

# Rebels With a Cause? Adolescent Defiance From the Perspective of Reactance Theory and Self-Determination Theory

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The present investigation focused on adolescents' defiance against parents by drawing upon psychological reactance theory (Brehm, 1966) and self-determination theory (Ryan & Deci, 2000). Psychological reactance would be elicited when freedom is taken away, thereby motivating individuals to engage in oppositional behavior. Throughout four studies (total  $N = 1,472$ , age ranging between 12 and 21 years), it was examined whether a controlling parenting style related to adolescents' experiences of autonomy need frustration (i.e., pressure) and reactance. Reactance, in turn, would relate to more externalizing and internalizing problems. Support was obtained for these associations in community and clinical samples, making use of different informants, and controlling for responsiveness and rule setting. A vignette-based study provided further support. The discussion highlights theoretical and clinical implications.

Within popular and scientific literature, adolescence is often depicted as a turbulent developmental period for both adolescents and their parents (Steinberg, 2001). Whether we consider the popular troubled teenage character of James Dean in the 1955 movie *Rebel Without a Cause* or the Arctic Monkeys singing about the *Fluorescent Adolescent* years, rebellion and defiance against authority figures are recurrent themes. Also in scientific accounts, adolescents are considered to be at risk for emotional upheaval, engagement in rule-breaking behaviors, and resistance against parental authority (e.g., Arnett, 1999). Across four studies, we investigated why some adolescents defy parental rules and exhibit problem behaviors, thereby focusing on the role of controlling parenting.

Parental control is assumed to be a key aspect of childrearing and an important correlate of adjustment (Barber & Xia, 2013; Steinberg, 2001). However, parental control is a complex concept involving positive and constructive forms, such as behavioral control (Gray & Steinberg, 1999) or firm control (Chao, 1994) as well as negative and detrimental forms, such as psychological control (Barber, 1996) or coercive control (Rothbaum & Weisz, 1994). Hereinafter, the term *controlling* parenting

refers to an intrusive, pressuring, and coercive parenting style (i.e., a detrimental form of control), which may involve guilt induction, threats with punishment, and conditional regard (e.g., Barber, 1996; Soenens & Vansteenkiste, 2010). Abundant cross-sectional and longitudinal research has documented the bidirectional associations between controlling parenting and internalizing and externalizing problems among children and adolescents (e.g., Joussemet et al., 2008). Herein, we applied psychological reactance theory (PRT; Brehm, 1966) and self-determination theory (SDT; Ryan & Deci, 2000) to investigate the mechanisms behind this association among middle and late adolescents.

## *Psychological Reactance Theory*

Back in the 1960s, PRT was developed to explain why “forbidden fruits” are often more attractive (Brehm, 1966). According to PRT, prohibitions may elicit psychological reactance, that is, a “motivational state hypothesized to occur when a freedom is eliminated or threatened with elimination” (Brehm & Brehm, 1981, p. 37). Reactance is considered an aversive state, comprising both an emotional component (e.g., feelings of anger) and a cognitive component (e.g., a rejecting attitude toward authority; Rains, 2013). Reactance also entails the behavioral intention to reestablish the threatened freedom

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through the tendency to engage in the forbidden behavior (Brehm, 1966).

Previous research found reactance to be triggered when requests are framed in a pressuring way, such that people experience these requests as a threat to their freedom. For instance, dogmatic language was found to elicit reactance, whereas offering a choice did not (Dillard & Shen, 2005; Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003). Such effects have been documented using explicit attempts to induce pressure, such as forceful language in health messages (e.g., Quick & Stephenson, 2008), but also when pressure was induced in a more subtle way, such as through attention modification tasks (DeWall, Deckman, Maner, & Rouby, 2011) and priming (Chartrand, Dalton, & Fitzsimons, 2007). Furthermore, past research showed that the most apparent consequence of reactance is a "boomerang effect" where people tend to do exactly the opposite of what is requested (e.g., Quick & Stephenson, 2008; Rains, 2013). Although such restorative reactions are meant to regain freedom, they may come at the expense of one's personal preferences (Brehm, 1966).

Although psychological reactance was described initially as a state phenomenon, Brehm and Brehm (1981) added that there are stable individual differences in *reactance proneness*, which represents the dispositional propensity to experience reactance across situations. People high in reactance proneness are more sensitive to threats to their freedom (Chartrand et al., 2007) and react more strongly to influence attempts (e.g., Dillard & Shen, 2005). Reactance proneness would peak in adolescence (Grandpre et al., 2003), which may be due to adolescents' changing beliefs about parents' legitimate authority to impose rules and restrictions (Smetana, 1995).

Given the presumed role of parents in the development of reactance, the question arises whether a specific type of parenting is associated with reactance proneness. An additional reason why reactance warrants study within parent-adolescent relationships is because, at first sight, some propositions derived from PRT seem in contrast with findings from the parenting literature. While within PRT, prohibitions and rules that restrict adolescents' freedom are said to increase the likelihood of engaging in the forbidden behavior, socialization scholars emphasize the importance of parental regulation of undesirable behaviors, as a lack of regulation would be associated with more behavioral problems in adolescence (e.g., Steinberg, 2001). To resolve this seeming paradox, we also relied on SDT (Ryan & Deci, 2000).

### *Self-Determination Theory*

Central to SDT are the basic psychological needs for autonomy, relatedness, and competence. When satisfied, these needs foster growth and psychosocial adjustment. When frustrated, people would display maladjustment and psychopathology (Ryan & Deci, 2000; Vansteenkiste & Ryan, 2013). In the present study, we focus on the need for autonomy, which involves experiencing a sense of volition and psychological freedom in one's actions. When this need is frustrated, people feel pressured to behave, think, or feel in a nondesired way, which is typically accompanied with feelings of internal conflict and alienation from what people truly value (Deci & Ryan, 2000). As predicted by SDT, need frustration has been found to relate to maladjustment and psychopathology among adolescents and adults (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011).

Importantly, SDT assumes that the active obstruction of psychological needs would elicit defensive behavior to cope with the experienced need frustration (Deci & Ryan, 2000). Oppositional defiance is one potential coping response, which involves a blunt rejection of authority and a tendency to do the opposite of what is requested (Deci & Ryan, 1985; Skinner & Edge, 2002). Although the aim of oppositional defiance is to cope with need frustration, it typically increases subsequent need frustration (Vansteenkiste & Ryan, 2013). Indeed, oppositional defiance does not imply self-endorsed functioning, because people's actions are not grounded in genuinely valued interests and convictions; instead, their actions are determined by the external rules against which they react (Deci & Ryan, 1985; Skinner & Edge, 2002).

Furthermore, SDT specifies that perceived controlling parenting, in contrast to autonomy-supportive parenting, would be associated with more need frustration among adolescents (Grolnick, 2003; Soenens & Vansteenkiste, 2010). While controlling parents force children to think, act, or feel in prescribed ways, autonomy-supportive parents foster children's sense of volition and psychological freedom (e.g., by offering meaningful choice or by providing a rationale for a request; Grolnick, 2003; Soenens et al., 2007). As research increasingly supports the notion that controlling, relative to autonomy-supportive, parenting relates to need frustration among adolescents (e.g., Ahmad, Vansteenkiste, & Soenens, 2013), controlling parenting is particularly likely to predict oppositional defiance. Indeed, Vansteenkiste, Soenens, Van Petegem, and

Duriez (2014) found that a controlling communication of prohibitions predicted increases in middle adolescents' oppositional defiance against these prohibitions 1 year later.

