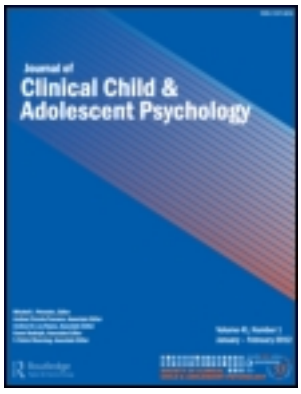

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Effects of Childhood Aggression on Parenting during Adolescence: The Role of Parental Psychological Need Satisfaction

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Effects of Childhood Aggression on Parenting during Adolescence: The Role of Parental Psychological Need Satisfaction

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The current study examined the explanatory role of satisfaction of parental psychological needs in effects of childhood aggression on various adolescent-perceived parenting behaviors in middle adolescence. Research questions were examined in a large multi-informant, prospective community study of ethnic majority Belgian families ($N = 609$, 49.7% girls). Aggression was rated by parents when children were in middle childhood ($M_{age} = 7.5$ years) using the Child Behavior Checklist. Parents reported on satisfaction of their needs for autonomy, competence, and relatedness when children were in preadolescence ($M_{age} = 10.5$ years) and early adolescence ($M_{age} = 13.5$ years) using the Parenting Stress Index. Parenting behaviors were rated by adolescents in early adolescence ($M_{age} = 13.5$ years) and in middle adolescence ($M_{age} = 15.5$ years), using the Parenting Scale (overreactive discipline), the Psychological Control Scale, Youth Self-Report (psychological control), and the Parenting Practices Questionnaire (warmth). Mediation of associations from aggression to parenting by parents' psychological needs was examined using multiple mediation structural equation modeling analyses. Childhood aggression was related to decreased satisfaction of parents' needs for competence, relatedness, and autonomy in early adolescence. Satisfaction of parents' needs for relatedness and, to a lesser extent, competence affected later parenting, and satisfaction of all three needs affected changes in parenting. Relations were specific for the different parenting constructs but similar across parental gender. Targeting parents' psychological needs may aid effectiveness of interventions that are aimed at decreasing (psychologically, overreactive) controlling parenting and at increasing supportive parenting.

Theories on socialization recognize that, in addition to parents affecting children, children affect parenting behaviors (e.g., Patterson, 1982; Sameroff & MacKenzie, 2003). There is accumulating empirical support for this theoretical notion, with research demonstrating effects of child personality characteristics (de Haan, Deković, & Prinzie, 2012) and behaviors (Hafen & Laursen, 2009) on parenting behaviors. Possibly because of its visible and troubling nature, direct aggression is particularly likely to affect parents' behaviors (Rueter & Conger, 1998). Direct aggression comprises overtly problematic behaviors that are aimed at (physically)

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hurting another person, such as hitting and pushing, as well as overt verbal attacks such as name calling and threatening (Achenbach, 1991; Card, Stucky, Sawalani, & Little, 2008). Although direct aggression is, to some extent, normative during early childhood, children generally decrease in this form of aggression from middle childhood into adolescence (Bongers, Koot, van der Ende, & Verhulst, 2003). Some children, however, continue to display elevated levels of direct aggression as they grow older (Martino, Ellickson, Klein, McCaffrey, & Edelen, 2008). Elevated levels of direct aggression during late childhood have been found to undermine psychosocial adjustment and the quality of interpersonal relationships, such as the parent–child relationship (Card et al., 2008; Deković, Janssens, & van As, 2003; Scaramella, Conger, Spoth, & Simons, 2002). Explanatory mechanisms for effects of direct aggression on parenting are, however, less well understood.

A plausible theoretical explanation for detrimental effects of direct aggression on parenting is provided by self-determination theory (SDT; Deci & Ryan, 2000). SDT asserts that three innate, universal psychological needs are essential to understand human behavior. According to SDT, all human beings have a fundamental need to feel competent, related, and autonomous (Deci & Ryan, 2000). On the basis of SDT, it can be reasoned that direct aggression detrimentally affects the quality of parental control and support because of its undermining effects on parents' needs of competence, relatedness, and autonomy. The current study tests these theoretical assertions, and as such offers a comprehensive explanation of *why* child direct aggression affects parenting.

PARENTING QUALITY

Parents use many different strategies to socialize their children, including supportive and controlling behaviors. An important type of supportive parenting behavior is parental warmth (also labeled responsiveness; MacDonald, 1992). Warmth comprises behaviors such as showing empathy and affection, and expressing an interest in the child's life (Davidov & Grusec, 2006; Locke & Prinz, 2002). Warmth is important for the formation of a secure attachment (MacDonald, 1992; Rothbaum & Weisz, 1994). Adolescents who are securely attached engage in the outside world knowing that they will always be welcomed when they return to their parents for safety (Bowlby, 1969, 1988). A secure attachment to parents during adolescence promotes internalization of parental rules and regulations (Rothbaum & Weisz, 1994) and is associated with less problem behavior (for a review, see Moretti & Peled, 2004).

