Developmental Psychology

The Cost of Empathy: Parent–Adolescent Conflict Predicts Emotion Dysregulation for Highly Empathic Youth

Caspar J. Van Lissa, Skyler T. Hawk, Hans M. Koot, Susan Branje, and Wim H. J. Meeus

The Cost of Empathy: Parent–Adolescent Conflict Predicts Emotion Dysregulation for Highly Empathic Youth

Caspar J. Van Lissa
Erasmus University Rotterdam

Skyler T. Hawk
The Chinese University of Hong Kong

Hans M. Koot
VU University, Amsterdam

Susan Branje
Utrecht University

Wim H. J. Meeus
Utrecht University and Tilburg University

Empathy plays a key role in maintaining close relationships and promoting prosocial conflict resolution. However, research has not addressed the potential emotional cost of adolescents' high empathy, particularly when relationships are characterized by more frequent conflict. The present 6-year longitudinal study ($N = 467$) investigated whether conflict with parents predicted emotion dysregulation more strongly for high-empathy adolescents than for lower-empathy adolescents. Emotion dysregulation was operationalized at both the experiential level, using mood diary data collected for 3 weeks each year, and at the dispositional level, using annual self-report measures. In line with predictions, we found that more frequent adolescent–parent conflict predicted greater day-to-day mood variability and dispositional difficulties in emotion regulation for high-empathy adolescents, but not for average- and low-empathy adolescents. Mood variability and difficulties in emotion regulation, in turn, also predicted increased conflict with parents. These links were not moderated by empathy. Moreover, our research allowed for a novel investigation of the interplay between experiential and dispositional emotion dysregulation. Day-to-day mood variability predicted increasing dispositional difficulties in emotion regulation over time, which suggests that experiential dysregulation becomes consolidated into dispositional difficulties in emotion regulation. Moderated mediation analyses revealed that, for high-empathy adolescents, conflict was a driver of this dysregulation consolidation process. Finally, emotion dysregulation played a role in overtime conflict maintenance for high-empathy adolescents. This suggests that, through emotion dysregulation, high empathy may paradoxically also contribute to maintaining negative adolescent–parent interactions. Our research indicates that high empathy comes at a cost when adolescent–parent relationships are characterized by greater negativity.

Keywords: conflict, emotion regulation, empathy, longitudinal, mood variability

Supplemental materials: http://dx.doi.org/10.1037/dev0000361.supp

Empathy is widely considered to be an adaptive trait that facilitates social bonding, promotes pro-social behavior, and helps people maintain positive close relationships (Davis & Oathout, 1987; De Waal, 2010; Hoffman, 2000). It plays an important societal function, because it helps overcome prejudice (Vescio,

---

Caspar J. Van Lissa, Faculty of Social Sciences, Erasmus University Rotterdam; Skyler T. Hawk, Department of Educational Psychology, The Chinese University of Hong Kong; Hans M. Koot, Department of Developmental Psychology, VU University, Amsterdam; Susan Branje, Adolescent Development, Utrecht University; Wim H. J. Meeus, Adolescent Development, Utrecht University, and Developmental Psychology, Tilburg University.

Correspondence concerning this article should be addressed to Caspar J. Van Lissa, Faculty of Social Sciences, Erasmus University Rotterdam, Burgemeester Oudlaan 50, 3062 PA Rotterdam, the Netherlands. E-mail: vanlissa@fsw.eur.nl

Sechrist, & Paolucci, 2003), and resolve intergroup (de Vos, van Zomeren, Gordijn, & Postmes, 2013) as well as interpersonal (McCullough, Worthington, & Rachal, 1997) conflict. In adolescent–parent relationships, too, adolescents' greater empathy is associated with lower adolescent–parent conflict frequency, and with increased prosocial conflict resolution behavior toward parents (Van Lissa, Hawk, Branje, Koot, & Meeus, 2016; Van Lissa, Hawk, & Meeus, 2017). However, relatively little research has addressed the potential downsides of high empathy. Highly empathic individuals are more sensitive to interaction partners' emotions, particularly negative ones (Sonnby-Borgström, 2002). We hypothesized that this sensitivity might render highly empathic adolescents more susceptible to emotion dysregulation in the wake of conflict with parents.