Thus, SDT and PRT converge on the assumption that a sense of freedom (or autonomy) is important for predicting adaptive outcomes. Indeed, oppositional defiance shows a strong conceptual overlap with reactance, as both are triggered when a person experiences pressure, that is, when one's freedom is threatened (PRT) or when one's need for autonomy is thwarted (SDT). Controlling parenting was therefore hypothesized to relate to more reactance. Moreover, both theories emphasize that reactance manifests in a tendency to reject externally imposed rules. Adolescents high in reactance therefore were expected to engage in undesirable behavior (e.g., externalizing problems). Both theories also predict that reactance may have an emotional cost (as manifested in internalizing problems) because reactance would alienate people from their personal values and preferences (Brehm, 1966; Deci & Ryan, 1985).

Even though the two theoretical frameworks converge on various issues, they seem to diverge regarding the question of whether rules as such trigger reactance. In our view, PRT seems to assume that rule setting in and of itself may hinder autonomy and therefore may be associated with more reactance. In contrast, according to SDT, rule setting is an aspect of parental structure, which refers to parental behaviors and strategies that promote children's competence (Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010). As structure is largely orthogonal to the degree to which parents are controlling or autonomy supportive, SDT would expect rule setting to be unrelated to need frustration and reactance.

#### *Examining the Robustness and Generalizability of the Proposed Model*

Our overall aim was to examine whether controlling parenting relates to more need frustration among adolescents, which would be associated with more reactance toward the parents. Reactance, in turn, would relate to more externalizing and internalizing problems. To examine the robustness of this model, we examined whether the model (a) holds after controlling for parental responsiveness, (b) can be generalized to a sample of referred youth, (c) applies to middle and late adolescents and to boys and girls, and (d) is valid at the trait and state levels.

First, in order to test for the unique role of a controlling parenting style, we controlled for parental responsiveness, which pertains to parents' expressions of warmth and acceptance as well as their responsiveness to children's distress (Davidov & Grusec, 2006). In previous research, parents' responsiveness predicted decreased defiance against parents (e.g., Kochanska, Barry, Aksan, & Boldt, 2008). Many studies have found that responsiveness and controlling parenting are correlated negatively (e.g., Ahmad et al., 2013). Therefore, any association between controlling parenting and defiance may be spurious and accounted for by the variance shared with responsiveness.

Second, we tested whether the model would generalize to a sample of youngsters that are referred for antisocial behavior. Some scholars argue that there are systematic and qualitative differences between clinically referred versus nonclinical youth, not only in the average level of internalizing and externalizing symptoms, but also in the type and strength of association with certain parenting practices (e.g., Deater-Deckard & Dodge, 1997). According to Mason, Cauce, Gonzales, and Hiraga (1996), for instance, the dynamics of parental control may work differently among youth at risk for behavioral problems. These adolescents may benefit from at least moderate levels of parental control, in the sense of both parental rule setting and controlling parenting. In other words, to deal effectively with at-risk youngsters, it is important to be "neither too sweet nor too sour" (Mason et al., 1996, p. 2115). Technically, this hypothesis involves examining curvilinear effects between controlling parenting and outcomes to examine whether moderate levels of controlling parenting are most beneficial (Deater-Deckard & Dodge, 1997).

A third supplementary goal was to explore whether the proposed associations held up for middle and late adolescents and for boys and girls. We expected to find mean-level differences for age and gender, consistent with previous research (e.g., Bongers, Koot, van der Ende, & Verhulst, 2003). However, in spite of these mean-level differences, we expected the structural relations to be similar across age groups and gender.

Fourth, the proposed model was tested not only at the trait level (i.e., at the level of general individual differences in controlling parenting and reactance) but also at the state level. Recent research on personality states has shown that although individuals' trait personality dispositions relate to their personality states in specific situations, the association is far from perfect (e.g., Fleeson, 2007). Also, associations

between certain constructs may differ depending on the level of analysis (i.e., trait vs. state; Beckman, Wood, & Minbashian, 2010). That is, associations obtained at the level of personality traits are not necessarily perfectly equivalent with associations obtained at the level of personality states.

### The Present Research

In total, four studies were conducted. Study 1 was an initial test of the proposed associations, making use of adolescent reports only. In Study 2, we relied upon parent reports of parenting style and problem behavior. In Study 3, we tested these associations in a sample of referred youth. Study 4 was a scenario-based experimental investigation to examine whether the model generalized to the state level.

## Study 1

### Method

#### Participants and Procedure

Data were gathered in three secondary schools in the Dutch-speaking part of Belgium (Flanders), during a regular class period. Participation was voluntary and confidentiality was guaranteed in all studies. The sample comprised 544 high school students (42% boys) from 9th through 12th grades, ranging in age between 14 and 21 years ( $M = 16.6$ ). In total, 82% of the participants came from two-

parent families. The majority of the students (74%) followed an academic track, with the remaining students following a technical or vocational track. These descriptive statistics match closely with population statistics of Belgian adolescents at this age (Goossens & Luyckx, 2007). Most of the participants came from middle-class families. Missing data (5.97%) were likely missing at random, as Little's (1988) missing completely at random (MCAR) test was nonsignificant (normed  $\chi^2 = 1.59$ ). Hence, as in all subsequent studies, full information maximum likelihood was used.

### Measures

Unless mentioned otherwise, participants rated items on a 5-point scale, ranging from 1 (*completely not true*) to 5 (*completely true*), throughout the studies. Reliabilities are presented in Table 1.

*Parenting.* Adolescents reported about their mothers' and fathers' controlling, relative to autonomy-supportive, parenting style using a combination of two measures. That is, we administered the eight-item Psychological Control Scale-Youth Self Report (YSR; Barber, 1996; e.g., "My mother/father is less friendly to me if I don't see things like she/he does") and the seven-item Autonomy Support subscale of the Perceptions of Parents Scale (Grolnick, Ryan, & Deci, 1991; e.g., "Whenever possible, my mother/father allows me to choose what to do"). As in previous research (Soenens et al., 2007), there was a strong negative correlation between the two scales ( $r = -.61$  for mothers and  $r = -.69$  for

Table 1  
Means, Standard Deviations, Reliabilities, and Correlations Among the Variables of Study 1