Whereas the construct of parental warmth has a rather clear and consensually agreed-upon definition, the construct of parental control is relatively more complex and ambiguous. In contemporary socialization research (Barber, Stolz, & Olsen, 2005; Skinner, Johnson, & Snyder, 2005) and SDT-based research (Grolnick, Deci, & Ryan, 1997; Soenens & Vansteenkiste, 2010), a distinction is made between parental control as pressure and as structure or regulation. Whereas structure or regulation refers to the provision of guidelines for behavior and the development of a predictable family climate, pressure refers to intrusive, manipulative, and dominant parental behavior. Because child problem behaviors have been linked more reliably to parental pressure than to parental structure or regulation, the present study focused on parental control as pressure. Within the construct of control as pressure, a further distinction can be made between externally pressuring and internally pressuring strategies. First, overreactive discipline entails the tendency of parents to respond impatiently and in an overtly aversive fashion (i.e., with blunt expressions of anger, frustration, meanness, and irritation) to problematic behavior of their children (Arnold, O'Leary, Wolff, & Acker, 1993; Prinzie, Onghena, & Hellinckx, 2007). Second, psychological control comprises attempts to pressure the child through relatively more insidious and manipulative tactics, such as guilt-induction, shaming, and love withdrawal (Barber, 1996). In contrast to overreactive discipline, which typically involves parental attempts to pressure the child through external contingencies (e.g., yelling, threats of physical punishment), psychological control appeals to internally pressuring feelings in the child's functioning, such as guilt, inferiority, and separation anxiety (Soenens & Vansteenkiste, 2010). Although overreactive discipline and psychological control may increase obedience and appropriate behavior in the short term, they are likely to backfire and increase children's problem behaviors in the long run (Patterson, 1982).

The parent–child relationship is particularly likely to change during adolescence (Steinberg, 2001), and the quality of parenting importantly affects how children navigate through this challenging period of life (Barber et al, 2005; Steinberg, 2001). The present study focused on three parenting constructs, assessed in adolescence, which fall into the typology of support and control and which have particularly robust associations with adolescent problem behaviors: warmth (Barber et al., 2005), overreactive discipline (de Haan, Deković, & Prinzie, 2010; van den Akker, Deković, & Prinzie, 2010), and psychological control (Barber et al., 2005; Soenens, Vansteenkiste, Luyckx, & Goossens, 2006).

CHILD-DRIVEN EFFECTS ON PARENTING QUALITY

Children's behaviors may have a substantial impact on parenting behaviors and the parent–child relationship. In his seminal article, Bell (1968) proposed that parents

modified their use of certain parenting techniques based on the congruence between their expectations and the actual behavior exhibited by the child. Following this critical review, developmental models that aimed to explain individual differences in parenting behaviors began to incorporate bidirectional parent–child effects. For example, Patterson's (1982) well-known coercion theory emphasizes that, in addition to the impact of parenting behaviors on child behaviors, researchers should acknowledge that children's problem behaviors lead to less positive (warm, responsive) parenting practices and reinforce harsh and coercive parenting.

Consistent with the notion of child-driven effects, a number of longitudinal studies showed that, in response to children's externalizing behaviors, parents increased in punitive, overreactive disciplinary techniques (Deković et al., 2003; Roche, Ghazarian, Little, & Leventhal, 2010) and psychologically controlling parenting (e.g., Steeger & Gondoli, 2012), and decreased in supportive-parenting, such as warmth (Deković et al., 2003; Scaramella et al., 2002). Results from these studies suggest that, notwithstanding the continuous impact of parents' behaviors on child behavior, children's problem behaviors may substantially affect parenting. The current study examines long-term associations (across 8 years) between direct child aggression and several types of adolescent-perceived parenting behaviors.

EXPLANATORY MECHANISMS FOR CHILD-DRIVEN EFFECTS

SDT posits that the psychological needs for competence, relatedness, and autonomy are critical for understanding human behavior. The need for competence, which is conceptually related to self-efficacy (Bandura, 1989; Mah & Johnston, 2008), refers to the desire to feel effective and skillful in the activities one undertakes. When the need for competence is thwarted, people feel incapable and inferior. The need for relatedness implies that people have an innate desire to feel connected to others—to love and care, and to be loved and cared for (Baumeister & Leary, 1995; Deci & Ryan, 2000). The need for relatedness has connections to attachment theory, in which it is similarly posited that a threat to feelings of security creates anxiety and generates anger, which may lead to disturbances in behavior (Bowlby, 1969, 1988). When the need for relatedness is thwarted, people feel alienated from their social surroundings and experience others as cold, indifferent, or even hostile. The need for autonomy refers to the natural desire of people to experience their behavior as freely chosen and volitional. When satisfied, people experience a sense of self-endorsement, initiative, and authenticity. When frustrated, people feel coerced to engage in activities and they experience a sense of pressure (Deci & Ryan, 2000).

We expect that all three psychological needs may mediate associations between aggression and parenting. First, direct aggression may signal parental incompetence in regulating the child's behavior. As such, aggression may threaten parents' feelings of effectiveness as socialization figures, thereby undermining parents' need for competence. Further, direct aggression likely violates parental trust and alienates parents from their children, thereby undermining parents' need for relatedness. In addition, direct aggression may bring about many conflicts as well as emotional and practical problems in the family. As a consequence, parents may experience their role as a parent as a burden and as an obligatory task that frustrates their need for autonomy. To date, there is only indirect and preliminary evidence supporting the effects of child aggression on parental psychological needs satisfaction. For instance, empirical studies show that child aggression is related to lower parental self-efficacy (Day, Factor, & Szkiba-Day, 1994; Mah & Johsnston, 2008; Sanders & Woolley, 2005), which is conceptually linked to parents' need for competence. Systematic research about associations between child aggression and parental feelings of relatedness and autonomy is currently lacking. The current study examines effects of aggression on parents' psychological needs satisfaction during early adolescence, because parents' psychological need satisfaction may be particularly susceptible to change during this phase. Early adolescence is characterized, somewhat paradoxically, by increases both in children's reasoning skills and in impulsive and reckless behaviors (Reyna & Farley, 2006). Parents are, therefore, often left to reconcile unpredictable and erratic behaviors.

