejection fits the data very well (Fig. 1) ($\chi^2 [2] = 3.55$, $p = 0.17$, GFI = 0.998, NFI = 0.980, RMSEA = 0.026). This means that perceived parental rejection is statistically predictive of both depression and aggression separately and that depression and aggression co-occur.

Construction and validation of personality types

We used the k-means clustering procedure to construct the personality types on the basis of the Big Five dimensions (Dubas et al. 2002). The means of the clusters on the Big Five characteristics are presented in Fig. 2.

Multivariate analyses of variance (MANOVA) with Tukey post hoc tests on the univariate effects were used to examine whether the clusters differed from each other on the Big Five personality characteristics. The MANOVA was significant and Tukey post hoc tests revealed that each type was significantly different from the other type on each dimension with one exception: resilient and overcontrollers were not significantly different from each other on Openness to Experience.

Following Dubas et al. (2002), we checked the replicability of the personality types by dividing the sample at random in two subsamples, rerunning the cluster analyses for each subsample and calculating the degree of correspondence of individuals being assigned to clusters of the total sample and of the subsamples. The kappa coefficients (Cohen 1960) for both replication samples were

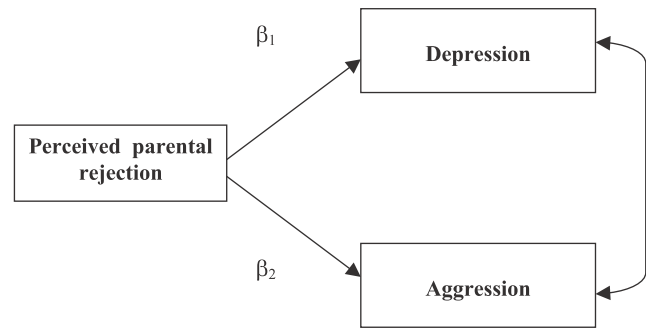


Fig. 1 Hypothesized relationship between perceived parental rejection, depression and aggression

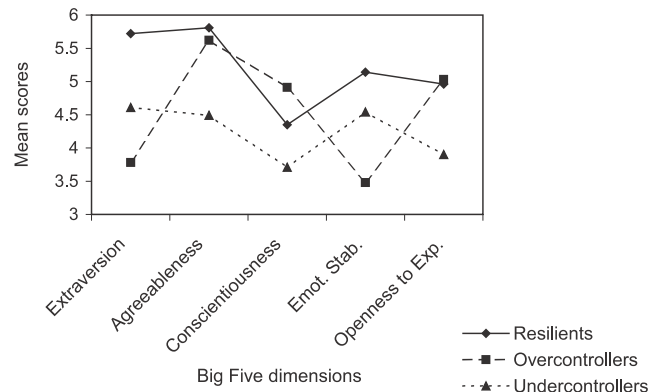


Fig. 2 Big Five personality profiles of the personality types (Resilients: N = 403; Overcontrollers: N = 318; Undercontrollers: N = 421)
Emot. Stab. = Emotional Stability; Openness to Exp. = Openness to Experience

excellent: 0.96 and 0.97. Thus, we were confident that our types were replicable. We used the types from the total sample in all further analyses.

In our sample, we found 35.3% resilient, 27.8% overcontrollers and 36.9% undercontrollers. The distribution of the genders differed significantly in the three personality types: there were more girls in the resilient group (57.1%) and in the overcontroller group (61.6%) than boys, whereas there were more boys [57%; $\chi^2 (2) = 29.13$, $p < 0.001$] in the undercontroller group than girls.

After constructing the personality types, we focused on validating the types. We performed a MANOVA to look for significant differences between the genders and

types. A main effect for gender and type on depression [gender: $F(1, 1142) = 12.67, p < 0.001$; type: $F(2, 1142) = 26.39, p < 0.001$] and aggression [gender: $F(1, 1142) = 56.06, p < 0.01$; type: $F(2, 1142) = 5.59, p < 0.001$] was found. These analyses revealed that girls scored higher on depression than boys, whereas boys scored higher on aggression than girls. In terms of personality types, Tukey post hoc tests revealed that overcontrollers scored higher than resilients on depression; undercontrollers scored higher than resilients, but lower than overcontrollers. With regard to aggression, undercontrollers scored higher than both resilients and overcontrollers.