	1	2	3	4	5	6	7	8	9	10	11
1. Controlling parenting M											
2. Parental rule setting M	.20***										
3. Responsiveness M	-.64***	-.03									
4. Controlling parenting F	.40***	.06	-.26***								
5. Parental rule setting F	.04	.55***	.00	.15**							
6. Responsiveness F	-.29***	-.01	.40***	-.63***	-.01						
7. Need frustration	.57***	.21***	-.48***	.50***	.08	-.41***					
8. Reactance proneness	.43***	.05	-.38***	.39***	.00	-.30***	.51***				
9. Deviant behavior	.13**	-.01	-.15***	.10*	-.10*	-.15**	.09*	.32***			
10. Behavioral misconduct	.31***	-.06	-.27***	.24***	-.15**	-.19***	.33***	.45***	.56***		
11. Age	-.05	-.01	-.05	.00	-.02	-.13**	-.15**	-.15**	-.01	-.11*	
<i>M</i>	2.24	3.84	3.81	2.30	3.79	3.42	2.40	2.57	0.37	2.32	16.56
<i>SD</i>	0.56	0.50	0.73	0.66	0.58	0.85	0.64	0.59	0.31	0.65	1.38
$\alpha$	.84	.70	.89	.88	.76	.91	.88	.87	.69	.80	NA

Note. M = mother; F = father; NA = not applicable.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

fathers,  $ps < .001$ ). Therefore, autonomy-supportive items were reverse coded and averaged with the items tapping into psychological control to obtain a general index of controlling (vs. autonomy-supportive) parenting. In addition, the Parental Expectations for Behavior subscale of the Parental Regulation Scale–YSR (PRS–YSR; Barber, 2002) tapped into mothers' and fathers' rule setting regarding desirable behavior (eight items; e.g., "My mother/father has clear expectations for how I should behave in and outside the home."). We also assessed responsiveness using a seven-item version of Acceptance-Rejection subscale of the Child Report of Parenting Behavior Inventory (Schaefer, 1965). An example item is: "My mother/father gives me a lot of care and attention."

*Need frustration.* A recently developed questionnaire measured autonomy need frustration (vs. satisfaction), that is, adolescents' experiences of pressure (vs. volition), in the parent–adolescent relationship (Van Petegem, Vansteenkiste, & Beyers, 2013). The scale consists of 10 items (e.g., "When I'm with my parents, I rarely have the feeling I can be myself"). Extensive validity information has been provided by Van Petegem et al. (2013).

*Reactance proneness.* Adolescents' reactance proneness toward the parents was assessed through a slightly adapted version of the 14-item Hong Psychological Reactance Scale (Hong & Faedda, 1996). Given that the scale taps into people's global propensity to experience reactance, items were reformulated to the parent–adolescent context (e.g., "Regulations of my parents trigger a sense of resistance in me"; see Van Petegem et al., 2013).

*Behavioral problems.* Two different indicators of behavioral problems were assessed. First, the Deviant Behavior Scale (Weinmann, 1992) assessed adolescents' norm-breaking behavior (10 items; e.g., stealing, involved in fighting) during the past 6 months and is rated on a frequency scale, ranging from 0 (*never*) to 3 (*frequently*). Second, the Behavioral Conduct subscale of Harter's Self-Perception Profile for Adolescents (five items; Harter, 1988; Wichstrom, 1995) taps into adolescents' behavioral conduct. This scale was reverse scored, such that higher scores reflect behavioral misconduct.

## Results and Discussion

### Preliminary Analyses

Descriptive statistics and correlations are presented in Table 1. Age correlated negatively with perceived paternal responsiveness, need frustration,

reactance, and behavioral conduct. Next, a multivariate analysis of variance (MANOVA), including gender and family structure as fixed factors, yielded significant multivariate results for gender,  $F(10, 529) = 4.72, p < .001, \eta^2 = .08$ , and family structure,  $F(10, 529) = 2.91, p < .01, \eta^2 = .05$ . Girls scored higher on maternal,  $F(1, 538) = 5.13, p < .05, \eta^2 = .01$  ( $M = 3.87$  vs.  $M = 3.72$  for girls vs. boys), and paternal responsiveness,  $F(1, 538) = 10.60, p < .01, \eta^2 = .02$  ( $M = 3.43$  vs.  $M = 3.20$ ), whereas boys scored higher on need frustration,  $F(1, 538) = 8.84, p < .01, \eta^2 = .02$  ( $M = 2.32$  vs.  $M = 2.48$  for girls vs. boys); behavioral misconduct,  $F(1, 538) = 8.14, p < .01, \eta^2 = .02$  ( $M = 2.32$  vs.  $M = 2.47$ ); and deviant behavior,  $F(1, 538) = 27.12, p < .001, \eta^2 = .05$  ( $M = .36$  vs.  $M = .50$ ). Furthermore, adolescents from intact families scored higher on paternal responsiveness,  $F(1, 538) = 6.71, p < .05, \eta^2 = .01$  ( $M = 3.44$  vs.  $M = 3.20$  for intact vs. nonintact families), and lower on behavioral misconduct,  $F(1, 538) = 5.85, p < .05, \eta^2 = .01$  ( $M = 2.31$  vs.  $M = 2.48$ ), and deviant behavior,  $F(1, 538) = 15.04, p < .001, \eta^2 = .03$  ( $M = .36$  vs.  $M = .50$ ).

### Primary Analyses

We used structural equation modeling (SEM) to test our hypothesized model, using robust maximum likelihood estimation in Mplus 7.00 (Muthén & Muthén, 2012). Each study variable was modeled as a latent variable represented by three parcels, created through a random selection of items. Behavioral problems was modeled as a higher order factor indicated by behavioral misconduct and deviant behavior. Model fit was evaluated based on the combined cutoff of .06 for the root mean square error of approximation (RMSEA) and .08 for the standardized root mean square residual (SRMR). In addition, a comparative fit index (CFI) of .95 or higher indicates a good fit (Marsh, Hau, & Wen, 2004). Analyses were performed separately for maternal and paternal ratings.

The estimated measurement model yielded a good fit for the mother and father models,  $\chi^2_s(172) = 282.32$  and  $290.92, ps < .001, CFIs = .98$  and  $.98, RMSEAs = .03$  and  $.04, SRMRs = .04$  and  $.04$ . The structural models are shown in Figure 1. Perceived maternal controlling parenting related to more need frustration after taking into account the role of maternal responsiveness and maternal rule settings, which yielded, respectively, a negative and a null relation with need frustration. In the father model, only perceived paternal controlling parenting related to more need frustration.

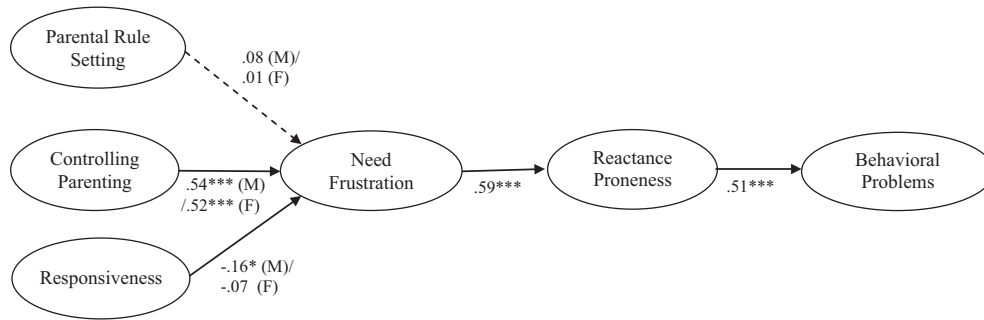


Figure 1. Structural equation model for Study 1,  $\chi^2(179) = 310.67$ ,  $p < .001$ , comparative fit index (CFI) = .98, root mean square error of approximation (RMSEA) = .04, standardized root mean square residual (SRMR) = .05 for the mother model;  $\chi^2(179) = 317.60$ ,  $p < .001$ , CFI = .98, RMSEA = .04, SRMR = .05 for the father model. M = mother, F = father. For clarity reasons, correlations between variables at the same level are not reported.