Conversely, when parents' needs for competence, relatedness, and autonomy are frustrated, parents may display less optimal parenting. Individuals whose psychological needs are thwarted have less energy available to relate to others in a vital, open, and responsive fashion (Deci & Ryan, 2000; La Guardia, Ryan, Couchman, & Deci, 2000). Further, need frustration is hypothesized to elicit compensatory and derivative means to overcome need frustration (Deci & Ryan, 2000). Translated to the parenting context, this implies that parents whose needs for competence, relatedness, or autonomy have been frustrated likely interact with their children in a cold and indifferent fashion, and may seek for the shortest and most cost-effective way to decrease their child's aggressive behavior. Thus, a lack of parental psychological needs satisfaction is likely related to several types of maladaptive parenting behaviors, including low warmth and high overreactive discipline and psychological control.

Again there is preliminary evidence suggesting an association between processes of parental need satisfaction

and parenting. For instance, extant work using self-efficacy theory (Bandura, 1989) has pointed to the importance of parental feelings of competence for parenting behavior. Specifically, maternal feelings of parenting competence have been associated with mothers' capacity to provide an adaptive, stimulating, and nurturing child-rearing environment, as characterized by higher maternal responsiveness and less defensive behaviors, fewer displays of negative affect, and a reduced use of punitive disciplinary techniques (for a review, see Jones & Prinz, 2005).

Although parts of the hypothesized mediation sequence received some empirical support, we know of no studies that simultaneously examined the mediating role of the three basic psychological needs that are identified by SDT. The current study therefore examined the mediating role of parental feelings of competence, relatedness, and autonomy in longitudinal associations from direct aggression to (adolescent-perceived) parental overreactive discipline, psychological control, and warmth.

AIMS AND HYPOTHESES

The overall aim of this study was to improve our understanding of child-driven effects on parenting. Specifically, this study examined whether parental psychological need satisfaction explained relations from childhood direct aggression to three types of parenting behavior, assessed 8 years later by adolescents. We further explored whether the patterns of associations were similar for mothers and fathers. Based on theory (Bell, 1968; Patterson, 1982; Sameroff & MacKenzie, 2003) and empirical evidence (Roche et al., 2010; Scaramella et al., 2002), we expected that elevated childhood direct aggression would be related to lower warmth and to higher overreactive discipline and psychological control in adolescence. Moreover, on the basis of SDT (Deci & Ryan, 2000) and research on parental self-efficacy (Day et al., 1994), we expected that aggression would be related to lower feelings of competence, relatedness, and autonomy in preadolescence, and through this, to less supportive and more controlling (overreactive, psychological control) parenting in middle adolescence. Because the three needs represent universal psychological nutriments, the effects of which have been shown to generalize across gender (Deci & Ryan, 2000), we expected that the indirect associations through competence, relatedness, and autonomy would be similar for mothers and fathers.

METHOD

Procedure and Participants

This study is part of the longitudinal Flemish Study on Parenting, Personality, and Development that started in 1999 (Prinzie et al., 2003). A proportional stratified sample of elementary-school-aged children attending regular schools in Belgium (Flanders) was randomly selected. That is, the names of the children who have their birthday before March 31 were arranged alphabetically; the second and the last child but one were selected. Strata were constructed according to geographical location (province), gender, and age. Parents received an invitation letter to participate in "a study of child development." When parents agreed to be contacted by the investigators, the researcher called the parents, explained the study, and obtained written permission. Out of 800 invited families, 674 families (85.3%) responded to the questionnaires. Participants took part voluntarily, and anonymity and confidentiality were guaranteed. All participants were ethnic majority Belgians.

For the current study, variables were selected from the third (Time 1 [T1]; 2001), fifth (Time 2 [T2]; 2007), and sixth (Time 3 [T3]; 2009) measurement waves. At T1, 602 families participated. In 560 families, both parents participated, in 39 families only the mother participated, and in three families only the father participated. Children's age ranged between 6 and 9 years ($M = 7$ years 6 months), and 49.7% ($N = 299$) were girls. Mothers' age ranged between 27 and 52 years ($M = 36$ years 7 months), and fathers' age ranged between 28 and 61 years ($M = 41$ years 6 months). At T1, 562 families (93.4%) were a two-parent household, and in 31 families (5.1%), parents were divorced. In two families (0.3%) the father had passed away, and seven families (1.2%) did not indicate household composition. Percentages of mothers (M) and fathers (F) with various educational levels were as follows: elementary school, M = 1.0, F = 3.0; secondary education, M = 40.9, F = 40.2; nonuniversity higher education M = 44.6, F = 32.9; university M = 12.5, F = 17.8. For mothers, the average occupational level (van Westerlaak, Kropman, & Collaris, 1975) was 3.49 ($SD = 1.38$, range = 1–6) and for fathers 3.59 ($SD = 1.58$, range 1–6), which is representative for the Belgian population. At T2, 457 families participated (451 mothers, 422 fathers), and at T3, adolescents rated the parenting behaviors of 421 mothers and 411 fathers (430 families).

To examine whether respondents for whom full data for the measures were obtained, differed from respondents who had missing data for any of the measures, attrition analyses were performed. Mothers and fathers who participated at both T1 and T2 did not differ from parents who had missing values at T2, regarding their assessment of child aggression, or their own need satisfaction at T1 (for mothers, F values ranged between 0.03 and 2.33, $ps \geq .127$; for fathers, F values ranged from 0.21 to 3.79, $ps \geq .052$). Adolescents who participated at both T2 and T3 did not report different

levels of parenting at T2 than adolescents who did not participate at T3 (F values ranged between 0.02 and 1.85, $ps \geq .174$). Moreover, Little's MCAR tests suggested that missing values were completely at random, for the mother data, $\chi^2(273) = 311.23$, $p = .06$, and for the father data, $\chi^2(311) = 349.35$, $p = .07$. To maximize data, missing values were imputed using the Expected Maximization algorithm, for the mother data and father data separately. As such, data from all respondents who provided information at Time 1 could be included in the analyses.