Considering adolescence is characterized by a temporary increase in adolescent–parent conflict (Branje, Laursen, & Collins, 2013), and is a developmentally sensitive period for mature emotion regulation (Zimmermann & Iwanski, 2014), it is important to

examine the role empathy might play in sensitizing adolescents to conflict-related emotion dysregulation. We therefore investigated whether adolescent–parent conflict frequency predicted emotion dysregulation more strongly for high-empathy adolescents than for average- and low-empathy adolescents. We used a 6-year longitudinal design with annual self-report measures of adolescent–parent conflict frequency and dispositional emotion dysregulation, as well as daily mood diaries collected in the years between annual measurements. This allows an investigation of emotion dysregulation both at the dispositional level and at the experiential (day-to-day) level. Although there is broad consensus about the prosocial, interpersonal benefits of empathy for adolescents, this research represents a novel investigation of the potential costs of high empathy in adolescent–parent relationships.

Empathy is a multidimensional construct, which refers to individuals' cognitive and affective responses to others' experiences (Davis, 1983). Two empathy dimensions in particular have been studied in relation to conflict: Cognitive *perspective taking*, the tendency to spontaneously consider matters from others' point of view, and affective *empathic concern*, the tendency to experience caring, other-oriented emotions in response to others' misfortunes (Davis, 1983). Affective empathic concern is thought to inhibit aggressive conflict behaviors directly, because it rouses a motive to reduce others' emotional distress (Feshbach & Feshbach, 2011). Cognitive perspective taking, on the other hand, allows individuals to take some distance from the emotional heat of the conflict, and address the situation constructively by engaging in mutually beneficial problem solving behavior (see Van Lissa et al., 2016). In longitudinal research, the development of both empathy dimensions was associated with adolescents' decreasing conflict escalation, and increasing constructive problem solving in conflicts with parents, although these associations were stronger for perspective taking (Van Lissa et al., 2016). Thus, greater dispositional empathy appears to help adolescents resolve conflict with parents more constructively.

The advantages empathy confers in resolving conflicts and maintaining positive close relationships might come at a cost, however, if high empathy also leaves individuals more reactive to others' emotions. A recent theoretical review argued that empathy is a "risky strength," which renders individuals vulnerable to internalizing problems (Tone & Tully, 2014). Individuals high in affective empathy are more likely to "catch" others' emotions than low-empathy individuals, as they have a stronger tendency to mimic facial expressions such as anger, even when presented at the preconscious level (Sonnby-Borgström, 2002). Similarly, trained observers with higher dispositional empathy experienced greater increases in cortisol when subjecting research participants to a social stress test (Buchanan, Bagley, Stansfield, & Preston, 2012). This empathic sensitivity is also likely to play a role in conflict interactions, as conflict situations often involve a great variety of strong emotions that are readily expressed (Van Kleef, 2009). Indeed, prior research showed that experimentally induced perspective taking increased participants' sensitivity to partners' anger in conflicts (Richardson, Green, & Lago, 1998). Furthermore, high-empathy adults tend to experience greater guilt in the aftermath of conflicts (Leith & Baumeister, 1998). Another recent study found that, when highly empathic adults experienced "goal conflict" (divergence of interests) with their romantic partners, they experienced greater negative mood and stress than lower-empathy individuals (Righetti, Gere, Hofmann, Visserman, & Van Lange, 2016). It remains to be examined, however, whether high-empathy adolescents are also susceptible to greater emotion dysregulation in relation to conflict with parents.

Adolescent–Parent Conflict and Emotion Dysregulation

Conflict with parents temporarily increases in adolescence, as adolescents expect to obtain increasing autonomy at an earlier age than parents are ready to grant it (Deković, Noom, & Meeus, 1997). Reflecting the power imbalance inherent in their relationships, such disagreements tend to end in power assertive resolutions favoring parents, and involve neutral or angry affect (Adams & Laursen, 2001). Nevertheless, youths and parents ultimately renegotiate their relationships to accommodate adolescents' increasing autonomy needs (Branje, Laursen, & Collins, 2013). At the same time, this is a period of substantial reorganization of the neural circuitry connecting the amygdala and prefrontal cortex, which is involved in emotion regulation (Gee et al., 2013). Although these changes ultimately enable the development of mature emotion regulation, they also temporarily hinder adolescents' existing regulatory abilities (Zimmermann & Iwanski, 2014). Neural and hormonal changes render adolescents more responsive to emotional cues, while the capacity for emotion regulation is still underdeveloped (Somerville, Jones, & Casey, 2010). Thus, heightened conflict with parents may pose a significant challenge to adolescents' developing emotion regulation capacities. It is therefore important to investigate the longitudinal interplay between these two developing constructs.