\* $p < .05$ . \*\*\* $p < .001$ .

Furthermore, need frustration related to reactance proneness, which in turn related to more behavioral problems. Associations between perceived parenting and need frustration were not significantly different for mothers versus fathers ( $z$  values ranging between  $-1.93$  and  $1.72$ ,  $ps > .05$ ). Moreover, both paternal and maternal controlling parenting yielded significant indirect effects through the intervening variables (i.e., need frustration and reactance) on behavioral problems ( $bs = .16$ ,  $p < .001$  for both models).

Next, we tested the moderating roles of gender and age (i.e., middle vs. late adolescence) through multigroup comparison. As recommended (e.g., Dimitrov, 2010), we first tested for metric invariance across groups through multigroup confirmatory factor analysis by comparing the fit of a constrained model (where factor loadings are fixed across groups) with the fit of an unconstrained model (where factor loadings are allowed to vary across groups). Then, we tested for structural equivalence by comparing a constrained model (with all structural paths set equal across groups) with an unconstrained model (with all paths set free). As indicators of model invariance, we examined the chi-square difference ( $\Delta\chi^2$ ), which should be nonsignificant, and the CFI difference ( $\Delta\text{CFI}$ ), which should be lower than .01 (e.g., Dimitrov, 2010).

After splitting the sample into a group of middle (14–16 years) and late (17–21 years) adolescents, metric invariance,  $\Delta\chi^2(14) = 20.46$ ,  $ns$ ,  $\Delta\text{CFI} = .001$  for the mother model, and  $\Delta\chi^2(14) = 15.81$ ,  $ns$ ,  $\Delta\text{CFI} = .000$  for the father model, and structural equivalence was obtained,  $\Delta\chi^2(6) = 2.06$ ,  $ns$ ,  $\Delta\text{CFI} = .000$  for the mother model, and  $\Delta\chi^2(6) < 1$ ,  $ns$ ,  $\Delta\text{CFI} = .001$  for the father model. Thus, the

uncovered factor structure and structural associations were equivalent for middle and late adolescents. As for gender, both the measurement model,  $\Delta\chi^2(14) = 15.48$ ,  $ns$ ,  $\Delta\text{CFI} = .001$  for the maternal ratings and  $\Delta\chi^2(14) = 11.08$ ,  $ns$ ,  $\Delta\text{CFI} = .000$  for the paternal ratings, and the structural model,  $\Delta\chi^2(6) = 3.39$ ,  $ns$ ,  $\Delta\text{CFI} = .000$  for the mother model and  $\Delta\chi^2(6) < 1$ ,  $ns$ ,  $\Delta\text{CFI} = .001$  for the father model, were found to be equivalent as well.

### Summary

Study 1 provided initial evidence for the validity of our proposed model, as adolescents who perceive their parents as controlling experienced more need frustration (i.e., pressure) in the parent–child relationship. Need frustration, in turn, related to more reactance proneness, which was related to adolescents' susceptibility for engaging in behavioral problems. The model held up across adolescents' ratings of both parents' rearing styles, across boys and girls and middle and late adolescents, as well as after controlling for perceived parental responsiveness and rule setting. Rule setting as such was unrelated to need frustration.

### Study 2

Given the exclusive reliance on adolescent reports in Study 1, Study 2 made use of a multi-informant assessment, with adolescents reporting on need frustration and reactance, and mothers reporting on their parenting style and on children's maladjustment. We also examined whether reactance would come with an adjustment cost, as indexed by internalizing problems.

### Method

#### Participants and Procedure

The sample comprised 596 adolescents and 591 mothers. Data were gathered in the context of a course on developmental psychology. Trained undergraduate students visited the families at home to administer the questionnaires. An informed consent was signed by the adolescent and the parents. Adolescents ranged in age between 12 and 19 years ( $M = 15.8$ ; 57% girls). Participants followed either an academic (66%), technical (24%), vocational (6%), or arts (3%) track. Most participants were of Belgian nationality (97%) and 81% of the adolescents came from intact families. Mothers' age ranged between 32 and 59 years ( $M = 45.7$ ). As for educational level, 34.5% of the mothers completed secondary education, 45.7% had a bachelor's degree, and 18.1% had a master's degree. Almost no data (0.8%) were missing; the MCAR test (normed  $\chi^2 = 1.70$ ) was nonsignificant.

#### Measures

The need frustration and reactance scales were filled out by the adolescents and were identical to Study 1. Table 2 contains reliability information.

*Parenting.* Mothers rated their own parenting style toward the participating adolescent. The same scales as in Study 1 were used to assess controlling parenting and responsiveness, but the items were adapted to parent report (e.g., "I give my son/daughter a lot of care and attention"). As indicators of parental rule setting, we used the Parental

Expectations subscale of the PRS–YSR again, combined with the Parental Monitoring subscale (eight items; e.g., "I ask my son/daughter questions about how he/she behaves outside the home"; Barber, 2002), as both subscales correlated strongly ( $r = .60$ ,  $p < .001$ ).

*Internalizing and externalizing problems.* Through the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001), mothers reported on their youngsters' internalizing (e.g., anxious/depressed symptoms; 31 items) and externalizing (e.g., rule-breaking behavior; 41 items) problems. Items were rated on a scale from 0 (*not at all*) to 2 (*very much*).

### Results and Discussion

#### Preliminary Analyses

Table 2 presents descriptive statistics and correlations. Adolescents' age correlated negatively with responsiveness and positively with internalizing problems. A MANOVA with gender and family structure as independent variables provided evidence for multivariate effects of gender,  $F(7, 575) = 4.35$ ,  $p < .001$ ,  $\eta^2 = .05$ , and family structure,  $F(7, 575) = 3.27$ ,  $p < .01$ ,  $\eta^2 = .04$ . As for gender, boys scored higher on reactance proneness,  $F(1, 581) = 19.58$ ,  $p < .001$ ,  $\eta^2 = .03$  ( $M = 2.37$  vs.  $M = 2.60$  for girls vs. boys); need frustration,  $F(1, 581) = 14.45$ ,  $p < .001$ ,  $\eta^2 = .02$  ( $M = 2.18$  vs.  $M = 2.36$ ); and externalizing symptoms,  $F(1, 581) = 9.45$ ,  $p < .01$ ,  $\eta^2 = .02$  ( $M = .20$  vs.  $M = .25$ ). As for family structure, nondivorced mothers reported more rule setting,  $F(1, 581) = 5.31$ ,  $p < .05$ ,