Measures

Aggression. Child aggression was rated by mothers and fathers at T1 using the Dutch translation of the Child Behavior Checklist (Achenbach, 1991; Verhulst, van der Ende, & Koot, 1996), Aggression subscale. The Aggression subscale has 18 items and comprises behaviors such as yelling, hitting, and name calling. The Child Behavior Checklist is an extensively validated instrument with adequate reliability and validity (Achenbach, 1991; Verhulst et al., 1996). Each item is rated as 0 (*not true*), 1 (*somewhat/sometimes true*), or 2 (*very/often true*). Cronbach's alphas were .89 for mother ratings and .88 for father ratings.

Psychological need satisfaction. At T1 and T2, parents reported on their psychological need satisfaction. We used the Sense of Competence, Attachment, and Role-Restriction scales of the Parenting Stress Index (Abidin, 1990; Jones & Prinz, 2005). The Sense of Competence scale (13 items) measures parents' perceptions of their competence in terms of generally handling difficulties, coping with daily demands, and exercising control over child behavior (e.g., "I feel that I am not very good at being a parent"). This scale was used an indicator of parental satisfaction of the need for competence. The Attachment scale (seven items) measures parents' experience of closeness in the parent–child dyad (e.g., "I am bothered that I have less close and affective feelings for my child than I expected"). This scale was used an indicator of parental satisfaction of the need for relatedness. The Role-Restriction scale (seven items) measures the extent to which parents feels restricted by their obligations as a parent (e.g., "I often feel that my child's needs and wishes control my life"), which is the inverse of parental autonomy. After it was reverse scored, this scale was used an indicator of parental satisfaction of the need for autonomy. Items are rated on a 6-point scale ranging from 1 (*disagree completely*) to 6 (*agree completely*). Scales were coded such that higher scores reflected higher feelings of need satisfaction. The sense of competence, relatedness (Deković et al., 2003; Friedman, Holmbeck, Jandasek, Zukerman, & Abad, 2004), and role restriction scales (Friedman et al., 2004) have been found to be reliable and valid in other samples of families with early adolescent children. In this study, Cronbach's alphas ranged between .74 and .88.

Parenting behavior. Adolescents rated their parents' warmth and overreactive discipline at T2 and T3, and parents' psychological control at T3 only. Using adolescent ratings of parenting is consistent with the view that the impact of parenting on adolescent adjustment is mediated by how adolescents perceive their parents' behaviors (Neiderhiser, Pike, Hetherington, & Reiss, 1998) and avoids rater bias.

Overreactive discipline was assessed using the Overreactivity scale of the Parenting Scale (Arnold et al., 1993; Prinzie et al., 2007). This scale (nine items) assesses parents' tendencies to respond to problematic behavior of their children with anger, frustration, meanness, irritation, and impatience. Items represent discipline encounters followed by two options that act as opposite anchor points for a 7-point scale, where 1 indicates a high probability of using an effective discipline strategy (e.g., "When I misbehave . . . My mother speaks to me calmly") and 7 indicates a high probability of making a discipline mistake (e.g., "She raises her voice or yells"). The instrument has adequate test–retest reliability, distinguishes clinical from nonclinical samples, and has been validated against behavioral observations of parenting (Arnold et al., 1993; Locke & Prinz, 2002). In this study, Cronbach's alphas for adolescent-perceived parenting ranged between .82 and .84.

Psychologically controlling parenting was assessed using the Psychological Control Scale, Youth Self-Report (Barber, 1996; Barber, Olsen, & Shagle, 1994). The scale (eight items) measures several aspects of psychologically controlling parenting: constraining verbal expressions, personal attack, love withdrawal, and invalidating feelings (e.g., "Is always trying to change how I think or feel about things"). Items were rated on a 6-point scale, ranging from 1 (*completely disagree*) to 6 (*completely agree*). Barber (1996) found good internal consistency reliabilities for adolescent reports of maternal psychological control. In this study, Cronbach's alphas were .79 and .82, respectively, for mothers' and fathers' psychological control at T3.

Warmth was assessed using the Warmth/Involvement scale of the Parenting Practices Questionnaire (Robinson, Mandleco, Frost Olsen, & Hart, 1995). Adolescent ratings of this measure have been found to be reliable and valid (Siffert, Schwarz, & Stutz, 2012).

The Warmth subscale (11 items) assesses the extent to which parents exhibit warm parenting and are involved in their children's lives (e.g., ''My mother shows empathy when I am hurt or frustrated''). Items are on a 5-point scale ranging from 1 (*never*) to 5 (*always*). In this study, Cronbach's alphas ranged between .89 and .91.

Overview of Analyses

First, descriptive statistics of the measures (means, standard deviations) and bivariate relationships among the measures were examined. We also examined parental gender differences in levels of the study variables using paired samples *t* tests. Then, the effects of aggression on needs satisfaction and parenting, and of needs satisfaction on parenting, were examined. To avoid rater bias, father-rated child aggression was examined in relation to mothers' self-assessed need satisfaction and adolescent ratings of mothers' parenting. Conversely, mother-rated child aggression was related to fathers' self-reported need satisfaction and adolescent ratings of fathers' parenting. In initial analyses, we examined the extent to which associations between the study variables were different for mothers and fathers. Specifically, using a path model within a multigroup structural equation modeling (SEM) approach, we compared the chi-square values of two models: (a) a model in which the hypothesized associations between the study variables were freely estimated (i.e., were allowed to vary between mothers and fathers) and (b) a model in which these associations were constrained to be equal for mothers and fathers. A nonsignificant difference in chi-square ($p > .05$) between these nested models indicates that associations are similar for mothers' versus fathers' needs satisfaction and/or parenting.