Emotion regulation has been conceptualized as a dynamic system, which compares the present emotional state to a desired emotional state—typically, a state that is congruent with one's goals—and engages regulatory strategies if these two states diverge (Hoeksma, Oosterlaan, & Schipper, 2004). According to this dynamic perspective, excessive mood variability might signal failure of the regulatory system. The link between conflict and emotion dysregulation has been studied at both the experiential level and the dispositional level. At the experiential level, mood diaries have been used to capture shifts in mood from day to day (e.g., see: Houben, Van Den Noortgate, & Kuppens, 2015). Such diary studies have revealed that, indeed, conflict is a source of day-to-day mood variability (Bolger, Davis, & Rafaeli, 2003). This likely also applies to adolescents, as diary studies with adolescent samples found that mothers' harsh parenting incited more anger in their children (Downey, Purdie, & Schaffer-Neitz, 1999), and that conflict with parents promoted adolescents' emotional distress (Chung, Flook, & Fuligni, 2009). At the dispositional level, questionnaires have been used to assess individuals' self-perceived difficulties in emotion regulation (Gratz & Roemer, 2004; Neumann, Van Lier, Gratz, & Koot, 2010). A systematic review indicates that negative parenting behavior, a strong correlate of adolescent–parent conflict (Barber, 1994), is associated with children's dispositional difficulties in emotion regulation (Morris, Silk, Steinberg, Myers, & Robinson, 2007). Relatively more frequent conflict with parents is thus likely to be associated with greater emotion dysregulation, both in terms of day-to-day mood variability and, in the long run, dispositional difficulties in emotion regulation.

Both mood variability and dispositional difficulties in emotion regulation are known to be associated with, and predictive of, decreased well-being, lower-quality close relationships, and internalizing and externalizing behavior (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Cole, Hall, & Hajal, 2008; Eisenberg & Fabes, 1992; Gross & John, 2003; Gross, 2013; Houben et al., 2015). Moreover, it is important to note that mood variability has been linked to maladjustment, irrespective of mood valence. Although effects are typically smaller for positive mood variability, they are in the same direction as effects for negative mood variability (Gruber, Kogan, Quoidbach, & Mauss, 2013; Houben et al., 2015). This is consistent with the view that excessive mood variability is an indicator of the failure to regulate emotions adequately. It is therefore important to identify factors, such as conflict, that contribute to dysregulation, and factors such as empathy that might moderate the extent to which negative interactions affect adolescents' emotion dysregulation. Links between adolescent–parent conflict and emotion dysregulation might be stronger for high-empathy adolescents, because of their greater sensitivity and reactivity to interpersonal cues (Nezlek, Feist, Wilson, & Plesko, 2001; Richardson et al., 1998; Sonnby-Borgström, 2002). We thus propose a *cost-of-empathy* hypothesis, namely that adolescent–parent conflict would predict emotion dysregulation more strongly for high-empathy adolescents than for average- or low-empathy adolescents.

Links between emotion dysregulation and conflict are likely to be bidirectional, for two reasons. First, emotion regulation is an important factor in conflict resolution (Gross, 2013). If adolescents have difficulty regulating their emotions, conflicts with parents might persist or increase. Second, parents typically expect older children to regulate their emotions autonomously (Dix, 1991). If adolescents fail to meet this expectation, their emotion displays can elicit negative responses from parents (Klimes-Dougan et al., 2007). Longitudinal research provides further empirical support for the notion that adolescents' emotion dysregulation predicts greater negative interactions with parents, when operationalized as daily mood variability (Maciejewski et al., 2014), and as dispositional difficulties in emotion regulation (Skripkauskaite et al., 2015). In line with this previous research, we hypothesized that adolescents' emotion dysregulation would predict greater adolescent–parent conflict frequency over time.