■ Structural equation modeling and multi-group analyses

The main goal of the present study was to investigate the moderation role of personality on the association between perceived parental rejection, depression and aggression. We tested a six-group model as we were not only interested in the effects of personality types, but also in the effects of gender. These six groups were resilient boys ($n = 173$), overcontroller boys ($n = 122$), undercontroller boys ($n = 240$), resilient girls ($n = 230$), overcontroller girls ($n = 196$) and undercontroller girls ($n = 181$). We tested whether the model (displayed in

Fig. 1) differed for the above six groups. For these multi-group analyses, we compared two models: a restricted model, in which all estimated parameters were required to be equal across groups, and a non-restricted multi-group model, in which these parameter estimates were allowed to differ across the groups. Model comparisons tests for the two six-group multi-group models demonstrated that the non-restricted model fit the data better than the restricted model [$\Delta\chi^2 = 59.08$; $\Delta df = 15$; $p(d) = 0.001$]. The non-restricted model fit well [$\chi^2(12) = 9.21, p > 0.05$, GFI = 0.995, NFI = 0.961, RMSEA = 0.000] and, therefore, we concluded that the personality type \times gender groups are different from each other, which makes it feasible to take a specific look at the differences between them.

When examining the six groups separately, most of the standardized regression weights between perceived parental rejection, depression and aggression were significant (Asendorpf and Van Aken 2003). We found three different kinds of significant differences between the six groups, namely gender differences within types, type differences within genders and combined type \times gender differences, as summarized in Table 2. Because the combined type \times gender differences represent differences between groups with a different type and a different gender, we cannot attribute the differences to a specific personality type or gender. Therefore, these differences are not further reported and described.

Table 2 Parameter values and significant differences between the type \times gender groups on the three paths

Group	Perceived parental rejection – depression (β_1)	Perceived parental rejection – aggression (β^2)	Depression – aggression
Parameter values			
Boys			
Resilients	0.24*	0.27*	0.31*
Overcontrollers	0.10	0.03	0.38*
Undercontrollers	0.14*	0.14*	0.36*
Girls			
Resilients	0.28*	0.17*	0.12
Overcontrollers	0.35*	0.23*	0.13
Undercontrollers	0.40*	0.19*	0.30*
Gender differences within types			
	Oc. g. > Oc. b.		Re. b. > Re. g. Oc. b. > Oc. g. Uc. b. > Uc. g.
Type differences within genders			
	Oc. g. > Re. g.	Re. b. > Oc. b.	Uc. b. > Re. b. Uc. g. > Re. g.
Combined type \times gender differences			
	Oc. g. > Re. b. Oc. g. > Uc. b. Uc. g. > Oc. b.	Re. b. > Uc. g.	Oc. b. > Re. g. Oc. b. > Uc. g. Uc. b. > Re. g. Uc. b. > Uc. g.

Re. b. = Resilient boys, Oc. b. = Overcontroller boys, Uc. b. = Undercontroller boys, Re. g. = Resilient girls, Oc. g. = Overcontroller girls, Uc. g. = Undercontroller girls; * $z > 1.96$

On the path from perceived parental rejection to depression (β_1), a significant gender difference within types was present between male ($\beta_1 = 0.10$) and female overcontrollers ($\beta_1 = 0.35$), and a significant type difference within genders was present between resilient ($\beta_1 = 0.28$) and overcontroller girls ($\beta_1 = 0.35$). This shows that perceived parental rejection was a better predictor for depression in female overcontrollers than in male overcontrollers. Furthermore, in girls, perceived parental rejection was a better predictor for depression in overcontrollers than in resilient.

On the path from perceived parental rejection to aggression (β_2), no gender differences within types were found. A significant type difference within genders was present, namely between resilient ($\beta_2 = 0.27$) and overcontroller boys ($\beta_2 = 0.03$). This shows that, in boys, perceived parental rejection was less predictive of aggression in overcontrollers than in resilient.