Table 2  
Means, Standard Deviations, Reliabilities, and Correlations Among the Variables of Study 2 (Top Half) and Study 3 (Bottom Half)

	1	2	3	4	5	6	7	8
<i>M</i>	2.13	4.02	4.30	2.24	2.44	0.25	0.20	15.77
<i>SD</i>	0.43	0.44	0.48	0.58	0.65	0.20	0.20	1.22
$\alpha$	.73	.78	.80	.86	.89	.86	.92	NA
1. Controlling parenting	—	-.01	-.36***	.33***	.24***	.16***	.32***	-.05
2. Parental rule setting	-.18	—	.25***	.08 <sup>†</sup>	.09*	.01	.07	-.06
3. Responsiveness	-.44**	.62***	—	-.24***	-.23***	-.13**	-.24***	-.09*
4. Need frustration	.64***	-.22	-.46**	—	.49***	.11**	.26***	-.06
5. Reactance proneness	.52***	.03	-.30 <sup>†</sup>	.51**	—	.18***	.39***	-.04
6. Internalizing symptoms	.27 <sup>†</sup>	.15	-.03	.22	.38*	—	.45***	.09*
7. Externalizing symptoms	.35*	.26 <sup>†</sup>	.15	.28 <sup>†</sup>	.47**	.66***	—	-.03
8. Age	.13	-.18	-.16	.03	.17	-.01	.27 <sup>†</sup>	—
<i>M</i>	2.55	3.57	3.81	2.40	2.38	0.53	0.74	16.28
<i>SD</i>	0.66	0.58	0.93	0.78	0.97	0.35	0.33	0.99
$\alpha$	.81	.78	.88	.69	.81	.92	.90	NA

Note. NA = not applicable.

<sup>†</sup> $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

$\eta^2 = .01$  ( $M = 4.05$  vs.  $M = 3.94$ ), and adolescents from intact families reported less externalizing problems,  $F(1, 581) = 11.13, p < .01, \eta^2 = .02$  ( $M = .19$  vs.  $M = .26$ ).

*Primary Analyses*

As in Study 1, main analyses were performed with SEM. The measurement model yielded a good fit,  $\chi^2(168) = 424.72, p < .001, CFI = .94, RMSEA = .05, SRMR = .05$ . The results of the structural model are presented in Figure 2. As in Study 1, mother-reported controlling parenting and responsiveness related, respectively, positively and negatively to adolescents' reports of need frustration. Different from Study 1, mother-reported rule setting related to more need frustration. Furthermore, need frustration related to reactance proneness, which in turn related positively to mother-reported ratings of externalizing and internalizing problems. Controlling parenting yielded a significant indirect effect via need frustration and reactance on internalizing ( $b = .04, p < .01$ ) and externalizing ( $b = .09, p < .001$ ) problems. Finally, we tested moderation by age group and gender using the same procedure as in Study 1. For age group, we contrasted early and middle adolescents (12–16 years) with late adolescents (17–19 years). As in Study 1, we found evidence for metric invariance,  $\Delta\chi^2(14) = 5.10, ns, \Delta CFI = .002$ , and structural equivalence,  $\Delta\chi^2(6) < 1, ns, \Delta CFI = .001$ , across age groups. As for gender, both metric,  $\Delta\chi^2(14) = 9.86, ns, \Delta CFI = .001$ , and structural invariance,  $\Delta\chi^2(6) = 4.11, ns, \Delta CFI = .001$ , were obtained as well. Thus, the model presented in Figure 2 held

up for middle and late adolescents and for boys and girls.

*Summary*

The present results replicate the findings of Study 1, this time using mother reports of parenting and adjustment. If mothers reported relying on a more controlling parenting style, their adolescents reported experiencing more need frustration and reactance proneness, which in turn related to more adolescent externalizing and internalizing problems as reported by their mothers. Different from Study 1, mother-reported rule setting predicted more experienced need frustration, which may be due to the use of different informants in the two studies. A supplementary analysis confirmed this interpretation, as the inclusion of adolescent reports on parenting in Study 2 provided the opportunity to further explore this issue. The obtained results were very similar to the findings of Study 1, with adolescent-reported controlling parenting relating to more experienced need frustration ( $b = .70, p < .001$ ). The degree of rule setting was unrelated ( $b = .02, ns$ ) and responsiveness was associated slightly negatively to need frustration ( $b = -.15, p < .05$ ). It seems, then, that differences between Studies 1 and 2 indeed were due to the different informant used to measure parenting (rather than specific sample characteristics).

**Study 3**

As the generalizability of Study 1 and 2 is limited to community families, the goal of Study 3 was to

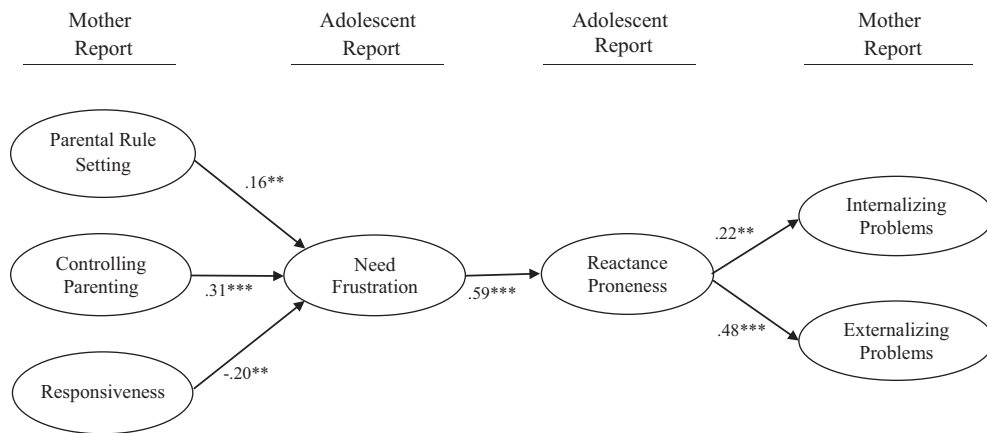


Figure 2. Structural equation model for Study 2,  $\chi^2(179) = 479.97, p < .001$ , comparative fit index = .93, root mean square error of approximation = .05, standardized root mean square residual = .07. For clarity reasons, correlations between variables at the same level are not reported. \*\* $p < .01$ . \*\*\* $p < .001$ .

test whether the proposed model would hold in a clinical sample of youngsters referred for antisocial behavior. Based on the work of Mason et al. (1996), one could expect that a moderate amount of perceived parental rule setting and controlling parenting would yield the most beneficial outcomes among at-risk youngsters. On the basis of SDT, however, one could expect the same direction and strength of associations as in Study 1 and 2 because perceived controlling parenting would be universally detrimental (Ryan & Deci, 2000). Therefore, we examined linear and curvilinear relations between parenting and need frustration and reactance. As in Studies 1 and 2, we controlled for responsiveness and rule setting.