The proposed mediation model was tested in two ways, using SEM. First, we tested a prospective model in which the T2 (2007) levels of parental satisfaction of competence, closeness, and autonomy were modeled as intervening variables in associations between T1 (2001) levels of aggression and T3 (2009) levels of the three parenting behaviors. Second, it was examined whether aggression was also related to changes in needs satisfaction and parenting and whether needs satisfaction was also related to changes in parenting, by analyzing a model in which previous (2001) levels of needs satisfaction and previous (2007) levels of overreactive discipline and warmth were controlled for. Because psychological control was measured only at T3, we could not model changes in psychological control in this model. All mediation SEM models were examined using multiple mediation analyses in MPlus 5.0 (Muthén & Muthén, 1998–2006). A bootstrapped method was used to estimate significance of indirect effects, which makes no assumptions about the sampling distribution of direct or indirect effects. Instead, bootstrapping approximates the sampling distribution empirically, with no recourse to mathematical derivations. Bootstrapping has been shown to be superior to other methods to estimate the indirect effects, both in terms of power and Type I error rates (Preacher & Hayes, 2008).

In all models, background variables (child age, child gender, parental age, and/or educational level), which in the correlation analyses were found to be significantly related with the study variables, were included as control variables.

RESULTS

Descriptive Statistics and Bivariate Intercorrelations

Means, standard deviations, and results of paired samples *t* tests (testing for differences between maternal and paternal ratings) are presented in Table 1. Mothers reported higher levels of aggression than fathers. Mothers also reported lower satisfaction of the need for competence and higher satisfaction of the needs for relatedness and autonomy than fathers. Finally, mothers were rated as higher on warmth and psychological control and lower on overreactive discipline than fathers (although this effect only showed up at T3). It should be noted, however, that most mean-level differences were small to moderate in terms of effect size.

Correlations (Table 2) show that aggression was directly related to adolescent-perceived maternal and paternal overreactive discipline, psychological control, and warmth, assessed 8 years later. Further, aggression was negatively related to mothers' and fathers' feelings

TABLE 1
Descriptive Statistics of the Measures

	Mothers		*Fathers*		*Mother–Father Comparison*			
	M	*SD*	*M*	*SD*	$\|t\|$	*df*	*p*	$\|d\|$
Time 1 (2001)								
Aggression	6.33	5.66	5.59	5.25	3.88	556	.00	.14
Competence	5.21	0.66	5.28	0.61	2.64	553	.01	.11
Relatedness	5.56	0.53	5.46	0.57	3.87	553	.00	.18
Autonomy	4.59	0.91	4.81	0.89	5.17	553	.00	.24
Time 2 (2007)								
Competence	5.08	0.71	5.15	0.67	1.66	430	.10	.10
Relatedness	5.36	0.62	5.24	0.68	3.67	430	.00	.19
Autonomy	4.69	0.86	4.86	0.85	3.42	430	.00	.20
Overreactive Discipline	3.24	1.04	3.35	1.13	1.55	445	.12	.10
Warmth	3.62	0.72	3.06	0.83	16.23	445	.00	.72
Time 3 (2009)								
Overreactive Discipline	3.36	1.03	3.54	1.16	2.67	418	.01	.16
Warmth	3.44	0.73	2.84	0.80	16.41	418	.00	.78
Psychological Control	2.44	0.89	2.28	0.90	3.92	419	.00	.18

TABLE 2
Correlations Between the Measures

	1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*	*13.*	*14*	*15.*
1. Aggression T1	**.68**	**−.31**	**−.40**	**−.23**	**−.27**	**−.28**	**−.25**	**.24**	−.03	**.20**	**−.10**	**.19**	.04	**−.10**	**−.18**
2. Competence T1	**−.43**	**.39**	**.69**	**.53**	**.62**	**.52**	**.42**	**−.17**	**.14**	**−.17**	**.17**	−.06	−.06	−.03	**.07**
3. Relatedness T1	**−.50**	**.61**	**.40**	**.43**	**.46**	**.55**	**.37**	**−.20**	**.22**	**−.13**	**.18**	**−.08**	−.02	−.04	**.09**
4. Autonomy T1	**−.28**	**.53**	**.42**	**.36**	**.37**	**.32**	**.59**	**−.11**	**.11**	**−.14**	**.11**	.00	.02	.06	.01
5. Competence T2	**−.35**	**.63**	**.46**	**.42**	**.38**	**.74**	**.61**	**−.30**	**.21**	**−.24**	**.17**	**−.12**	−.06	**−.13**	.05
6. Relatedness T2	**−.42**	**.46**	**.55**	**.36**	**.72**	**.45**	**.52**	**−.28**	**.30**	**−.21**	**.24**	**−.15**	−.05	**−.14**	.05
7. Autonomy T2	**−.25**	**.35**	**.31**	**.62**	**.53**	**.44**	**.33**	**−.20**	**.10**	**−.23**	**.13**	**−.11**	.03	−.01	**.07**
8. Overreact T2	**.22**	**−.15**	**−.17**	**−.09**	**−.31**	**−.32**	**−.14**	**.35**	**−.41**	**.58**	**−.33**	**.36**	**.08**	**.14**	**−.08**
9. Warmth T2	**−.12**	**.14**	**.18**	**.09**	**.25**	**.31**	**.07**	**−.38**	**.56**	**−.28**	**.59**	**−.17**	**−.10**	**−.29**	−.03
10. Overreact T3	**.15**	**−.12**	**−.14**	−.04	**−.27**	**−.28**	**−.15**	**.62**	**−.29**	**.24**	**−.40**	**.53**	.00	.01	−.05
11. Warmth T3	**−.11**	**.12**	**.11**	.06	**.24**	**.26**	.05	**−.32**	**.60**	**−.37**	**.50**	**−.24**	**−.22**	**−.10**	**.11**
12. Psych. Control T3	**.11**	**−.07**	**−.09**	−.04	**−.18**	**−.20**	**−.16**	**.27**	**−.20**	**.49**	**−.39**	**.52**	.02	.04	−.05
13. Age Parent	−.05	**−.07**	.06	−.06	−.06	**.08**	−.02	−.03	−.02	**−.09**	.04	−.05		**.12**	.02
14. Age Child	**−.10**	.03	−.01	.05	−.03	−.00	**.07**	**.10**	**−.28**	.01	**−.11**	−.05	**.23**		.02
15. Gender Child[a]	**−.17**	**.12**	**.09**	.06	**.16**	**.12**	.06	−.04	**.10**	**−.08**	**.19**	**−.12**	.04	.02	