The Longitudinal Interplay Between Experiential and Dispositional Dysregulation

Although emotion dysregulation has been operationalized at both the experiential and dispositional level, previous studies have tended to focus on a single level of analysis. Our research design incorporated both daily diary assessments and annual questionnaire measures. We were thus able to investigate whether greater adolescent–parent conflict predicts greater emotion dysregulation both in terms of day-to-day mood variability, and in terms of dispositional difficulties in emotion regulation. By using experience sampling methods in addition to self-report measures, we avoid potential problems associated with common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), and aim to provide a valuable replication of the cost-of-empathy effect across two measurement levels. Furthermore, this design allowed us to investigate the overtime interplay between experiential and dispo-

sitional measures of emotion dysregulation. The strength model of self-regulation suggests that regulating emotions is a costly and demanding process, and that each regulatory effort temporarily depletes available mental resources (Baumeister, Vohs, & Tice, 2007). Adolescents who experience greater day-to-day mood variability have to draw on these resources more frequently to maintain desired emotional states (Hoeksma et al., 2004). As adolescence is a developmentally sensitive period for emotion regulation (Zimmermann & Iwanski, 2014), consistent depletion of regulatory resources by might become consolidated into dispositional difficulties in emotion regulation. We thus hypothesized that greater day-to-day mood variability would predict overtime increases in self-reported, dispositional difficulties in emotion regulation.

Indirect Effects

The hypothesized main effects additionally suggest two potential indirect effects. First of all, we hypothesized that adolescent–parent conflict would predict greater mood variability, and that mood variability would in turn predict greater dispositional difficulties in emotion regulation. If both hypotheses are supported, then links from conflict to difficulties in emotion regulation might be mediated by mood variability. Because we hypothesized that links between conflict frequency and mood variability would be strongest for high-empathy adolescents, this mediational effect is also likely to be moderated by empathy. Second, as we hypothesized that conflict would predict increased emotion dysregulation, and that dysregulation would, in turn, predict increased conflict with parents, we investigated whether emotion dysregulation partially explained the rank-order stability of adolescent–parent conflict frequency over time. For most families, adolescence is characterized by an increase in conflict in early adolescence, which subsides over time. Others, however, sustain more permanent disruption (Branje et al., 2013). Reciprocal links between conflict and emotion dysregulation might help explain why conflict remains more stable for some families. Because we hypothesized conflict would predict emotion dysregulation more strongly for high-empathy adolescents, emotion dysregulation might also play a stronger mediating role in conflict maintenance for high-empathy adolescents.

The Present Study

The current study builds upon prior published work, which offered preliminary evidence suggesting that high-empathy adolescents might be more sensitive to conflict with parents (Van Lissa et al., 2015). In this prior research, we identified groups of low-, average-, and high-empathy adolescents, based on developmental trajectories of empathic concern and perspective taking (Davis, 1983). We then examined whether adolescent–parent agreement regarding the frequency of conflicts was moderated by empathy class. From age 13 to 18, high-empathy adolescents' perceptions of conflict frequency were in line with parents' reports. Average- and low-empathy adolescents' reports, on the other hand, temporarily diverged from parents' reports, with adolescents underreporting conflict, relative to both parents (Van Lissa et al., 2015). We argued that the greater correspondence between high-empathy adolescents' and their parents' reports

might reflect greater conflict sensitivity. This interpretation would be strengthened, however, if conflict perceptions are also more strongly linked with conflict-related outcomes, such as emotion dysregulation, for high-empathy adolescents than for average and low-empathy adolescents. The present study thus set out to investigate the notion that high empathy may come at the cost of greater emotion dysregulation in response to conflict, by conducting additional analyses using the same sample. Because our previous work revealed that empathy was confounded with adolescent–parent disagreement about conflict frequency, we focused on adolescents' perceptions of conflict in the present study (although additional analyses using parent-reported conflict are provided in

Appendix A). This decision is further validated by recent work, which showed that children's perceived parenting holds greater predictive value than parents' self-reported parenting when it comes to children's emotional functioning (Cheung, Pomerantz, Wang, & Qu, 2016).