### Method

#### Participants and Procedure

Participants were recruited in two residential mental health care centers in the Dutch-speaking part of Belgium, to which male adolescents are referred for behavioral problems. Although 46 adolescent boys initially participated, 3 cases were dropped because of low-quality responses. In the final sample ( $N = 43$ ; age range = 13–18 years,  $M = 16.3$ ), 1 participant followed an academic track, 2 followed a technical track, and the other 40 youngsters followed a vocational track. Furthermore, 15 adolescents (34.9%) reported coming from intact two-parent families, 26 adolescents (60.5%) had divorced parents, and in 2 cases (4.7%) one of the parents had deceased. Questionnaires were administered individually in the presence of a research collaborator. Informed consent was obtained from adolescents and their parents. The few missing data (1.1%) were missing at random (normed  $\chi^2 = 1.66$ , *ns*).

#### Measures

Reliability information is presented in Table 2. Perceived parenting was measured through the same questionnaires as in Study 2.

*Psychological need frustration.* Experienced need frustration in the mother–adolescent relationship was assessed using a five-item questionnaire (e.g., “When I’m with my mother, I feel free to be who I am,” reverse coded), which was based upon a well-validated autonomy need satisfaction questionnaire for close relationships (La Guardia, Ryan, Couchman, & Deci, 2000).

*Reactance proneness.* Adolescents’ reactance proneness was measured through a recently devel-

oped measure of Oppositional Defiance (Vansteenkiste et al., 2014). This four-item scale (e.g., “I do exactly the opposite of what my mother expects me to do”) correlates highly with the reactance proneness measure of Studies 1 and 2 ( $r_s > .70$ ; Van Petegem et al., 2013).

*Internalizing and externalizing problems.* Participants filled out the YSR (Achenbach & Rescorla, 2001), which is the adolescent self-report version of the CBCL used in Study 2, to assess internalizing and externalizing problems. Adolescents answered items on a scale ranging from 0 (*not at all*) to 2 (*very much*).

### Results and Discussion

#### Preliminary Analyses

Descriptive statistics and correlations are presented in Table 2. A MANOVA indicated no mean-level differences between intact versus nonintact families,  $F(5, 35) < 1$ , *ns*. Furthermore, age correlated only marginally positively with externalizing problems.

#### Primary Analyses

The small sample size precluded us from performing SEM with latent variables. Hence, we tested our integrated model through path analysis with manifest variables. The model fit the data well,  $\chi^2(39) = 46.96$ , *ns*, CFI = .96. The values of the RMSEA and SRMR fit indices were rather high (.07 and .10, respectively). However, these fit indices tend to be strongly biased when the sample size is small and therefore it is recommended not to take these into account (e.g., Kenny, Kaniskan, & McCoach, 2014). The path model is presented in Figure 3. As in Studies 1 and 2, perceived controlling parenting related uniquely to need frustration. Need frustration related to reactance proneness, which in turn related to both internalizing and externalizing problems. Additionally, controlling parenting was associated indirectly with internalizing ( $b = .12$ ,  $p < .01$ ) and externalizing ( $b = .15$ ,  $p < .05$ ) problems through the intervening variables. Finally, curvilinear associations between the parenting variables and each of the other variables were nonsignificant ( $t$  values ranging between  $-.07$  and  $1.81$ , *ns*).

#### Summary

The findings of Study 3 indicate that our obtained associations generalize to a sample of

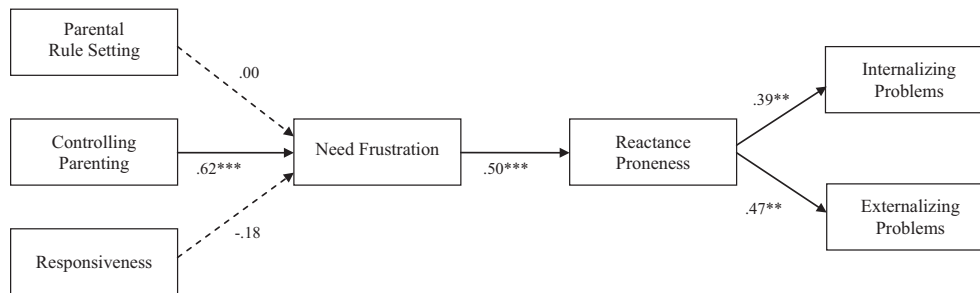


Figure 3. Path model for Study 3. For clarity reasons, correlations between variables at the same level are not reported.  $^{**}p < .01$ .  $^{***}p < .001$ .

clinically referred male youth. Clinically referred youth who perceive their parents as controlling reported more need frustration, which in turn was related to reactance proneness and subsequent externalizing and internalizing problems. Neither perceived responsiveness nor limit setting related to need frustration. Interestingly, there were no curvilinear associations between these parenting dimensions and any of the other variables, which contradicts the assumption that at-risk youth would benefit most from moderate levels of rule setting or controlling parenting (Mason et al., 1996).

#### Study 4

The first three studies focused on parenting and reactance at a general level. Yet, adolescents can also display reactance in more circumscribed situations in which they feel pressured by their parents. Therefore, in Study 4, we provided participants a hypothetical vignette in which parents formulated a specific request, using either a controlling, neutral, or autonomy-supportive style. We hypothesized that a controlling vignette would elicit more state reactance among adolescents, and that need frustration would explain why a controlling request elicits state reactance. State reactance, in turn, was expected to relate to adolescents' intention to engage in the undesirable behavior (i.e., studying less on a next occasion), which would be reflective of their tendency to oppose and reject the parental request.

In addition, we investigated the role of trait differences in reactance proneness in the parent-child relationship, thereby examining whether adolescents high on trait reactance proneness would display more need frustration and state reactance in the specific situation (i.e., a main effect of reactance proneness) and/or whether they would be more

susceptible to the controlling induction. Specifically, adolescents high on trait reactance might display elevated levels of need frustration state reactance, particularly in response to the controlling vignette (i.e., an interaction effect; e.g., Dillard & Shen, 2005).

#### Method

##### Participants and Procedure

Participants were 289 adolescents, ranging in age between 13 and 19 years ( $M = 15.8$  years; 51.2% girls). Almost all participants (96.8%) were of Belgian nationality. Most of the participants came from two-parent families (82.5%). Furthermore, 67.5%, 23.7%, 5.3%, and 2.5% of the participants followed, respectively, an academic, technical, vocational, and arts track. As in Study 2, trained undergraduate students visited adolescents at home. An informed consent was signed by the adolescents and the parents. During that meeting, participants provided background information and filled out a first set of questionnaires (including a measure of trait reactance proneness). A few days later, the students visited the same family again for the state questionnaires. Adolescents first read the description of a specific situation (i.e., coming home with bad grades) followed by a hypothetical maternal reaction to the situation, that is, the mother requesting the child to study more. The maternal reaction was either controlling, neutral, or autonomy supportive. After reading the vignette, participants filled out a number of state questionnaires. Appendix S1 in the online Supporting Information contains a description of the vignettes as well as information on the development and validity of the material. Participants were assigned randomly to the controlling ( $n = 97$ ), autonomy-supportive ( $n = 93$ ), or neutral ( $n = 99$ ) condition.

Only 0.3% of the data were missing; the MCAR test was not significant (normed  $\chi^2 < 1$ ).