Note: Results regarding mother data are presented below the diagonal, regarding father data above the diagonal. Correlations between mother- and father-scores are on the diagonal. Coefficients in bold are significant at $^{*}p < .05$.

[a]Gender child was coded as (0 = boy, 1 = girl).

of competence, relatedness, and autonomy 6 years later. Competence, relatedness, and autonomy at T2 were associated with lower adolescent-perceived maternal and paternal overreactive discipline and psychological control at T3, and with more paternal, but not maternal, warmth at T3. Mother and father ratings of aggression were strongly correlated, mothers' and fathers' self-reported needs satisfaction were moderately correlated, and adolescent ratings of mothers' and fathers' parenting were moderately to strongly correlated.

Regarding background variables, correlations show that older children, and children of older mothers reported less warmth at T3. Older children reported more paternal warmth and less paternal overreactive discipline and psychological control at T3, and children of older fathers reported less overreactive discipline at T3. Girls reported more warmth and less overreactive discipline and psychological control from mothers, and more warmth from fathers at T3 than boys. Further, mothers of older children reported less competence and relatedness at T2, whereas fathers of older children reported more competence and relatedness at T2. Older fathers reported less competence at T2. Mothers of girls reported more competence and relatedness at T2, and fathers of girls reported more autonomy at T2. In the SEM analyses, we controlled for the relevant background characteristics by including them as predictor variables in the respective models.

Next, mediation analyses were performed, in which relations between all variables are taken into account. To facilitate interpretation of the impact of the predictors and mediators, scores for aggression and needs satisfaction were converted to be in the same scale (*z* scores).

Mediation Analyses

Results of analyses in which it was examined whether associations were similar for mothers' versus fathers' psychological needs satisfaction and parenting, suggested that paths were similar (not statistically different) across parental gender, $\Delta\chi^2(15) = 18.23$, $p = .25$. In the remainder of this section, we therefore do not distinguish between mothers and fathers. Specifically, all subsequent models were tested as constrained models in which coefficients for maternal and paternal ratings were equated. It should be kept in mind, however, that scores obtained by different informants were used for each of the constructs.

Results of the prospective mediation analysis (Figure 1) showed that the indirect effect of aggression on overreactivity through sense of competence was significant ($\beta = .04$, $SE = .01$). The indirect effects of aggression on psychological control ($\beta = .03$, $SE = .01$) and on warmth ($\beta = -.06$, $SE = .01$) through relatedness were significant. Aggression was not directly related to overreactivity ($\beta = .04$, $SE = .03$, *ns*), psychological control ($\beta = .001$, $SE = .04$, *ns*), or warmth ($\beta = .02$, $SE = .03$, *ns*), above and beyond its indirect effects through parental need satisfaction. For mothers, the model explained 8.3% of overreactivity, 2.0% of psychological control, and 10.1% of warmth. For fathers, the model explained 7.5% of overreactive discipline, 2.6% of psychological control, and 9.8% of warmth.

It was then examined whether aggression was also related to changes in need satisfaction and in parenting, and whether need satisfaction was, in turn, associated with changes in parenting (Figure 2). Aggression was

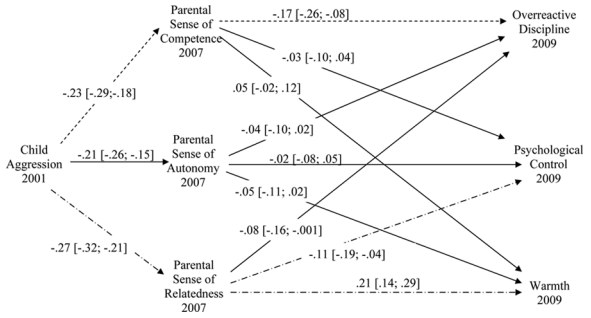

FIGURE 1 Associations in the prospective mediation model. *Note*: Standardized simple effects (z scores) are presented; 95% confidence intervals of the estimates are shown in brackets. Dashed lines indicate significant indirect effects. Direct associations and sizes of significant indirect effects are presented in the main body text only.