We also found these kinds of significant differences in the co-occurrence of depression and aggression. First of all, we found gender differences within all three types: the co-occurrence of depression and aggression was systematically stronger in boys (resilient, $r = 0.31$; overcontroller, $r = 0.38$; undercontroller, $r = 0.36$) than in girls (resilient, $r = 0.12$; overcontroller, $r = 0.13$; undercontroller, $r = 0.30$) for all three personality types. Also type differences within genders were found: co-occurrence was stronger in undercontroller girls ($r = 0.30$) than in resilient girls ($r = 0.12$) and co-occurrence was stronger in undercontroller boys ($r = 0.36$) than in resilient boys ($r = 0.31$).

Additional analyses were conducted to study whether personality in combination with age had a moderating effect. Multi-group analyses with a six-group model (three personality types \times two age groups) revealed only one significant between-group difference on the paths between parental rejection and depression and between parental rejection and aggression.

Discussion

The purpose of the present study was to examine whether personality moderates the association between perceived parental rejection, depression and aggression. In order to do so, we examined three research questions. The first research question focused on whether perceived parental rejection is related to depression and aggression. In this study, we demonstrated that the relation existed in the way we expected: perceived parental rejection was associated with both depression and aggression. These findings are in agreement with previous studies that have also demonstrated that a problematic relationship with parents could be one of the antecedents of developing these problem behaviors (Buehler and Gerard 2002; Chang et al. 2003; Chen et al. 2000; Forehand and Nousiainen 1993; Ge et al. 1996; Harold and Conger 1997; Khaleque and Rohner 2002; Kim et al. 2003; Koestner et al. 1991; Muris et al. 2001;

Nolan et al. 2003; Rapee 1997; Rothbaum and Weisz 1994).

The second research question examined whether the three personality types could be constructed by means of the shortened version of the Big Five questionnaire (Goldberg 1992). We demonstrated that the three personality types, constructed by means of the shortened version of the Big Five questionnaire, were very similar to the personality types constructed in the study of Dubas et al. (2002), in which the 100-item version of the Big Five questionnaire was used. The similarities in findings were not only present in the profile of the personality types, but also in relation to problem behavior (Dubas et al. 2002; but see also Asendorpf and Van Aken 1999; Hart et al. 1997; Robins et al. 1996; Van Lieshout et al. 1998). Consequently, the shortened version of the Big Five questionnaire can be adequately used to construct the three personality types.

The third research question examined whether the association between perceived parental rejection, depression and aggression was moderated by the adolescents' personality. We found that perceived parental rejection was associated with depression and with aggression in most personality type \times gender groups and that several clear differences on the associations were present between these groups. Therefore, we can affirm the final research question since personality proved to be a moderator on the associations between perceived parental rejection, depression and aggression.

■ Perceived parental rejection, depression and personality

Perceived parental rejection proved to be more strongly associated with depression in female overcontrollers than in male overcontrollers. Although it is not yet known from previous research what the effects of perceived parental rejection exactly are on the development of depression in the six groups we studied, we think that our findings can be explained in line with previous research. In general, this gender difference can be explained by the view that women value engagement in personal relationships more than men do. When this engagement is absent, as is the case in rejection, girls are more likely to feel depressed compared to boys (Feinberg et al. 2000; Gjerde et al. 1988). However, we should note that this gender difference was only significant in overcontrollers; the personality type that is most prone to develop depression compared to the other types. Since the undercontrollers and resilient are not as prone to developing depression as overcontrollers, it is possible that this might help to explain the absence of gender differences in these types.

Additionally, it was found that perceived parental rejection proved to be more strongly associated with depression in overcontroller girls than in resilient girls. Since overcontrollers in general are more prone to develop depression than the other types (Dubas et al. 2002;

Hart et al. 1997; Robins et al. 1996; Van Lieshout et al. 1998), our finding that overcontroller girls are more depressed when feeling rejected than one of the other groups is in line with previous research. However, we should note that this personality difference was only significant in girls; the gender that is the most prone to developing depression. Additionally, previous studies have shown that resilient girls are by definition able to deal with demanding situations, such as parental rejection, in a more flexible way than overcontrollers (Olsson et al. 2003), which could explain the specific difference between overcontroller and resilient girls. Therefore, in the light of these previous findings, it is quite reasonable that perceived parental rejection proved to be better associated with depression in overcontroller girls than in resilient girls.