Measures

Before filling out the vignette-based questionnaires, trait reactance proneness was assessed in the same way as in Studies 1 and 2. Reliabilities are presented in Table 3.

*State need frustration.* The degree of anticipated need frustration in the specific situation was assessed through a subscale of a recently developed need questionnaire (Chen et al., 2014). The subscale has eight items, tapping into the frustration (vs. satisfaction) of one’s need for autonomy. We adapted the items such that they refer to the specific situation (e.g., “If my mother would react like this, I would feel forced to do things I wouldn’t choose to do”).

*State reactance.* We assessed state reactance toward the request, thereby making use of the previously described four-item measure of oppositional defiance (Vansteenkiste et al., 2014). The items were also adjusted such that they referred to the specific request (e.g., “I would rebel against the request of my mother”).

*Intention to study.* We assessed adolescents’ intention to study more on a next occasion with three items, that is, whether they would be inclined to study more, to study differently, and to study more thoroughly. The item tapping into adolescents’ intention to study more correlated highly with the item about thoroughness ( $r = .61, p < .001$ ). Hence, these items were averaged.

Results and Discussion

Preliminary Analyses

Descriptive statistics and correlations can be found in Table 3. A MANOVA yielded no significant effects for gender,  $F(5, 273) = 2.04, ns$ , or family structure,  $F(5, 273) = 2.02, ns$ . Correlations with age were not significant either.

Primary Analyses

A MANOVA indicated that condition yielded a multivariate effect on the study variables,  $F(8, 564) = 20.99, p < .001, \eta^2 = .23$ . Subsequent univariate analyses showed significant mean-level differences in need frustration and state reactance, with participants in the controlling condition scoring highest and those in the autonomy-supportive condition scoring lowest (see Table 3). No significant differences emerged for intention to study.

Next, SEM was used to test the proposed model, thereby also testing for the role of reactance proneness by adding paths of reactance proneness to each of the state variables. As for condition, two dummy variables were created, one comparing the controlling condition with the neutral condition and another one comparing the autonomy-supportive condition with the neutral condition. The measurement model fit the data well,  $\chi^2(24) = 54.69, p < .001, CFI = .97, RMSEA = .07, SRMR = .04$ . The structural model is presented in Figure 4. In line with the MANOVA findings, the dummies representing the controlling and autonomy-supportive

Table 3  
Means, Standard Deviations, Condition Differences, Reliabilities, and Correlations Among the Manifest Variables of Study 4

	Overall M	SD	$\alpha$	AS condition	Neutral condition	Controlling condition	$F(2, 285)$	$\eta^2$	1	2	3	4
1. Trait reactance proneness	2.50	0.64	.89	2.51	2.43	2.54	0.77	0.00				
2. State need frustration	3.00	0.82	.90	2.48 <sub>a</sub>	2.83 <sub>b</sub>	3.69 <sub>c</sub>	89.75***	0.39	0.12*			
3. State reactance	1.94	0.79	.84	1.87 <sub>a</sub>	1.73 <sub>a</sub>	2.22 <sub>b</sub>	10.95***	0.07	0.39***	0.35***		
4. Intention to study more	2.99	1.04	.76	3.04	3.00	2.90	0.50	0.00	-0.07	-0.16**	-0.20**	
5. Intention to study differently	3.76	0.70	NA	3.80	3.76	3.73	0.20	0.00	-0.12*	-0.11	-0.32***	0.37***

Note. Scores with a different subscript differ significantly, based on Tukey’s post hoc test ( $p < .05$ ). AS = autonomy-supportive; NA = not applicable.  
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

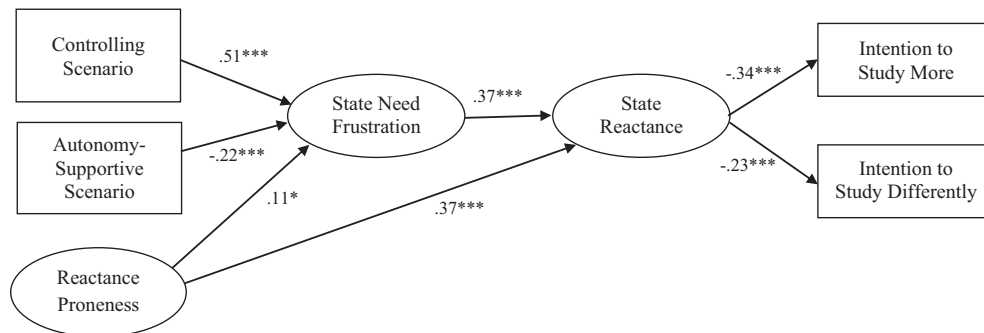


Figure 4. Structural equation model for Study 4,  $\chi^2(58) = 106.62$ ,  $p < .001$ , comparative fit index = .97, root mean square error of approximation = .05, standardized root mean square residual = .04. For clarity reasons, correlations between variables at the same level are not reported.

\* $p < .05$ . \*\*\* $p < .001$ .

vignettes were associated positively and negatively, respectively, with state need frustration. Need frustration predicted more state reactance, which in turn related negatively to the study intention variables. Furthermore, trait reactance proneness related to more state need frustration and more state reactance. Indirect effects were found for the controlling condition on intention to study more ( $b = -.06$ ,  $p < .01$ ) and differently ( $b = -.04$ ,  $p < .01$ ) through the intervening variables. This was also the case for the effects of the autonomy-supportive condition ( $b = .03$ ,  $p < .01$  for studying more;  $b = .02$ ,  $p < .01$  for studying differently). Adolescents' reactance proneness also had an indirect effect on study intention ( $b = -.14$ ,  $p < .001$  for studying more;  $b = -.10$ ,  $p < .01$  for studying differently).

Then, we performed a number of supplementary analyses. First, we examined the moderating role of reactance proneness by examining the interactions with each of the predictors in the structural paths. None of the interactions were significant ( $t$  values ranging between  $-1.73$  and  $1.83$ , all *ns*). Also, multigroup comparisons indicated that findings were similar for middle (13–16 years) and late (17–19 years) adolescents and for boys and girls, as we found metric invariance,  $\Delta\chi^2(6) = 4.52$ , *ns*,  $\Delta\text{CFI} = .001$  for age group, and  $\Delta\chi^2(6) = 9.70$ , *ns*,  $\Delta\text{CFI} = .002$  for gender; and structural equivalence,  $\Delta\chi^2(7) = 3.93$ , *ns*,  $\Delta\text{CFI} = .002$  for age group, and  $\Delta\chi^2(7) = 12.03$ , *ns*,  $\Delta\text{CFI} = .003$  for gender, across groups.

### Summary

Study 4 replicated our obtained findings using a vignette-based manipulation. Specifically, when adolescents were confronted with a hypothetical controlling request, they anticipated more experi-

enced need frustration and state reactance. As expected, state reactance was related to an inclination to do the opposite of what was requested in the scenario, that is, a lower intention to invest in studying. Furthermore, we found main effects of trait reactance proneness on state need frustration and reactance, supporting the idea that adolescents with a reactant orientation are sensitive to pressure and more easily interpret any kind of parental request (irrespective of how it is communicated) as a threat to their autonomy, and are more quickly inclined to defy to any request (e.g., Grandpre et al., 2003).