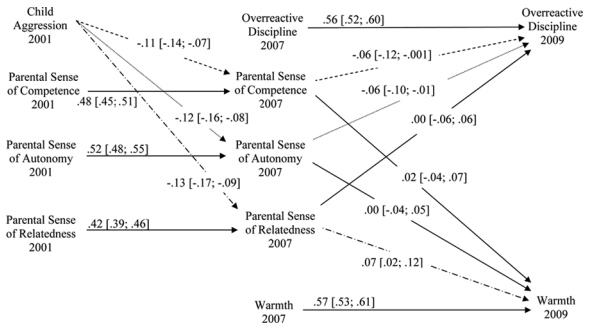

FIGURE 2 Explanation of changes in needs satisfaction and parenting. *Note*: Standardized simple effects (z scores) are presented, 95% confidence intervals of the estimates are shown in brackets. Dashed lines indicate significant indirect effects. Direct associations and sizes of significant indirect effects are presented in the main body text only.

related to changes in satisfaction of parental needs for competence, autonomy, and relatedness. Parents' relatedness satisfaction was related to increases in warmth, and parents' competence and autonomy satisfaction were related to decreases in overreactive discipline. Indirect effects of aggression on overreactive discipline via sense of competence ($\beta = .01$, $SE = .003$) and autonomy ($\beta = .01$, $SE = .003$) were significant. The indirect effect of aggression on (less) warmth through relatedness was significant ($\beta = -.01$, $SE = .005$). Aggression was not directly associated to changes in overreactive discipline ($\beta = -.01$, $SE = .02$, *ns*) or warmth ($\beta = .03$, $SE = .02$, *ns*) above and beyond its indirect effects through parental needs satisfaction.

DISCUSSION

For quite a long time, scholars have only paid lip service to the idea that child behavior may affect the quality of parents' rearing style (Kerr, Stattin, & Engels, 2008). Increasingly, however, research is demonstrating that children's problem behavior actually elicits inadequate parental responses that may further contribute to (rather than protect against) future problem behavior. As a consequence, the notion of child effects on parenting behavior is now widely accepted. Herein we argue that, if this alternative direction of effects is to be taken seriously, the next step in parenting research is to examine dynamic processes that may account for these child effects. This study aimed to increase our understanding of why a common type of problem behavior, direct aggression, is associated with later parenting by examining the mediating role of parental feelings of competence, relatedness, and autonomy. Further, it was explored whether associations were similar for mothers and fathers. Based on self-determination theory (Deci & Ryan, 2000), we expected that child aggression would be related to lowered feelings of parental competence, closeness to the child, and autonomy in early adolescence and, through this, to higher parental overreactive discipline, psychological control, and lower warmth in middle adolescence.

Aggression was directly related to higher overreactive discipline and psychological control and, at the trend level, to lower warmth in middle adolescence. These results offer further support for the possibility that parents, when confronted with child problem behaviors, may not necessarily respond in an adequate way but instead may increase the use of controlling techniques and lower their warmth and affection (Roche et al., 2010). Ironically, these are exactly the kind of parental behaviors that may further increase the odds of child problem behavior and aggression in particular. The finding that aggression is associated with later adolescent-perceived parenting is consistent with the notion that child problem behaviors detrimentally affect parenting (Patterson, 1982). In SDT, three types of pressures have been forwarded as important antecedents of controlling parenting (Grolnick, 2003), that is, pressures from above (e.g., stressful work conditions or low marital quality), pressures from within (e.g., pressuring forces in the parents' personality functioning), and pressures from below. Pressures from below represent features of the child's behavior that thwart parents' needs and, as such, increase the risk for parents' use of a controlling and autonomy-suppressing parenting style. The present study clearly illustrates that children's display of aggression represents such a pressure from below.

Further, feelings of competence mediated prospective associations from aggression to overreactive discipline, and feelings of relatedness mediated prospective associations from aggression to psychological control and warmth. Feelings of competence and autonomy mediated associations from aggression to changes in

overreactive discipline, and feelings of relatedness mediated relations from aggression to changes in warmth. Thus, relations between aggression and later parenting may be explained by parental feelings of need satisfaction. Although the mediation model explained only a small portion of the variance in adolescent-perceived parenting behaviors (around 2% of psychological control, 8% of overreactive discipline, and 10% of warmth) it should be kept in mind that this study provided a particularly conservative test of the mediating role of the three needs, by examining their role across an 8-year interval and by using different reporters for the independent, mediator, and dependent variables. Overall, these results support the theoretical claim that the extent to which parents' basic psychological needs are satisfied versus thwarted affect parental functioning (Deci & Ryan, 2000; La Guardia et al., 2000). When confronted with aggression, parents' trust in children may be violated and they may feel alienated from their children, such that their need for relatedness is thwarted. This thwarting of the need for relatedness seemed to be expressed mainly in terms of a lower display of parental warmth. Further, if children show more aggressive behaviors, parents may start doubting their effectiveness as parents such that their need for competence is thwarted. Consistent with data showing that self-perceived parental competence (or self-efficacy) has strong relations with parenting behavior (for a review, see Jones & Prinz, 2005; Mah & Johnston, 2008), we found that thwarting of the need for competence was related to higher overreactive discipline. The need for autonomy was not significantly related to levels of later parenting, but it was related to increases in overreactive discipline. These results suggest that child aggression may increase the likelihood that parents experience their role as a parents as a burden and as an obligatory task, which frustrates their need for autonomy and which relates to increased use of overreactive parenting.

Of interest, there seemed to be a certain degree of specificity involved in these associations, as satisfaction of the need for relatedness was particularly strongly related to parental warmth. In contrast, thwarting of the needs for competence and autonomy was relatively more strongly related to (changes in) overreactive discipline. These findings are somewhat consistent with the notion that different dimensions of parenting are relevant to the satisfaction (or thwarting) of specific needs. For instance, theoretically, parental warmth is considered to be particularly relevant to the satisfaction of children's need for relatedness because it signals involvement and closeness (Grolnick et al., 1997). Externally pressuring parenting, as expressed in overreactive discipline, would be relatively more relevant to the thwarting of children's need for autonomy and competence because it makes children feel pressured and ineffective (Grolnick et al., 1997). Hence, much like there is some degree of specificity in how specific parenting dimensions relate to specific needs in children's functioning, our data suggest that there is some specificity involved in the satisfaction of parents' own needs and their engagement in specific parental behaviors.