■ Perceived parental rejection, aggression and personality

As was noted in the Results section, perceived parental rejection was less associated with aggression in overcontroller boys than in resilient boys. Although previous studies have not yet demonstrated differences between the combined personality types and gender groups in relation to perceived parental rejection and aggression, the present findings are congruent with studies of personality types and studies of gender groups. In general, it has been found that parents who are rejecting and non-responsive increase their children's acquisition of, and motivation to use, socially unacceptable behaviors, such as externalizing behavior. In respect to gender, it is known that boys are more genetically predisposed than girls to react to stresses, such as parental rejection, with externalizing behavior (Ge et al. 1996; Rothbaum and Weisz 1994). Since girls are not as prone as boys to develop aggression, this might explain the absence of a type difference in girls. In respect to personality, it is known from previous studies that overcontrollers are less prone to develop aggression compared to resilient girls (Asendorpf and Van Aken 1999; Dubas et al. 2002; Robins et al. 1996). Hence, the finding that perceived parental rejection is less associated with aggression in overcontroller boys than in resilient boys is in agreement with previous research.

■ Depression, aggression and personality

The association between depression and aggression was significantly stronger in undercontrollers than in resilient girls, for both gender groups. Previous research has claimed that undercontrollers have a higher co-occurrence of depression and aggression than the other personality types (Dubas et al. 2002; Robins et al. 1996; Van Aken et al. 2002) and the findings of the present study replicated this. It is known that undercontrollers are very impulsive and have academic and behavioral prob-

lems, such as aggression, which could be a possible cause for serious conflicts with other people. The negative feelings that are related to these conflicts might cause a depressive mood in the undercontrollers (Dubas et al. 2002).

Additionally, all the male personality types demonstrated a significantly stronger co-occurrence than their female counterparts; boys displayed more co-occurring aggression and depression than girls. A tentative explanation of this finding might be that boys are more likely to display aggressive behavior as a result of an underlying depression than girls (Capaldi 1992; Gjerde et al. 1988).

■ Limitations and future research

In addition to the aforementioned findings, a few limitations of the present study need to be considered. The first limitation is that the relationships between perceived parental rejection, depression and aggression are not uni-directional. Some studies have suggested that parental rejection could be caused by problem behavior in adolescents (Coyne 1976a, 1976b). We recommend that longitudinal data should be used in future studies to examine the bi-directional relationships between perceived parental rejection and problem behaviors.

The second limitation is that our findings are solely based on adolescent self-reports. The adolescents not only filled in questionnaires about personality, depression and aggression, but also the questionnaire about perceived parental rejection. Therefore, we do not know whether the parents themselves thought they rejected their child. Since internalizing behaviors might be more difficult to observe to others (Achenbach et al. 1987) and since parents might answer questions about parenting in a socially desirable manner, we were more interested in the feelings and opinions of the adolescents themselves (O'Connor and Dvorak 2001).

A final limitation of this study is that only subclinical levels of adolescent depression and aggression were assessed. Although the data reported here can be used as a baseline for clinical populations, they do not meet clinical criteria and the results of this study should not be equated with those from studies of adolescents with psychiatric disorders (Gjerde et al. 1988; Kim and Smith 1998).

Conclusion

An important contribution of the present study was that it is not only important to examine the effects of either personality type or gender on the association between perceived parental rejection, depression and aggression, but it is also important to examine both personality types and gender together in one design. Since we found clear moderating effects of the combined personality type and gender groups and several clear differences be-

tween these combined groups on the aforementioned associations, future research should focus on these combinations instead of using either personality types or gender separately.