### General Discussion

The goal of the present set of studies was to gain a better understanding of the relation between controlling parenting and reactance in adolescents. We found that children of parents who use a controlling style were more likely to experience autonomy need frustration and reactance in the parent-child relationship. The degree to which adolescents experienced reactance, in turn, predicted several problematic outcomes, including externalizing and internalizing problems and noncompliance with parental requests. These findings were obtained across gender, in middle and late adolescents, across informants, across community, and across clinical samples, after controlling for other parenting dimensions, and at the trait and state levels.

#### Overview of the Findings and Implications

Supporting SDT (e.g., Grolnick & Pomerantz, 2009; Soenens & Vansteenkiste, 2010), the present research consistently found controlling parenting to

be related to adolescents' experiences of pressure in the relationship with their parents. These findings were obtained using adolescent reports (Study 1), mother reports (Study 2), in a sample of clinically referred youth (Study 3), as well as through objective descriptions of parental behaviors (Study 4). Moreover, we found support for the claim made in PRT and SDT that experiences of pressure relate to reactance in adolescents. Hence, the present investigation adds to the limited research applying PRT in a socialization context, as well as to the emerging body of SDT-based research on oppositional defiance (Skinner & Edge, 2002; Vansteenkiste & Ryan, 2013).

Interestingly, these associations were not significantly different for middle versus late adolescents, nor for boys and girls. Although adolescents' conceptions of legitimate parental authority change as they grow older (Smetana, 1995), we found that controlling parenting was related to need frustration and reactance similarly across age groups and gender. These findings do not preclude the possibility, however, that the content of the parental requests that elicit reactance differ by age or gender. Therefore, future research should investigate whether the current findings generalize across domains of social knowledge. Parents' rules about personal issues, for instance, may be experienced as more need frustrating and reactance triggering, as compared to rules about moral issues (cf. Kakiyama & Tilton-Weaver, 2009; Smetana, 1995).

Although PRT and SDT share many assumptions about the nature and correlates of reactance, one conceptual issue that may be especially enriching for PRT-based research is SDT's differentiated approach toward the concepts of autonomy and freedom (Ryan & Lynch, 1989). Given that PRT is "a theory of freedom and control" (Brehm & Brehm, 1981; title), this is an important issue, especially as for the question of whether reactance yields freedom and autonomy. When autonomy is defined as independence (i.e., the degree to which one avoids relying on the advice and rules of others), reactance may yield more autonomy and *absolute* freedom (i.e., freedom from external constraints). Yet, when autonomy is defined as volitional functioning (i.e., when actions are grounded in personally endorsed values and interests; Ryan & Deci, 2000), reactance may come with an ironic cost in terms of a reduced sense of *psychological* freedom and volition because one's actions are primarily determined by the external rules against which one reacts (Skinner & Edge, 2002). Consistent with this claim, we found a systematic association

of reactance not only with externalizing problems but also with internalizing problems, with the latter possibly signaling a sense of alienation from genuinely valued goals and interests.

The distinction between independence and volitional functioning is also crucial for understanding under which conditions rules and prohibitions relate to reactance (Vansteenkiste et al., 2014). As suggested by the present findings, restrictions of one's independence are not necessarily associated with more reactance. Indeed, perceived parental rule setting, which involves a limitation of adolescents' independence, was largely unrelated to adolescents' experiences of need frustration or reactance. Only when parents are perceived as threatening their volitional functioning (e.g., through the use of pressuring language), do experiences of need frustration and subsequent reactance seem to arise. Indeed, adolescents may feel volitional even when they follow parental rules and regulations (Vansteenkiste et al., 2014).

There was one notable exception to the overall pattern of nonsignificant associations between parental rule setting and need frustration: Mother-reported rule setting was associated with more need frustration and reactance in Study 2. Although this association is consistent with PRT, it was somewhat surprising from an SDT perspective, as rule setting is an element of structure, and SDT postulates that it would foster feelings of competence (e.g., Grolnick & Pomerantz, 2009). Possibly, when mothers reported that they were high on rule setting, this was not necessarily experienced as structuring and as supporting adolescents' needs. Together, the findings point to the importance of obtaining information from different sources as there may be differences between what parents actually do, what parents report, and how adolescents interpret these behaviors (Kakiyama & Tilton-Weaver, 2009).

The present findings also have clinical implications. Some scholars have argued that there are qualitative differences between referred and nonreferred youth in the association between parenting and externalizing problems (e.g., Deater-Deckard & Dodge, 1997). Yet, the proposed model also held in a sample of youngsters referred for antisocial behavior, a finding consistent with SDT's universality claim (e.g., Ryan & Deci, 2000). These findings also support the "spectrum hypothesis," which states that a disorder is not a discrete category, but rather entails the extreme endpoint of a continuously distributed dimension (Shiner & Caspi, 2003).

### Limitations and Future Research

Although the current investigation yielded several new insights, certain limitations need to be acknowledged. First, even though Study 4 used an experimental design, all constructs were assessed at one point in time, which precludes us from drawing conclusions about direction of effects and naturally occurring developmental changes in the central constructs. Although we interpreted our findings mainly in terms of parent-to-child effects, the associations obtained likely reflect a bidirectional process, with controlling parenting, for instance, also being triggered by adolescents' reactance (Vansteenkiste et al., 2014). Future longitudinal research may yield better insight into the nature and direction of the developmental sequence.

In addition, to fully acknowledge the transactional nature of the socialization process, future research could examine in greater detail adolescents' interpretations of and reactions to parental requests (cf. Kakihara & Tilton-Weaver, 2009). This would help to gain more insight into the way adolescents actively shape socialization. For instance, vignette-based or observational studies would allow researchers to explicitly disentangle objective parenting practices, adolescents' perception of these practices, and their reactions in the situation. Rather than using broad measures of controlling parenting, such studies could disentangle effects of more specific facets of controlling parenting. For instance, it could be examined whether threats with punishment elicit reactance more strongly as compared to guilt induction. Future research also could move beyond the need for autonomy by including measures of the needs for competence and relatedness (Ryan & Deci, 2000). An assessment of all three needs would allow researchers to determine their relative importance and their interplay in processes relevant to adolescent defiance.

### Conclusion

In conclusion, by drawing upon the frameworks of PRT and SDT, the present set of studies provided more insight into the reasons why controlling parenting often backfires (Grolnick, 2003). Some adolescents display, at least momentarily, an increase in problem behavior, which may elicit controlling and coercive parenting strategies as parents attempt to enforce obedience. Yet, as the present investigation shows, such practices are likely to yield ironic effects as they may further elicit reactance and problems. Although engagement in an autonomy-

supportive parental style sometimes may be easier said than done, such a style may be essential to reduce reactance and to foster successful socialization of adolescents more generally.

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### Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

**Appendix S1.** Information About the Development and Validity of the Hypothetical Vignettes (Study 4)

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