Together, results from this study extend current knowledge about why adolescent aggression is associated with later parenting by showing that needs satisfaction may be an important explaining mechanism for these relations. Our results show for the first time that not only do parenting behaviors affect adolescent functioning through adolescent needs satisfaction (e.g., Niemiec et al., 2006; Soenens & Vansteenkiste, 2010), but conversely, adolescent functioning also relates to parenting behaviors through parental needs satisfaction. Our finding that patterns of associations were similar for mothers and fathers further support the assertion that the three needs represent universal psychological nutriments that affect individuals' interpersonal behavior and well-being across gender (Deci & Ryan, 2000).

The findings of this study are also consistent with emerging evidence that processes of need satisfaction play an important role in the quality of interpersonal relationships more generally. It has been shown, for example, that need satisfaction is related to attachment security in partner relationships (La Guardia et al., 2000), possibly because partners whose needs are satisfied relate to the other partner in a more supportive fashion. Other studies suggest that need satisfaction is involved in teachers' use of autonomy-supportive practices (e.g., Roth, Assor, Kanat-Maymon, & Kaplan, 2007). To the best of our knowledge, the current study is among the first to directly examine the role of need satisfaction in parent behavior.

Implications for Research, Policy, and Practice

This study found that child aggression was related to satisfaction of all three needs, whereas associations from parents' need satisfaction to parenting behaviors were more specific. Unfortunately, it could not be examined whether need satisfaction was related to changes in psychological control. It is possible that, although parents' competence and autonomy satisfaction were not related to later levels of psychological control, they are related to changes in psychological control, much like was the case with overreactive discipline. Moreover, future research should incorporate short-term repeated measures of child problem behavior, parental needs satisfaction, and parenting, to provide a comprehensive test of the dynamics and reciprocities in the parent–child relationship (Patterson, 1982; Sameroff & MacKenzie, 2003). Research shows that there is significant variation

in individuals' need satisfaction from day to day and that these daily fluctuations in need satisfaction predict day-to-day variance in well-being (e.g., Ryan, Bernstein, & Brown, 2010). It would be useful to examine whether daily variation in parental need satisfaction also covaries with daily variation in their style of communicating with their children.

Given the relatively small amounts of explained variance, a second important aim for future research is to address the role of other explanatory factors in parental need satisfaction and parental behavior (Belsky, 1984), including (a) other features of child behavior (e.g., internalizing problems, school adjustment, and well-being); (b) features of parents' functioning, including personality and parental depression; (c) features of the social environment such as neighborhood safety; and (d) the complex interactions among these factors. Moreover, the model was tested in a sample of mainly well-adjusted ethnic majority families, and researchers should examine explanatory mechanisms of child-driven effects on parenting in other, more high-risk samples, such as families with highly aggressive youth, parental depression, or in families of ethnic minority background, to further test the generalizability of the proposed model.

Another important avenue for future research is to examine moderating effects of parental characteristics, such as personality, on the associations from aggression to parenting (through needs satisfaction). Personality researchers assert that personality shapes how people experience and interpret the social world (Caspi, Roberts, & Shiner, 2005). With regard to parenting, research increasingly shows that both broad-band personality dimensions (e.g., the Big Five; Prinzie, Stams, Deković, Reijntjes, & Belsky, 2009) and lower order features of parents' personality functioning (e.g., perfectionism and separation anxiety; Soenens, Vansteenkiste, Duriez, & Goossens, 2006) affect parents' use of control. Possibly, parents with a more resilient (e.g., emotionally stable) personality profile are less strongly affected by their children's behavior in terms of their personal need satisfaction and subsequent parenting behavior than parents with a more vulnerable (e.g., neurotic) personality profile. More generally, future research should examine interactions between pressures from below (i.e., child factors) with pressures from within (personality) or pressures from above (marital quality, work satisfaction) on parenting behavior.

Further, the family should be viewed as a dynamic and interactive system that consists of several interacting subsystems: the marital, sibling, and parent–child subsystem (Cox & Paley, 2003). Research that addresses how (interpersonal) behaviors of family members relate to needs satisfaction within each of these subsystems and, subsequently, to relationship quality may substantially add to current knowledge on family processes.

In terms of practical implications, results of this study point to the importance of parental need satisfaction as a key intervening process in associations between child behavior and quality of parenting style. As such, our results suggest that the effectiveness of interventions that are aimed at reducing ineffective, harsh parenting and promoting warm parenting may be increased by focusing on parents' needs satisfaction. One important goal in intervention programs may be to raise parents' awareness of how their child's aggressive behaviors affect their own psychological needs and, subsequently, their parenting. This awareness may help parents refrain from acting upon their feelings of needs frustration. That is, it may help parents to inhibit their dominant (and often counterproductive) response to child misbehavior and, instead, respond in a more constructive fashion, for instance, by communicating a rule and providing a clear rationale for the rule. Further, interventions may teach parents to use strategies for overcoming need frustration, such as discussing parenting problems with one's partner or close others (friends, family). If parents learn to become aware of, and cope with, their feelings of need frustration more effectively, they may be less likely to respond to their child's aggression in a harsh, ineffective way. Instead, they may become more likely to use effective and need-supportive parenting techniques that alleviate, rather than sustain, their children's aggressive behavior.

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