References

- Achenbach TM, McConaughy SH, Howell CT (1987) Child/adolescent behavioral and emotional problems: implication of cross-informant correlations for situational specificity. *Psychol Bull* 101:213–232
- Arbuckle JL (1995) AMOS 4.0. Chicago, SmallWaters Corporation
- Asendorpf JB, Borkeau P, Ostendorpf F, Van Aken MAG (2001) Carving personality description at its joints: confirmation of three replicable personality prototypes for both children and adults. *Eur J Personality* 15:169–198
- Asendorpf JB, Van Aken MAG (1999) Resilient, overcontrolled, and undercontrolled personality prototypes in childhood: replicability, predictive power, and the trait-type issue. *J Pers Soc Psychol* 77:815–832
- Asendorpf JB, Van Aken MAG (2003) Personality-relationship transaction in adolescence: core versus surface personality characteristics. *J Pers* 71:629–666
- Bentler PM (1989) EQS: structural equation program manual. Los Angeles, BMDP Statistical Software
- Björkqvist K, Lagerspetz KMJ, Kaukiainen A (1992) Do girls manipulate and boys fight?: developmental trends in regard to direct and indirect aggression. *Aggressive Behav* 18:117–127
- Block JH, Block J (1980) The role of ego-control and ego-resiliency in the organization of behavior. In: Collins WA (Ed) *Minnesota Symposium on Child Psychology*. Erlbaum, Hillsdale NJ, pp. 39–101
- Buehler C, Gerard JM (2002) Marital conflict, ineffective parenting, and children's and adolescents's maladjustment. *J Marriage Fam* 64:78–93
- Byrne BM (2001) Structural equation modelling with AMOS: basic concepts, applications and programming. Erlbaum, New Jersey
- Capaldi DM (1992) Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: II a 2-year follow-up at grade 8. *Dev Psychopathol* 4:125–144
- Chang L, Schwartz D, Dodge KA, McBride-Chang C (2003) Harsh parenting in relation to child emotion regulation and aggression. *J Fam Psychol* 17:598–606
- Chen X, Liu M, Li D (2000) Parental warmth, control, and indulgence and their relations to adjustment in Chinese children: a longitudinal study. *J Fam Psychol* 14:401–419
- Cohen JA (1960) A coefficient of agreement for nominal scales. *Educ Psychol Meas* 20:37–46
- Coyne JC (1976a) Depression and the response of others. *J Abnorm Psychol* 85:186–193
- Coyne JC (1976b) Toward an interactional description of depression. *Psychiatry* 39:28–40
- Digman JM (1990) Personality structure: emergence of the five-factor model. *Annu Rev Psychol* 41:417–440
- Dubas JS, Gerris JRM, Janssens JMAM, Vermulst AA (2002) Personality types of adolescents: concurrent correlates, antecedents, and type X parenting interactions. *J Adolesc* 25:79–92
- Feinberg ME, Howe GW, Reiss D, Hetherington ME (2000) Relationships between perceptual differences of parenting and adolescent antisocial behavior and depressive symptoms. *J Fam Psychol* 14:531–555
- Forehand R, Nousiainen S (1993) Maternal and paternal parenting: critical dimensions in adolescent functioning. *J Fam Psychol* 7:213–221
- Ge X, Best KM, Conger RD, Simons RL (1996) Parenting behaviors and the occurrence and co-occurrence of adolescent depressive symptoms and conduct problems. *Dev Psychol* 32:717–731
- Gerlsma C, Hale WW III (1997) Predictive power and construct validity of the Level of Expressed Emotion (LEE) scale: depressed out-patients and couples from the general community. *Brit J Psychiatry* 170:520–525
- Gerlsma C, van der Lubbe PM, van Nieuwenhuizen CH (1992) Factor analysis of the Level of Expressed Emotion Scale: a questionnaire intended to measure 'Perceived Expressed Emotion'. *Brit J Psychiatry* 160:385–389
- Gerris JRM, Houtmans MJM, Kwaaitaal-Roosen EMG, Schipper JC, Vermulst AA, Janssens JMAM (1998) Parents, adolescents, and young adults in Dutch families: a longitudinal study. Nijmegen The Netherlands: Institute of Family Studies University of Nijmegen
- Gjerde PF, Block J, Block JH (1988) Depressive symptoms and personality during late adolescence: gender differences in the externalization – internalization of symptom expression. *J Abnorm Psychol* 97:475–486
- Goldberg LR (1992) The development of markers for the Big-Five factor structure. *Psychol Assessment* 4:26–42
- Hale W, Van der Valk I, Akse J, Meeus W (2003) Een onderzoek naar het verband tussen ouderlijke afwijzing en depressie en agressie bij adolescenten. [A study about the association between parental rejection and depression and aggression in adolescents]. *Pedagogiek* 23:331–345
- Harold GT, Conger RD (1997) Marital conflict and adolescent distress: the role of adolescent awareness. *Child Dev* 68:333–350
- Hart D, Hofmann V, Edelstein W, Keller M (1997) The relation of childhood personality types to adolescent behavior and development: a longitudinal study of Icelandic children. *Dev Psychol* 33:195–205
- John OP, Caspi A, Robins RW, Moffitt TE, Stouthamer-Loeber M (1994) The 'Little Five': exploring the nomological network of the Five-Factor Model of personality in adolescent boys. *Child Dev* 65:160–178
- Khaleque A, Rohner RP (2002) Perceived parental acceptance-rejection and psychological adjustment: a meta-analysis of cross-cultural and intracultural studies. *J Marriage Fam* 64:54–65
- Kim IJ, Ge X, Brody GH, Conger RD, Gibbons FX, Simons RL (2003) Parenting behaviors and the occurrence and co-occurrence of depressive symptoms and conduct problems among African American children. *J Fam Psychol* 17:571–583
- Kim K, Smith PK (1998) Childhood stress, behavioral symptoms and mother-daughter pubertal development. *J Adolesc* 21:231–240
- Koestner R, Zuroff DC, Powers TA (1991) Family origins of adolescent self-criticism and its continuity into adulthood. *J Abnorm Psychol* 100:191–197
- Kovacs M (1985) The Children's Depression Inventory (CDI). *Psychopharmacol Bull* 21:995–998
- Lorr M (1983) Cluster analysis for social scientists: techniques for analyzing and simplifying complex blocks of data. San Francisco, Jossey-Bass Publishers
- McCrae RR, Costa PTJ (1995) Trait explanations in personality psychology. *Eur J Personality* 9:231–252
- Meeus W, Akse J, Branje S, ter Bogt T, Engels R, Finkenauer R, den Exter-Blokland E, Hale WW III, Raaijmakers Q, Spruijt E (2002) CONAMORE: CONflict And Management Of Relationships. Unpublished raw data
- Muris P, Schmidt H, Lambrichs R, Meesters C (2001) Protective and vulnerability factors of depression in normal adolescents. *Behav Res Ther* 39:555–565
- Nolan SA, Flynn C, Garber J (2003) Prospective relations between rejection and depression in young adolescents. *J Pers Soc Psychol* 85:745–755
- O'Connor BP, Dvorak T (2001) Conditional associations between parental behavior and adolescent problems: a search for personality-environment interactions. *J Res Pers* 35:1–26
- Olsson CA, Bond L, Burns JM, Vella-Brodrick DAV, Sawyer SM (2003) Adolescent resilience: a concept analysis. *J Adolescence* 26:1–11
- Rapee RM (1997) Potential role of childrearing practices in the development of anxiety and depression. *Clin Psychol Rev* 17:47–67

44. Robins RW, John OP, Caspi A, Moffitt TE, Stouthamer-Loeber M (1996) Resilient, overcontrolled, and undercontrolled boys: three replicable personality types. *J Pers Soc Psychol* 70:157–171
45. Rothbaum F, Weisz JR (1994) Parental caregiving and child externalizing behavior in nonclinical samples: a meta-analysis. *Psychol Bull* 116:55–74
46. Van Aken MAG, Van Lieshout CFM, Scholte RHJ, Haselager GJT (2002) Personality types in childhood and adolescence: main effects and person-relationship transactions. In: Pulkkinen L, Caspi A (Eds) *Paths to successful development: personality in the life course*. Cambridge, University Press
47. Van Lieshout CFM, Van Aken MAG, Scholte RHJ (1998) Adolescenten met verschillende persoonlijkheidstypen: hun sociale relaties en hun psychosociaal functioneren. [Adolescents with different personality types: their social relations and their psychosocial functioning] *Nederlands Tijdschrift voor Opvoeding, Vorming en Onderwijs* 14:114–133
48. Verhulst FC (2000) Principes. In: Verhulst FC, Verheij F (Eds) *Kinder- en jeugdpsychiatrie: onderzoek en diagnostiek*. [Child and adolescent psychiatry: research and diagnostics] Assen, Van Gorcum
49. Wenar C, Kerig P (2000) *Developmental psychopathology: from infancy through adolescence*. Boston, McGraw-Hill