Building upon this prior work, the present 6-year longitudinal study set out to investigate the moderating role of empathy on the interplay between adolescent–parent conflict and adolescents' experiential and dispositional emotion dysregulation. Our hypotheses are graphically represented in Figure 1. Our main focus was the *cost-of-empathy* hypothesis: We predicted that adolescent–parent conflict would predict stronger increases in day-to-day mood vari-
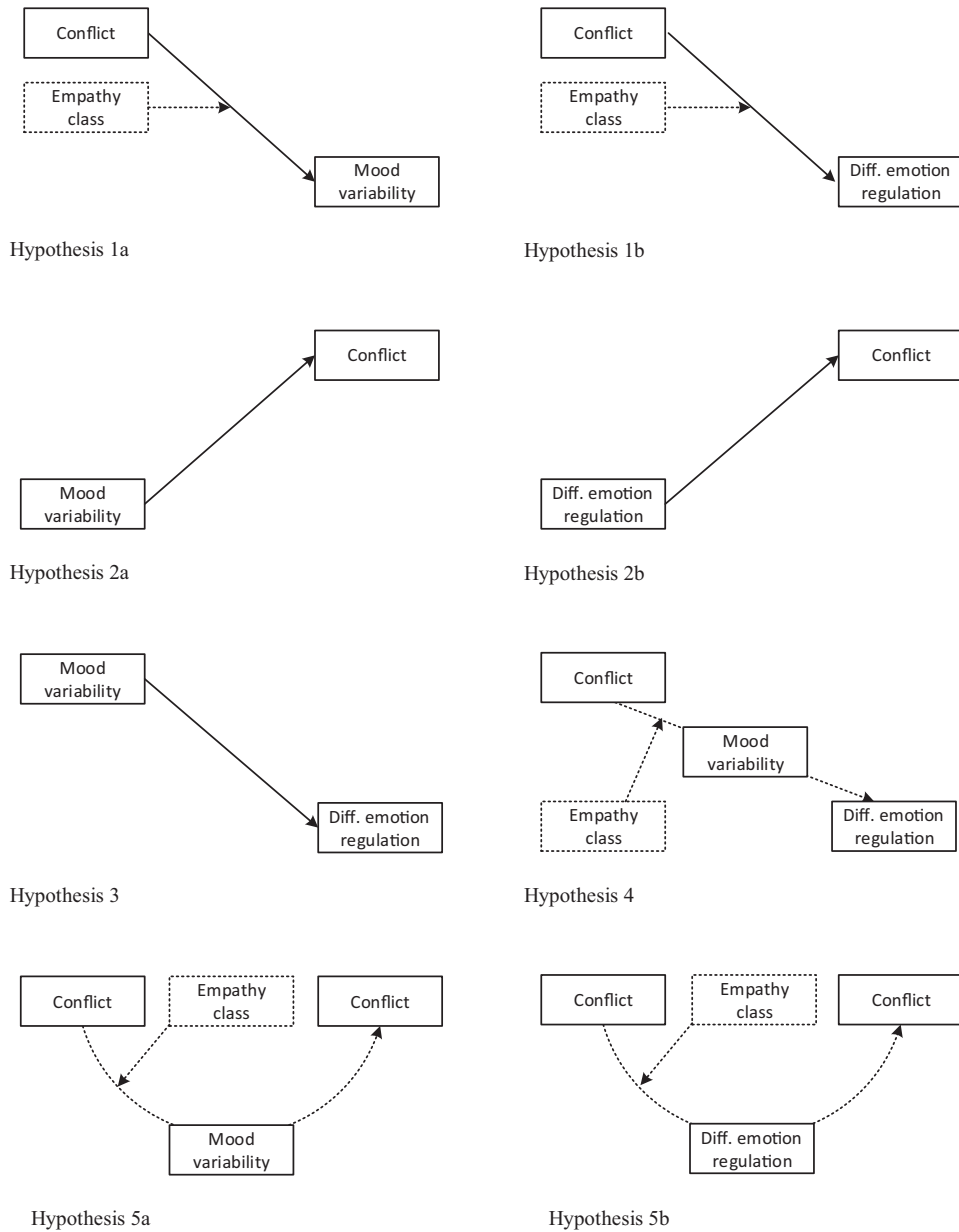

Figure 1. Graphical overview of hypotheses. Solid arrows represent direct effects. Dashed arrows represent indirect (mediational) and interaction (moderating) effects.

ability (Hypothesis 1a) and difficulties in emotion regulation (Hypothesis 1b) for high-empathy adolescents, compared to for average- and low-empathy adolescents. We further hypothesized that greater day-to-day mood variability (Hypothesis 2a) and difficulties in emotion regulation (Hypothesis 2b) would predict greater conflict with parents over time. We did not expect these links to be moderated by empathy. Although many studies have investigated prosocial effects of empathy on conflict resolution, the present study contributes to the literature by investigating potential emotional costs of high empathy.

Because we examined both daily mood diaries and annual self-report measures, we were also able to investigate—for the first time, to our knowledge—the longitudinal interplay between experiential and dispositional indices of emotion dysregulation. We hypothesized that day-to-day mood variability would predict greater self-reported dispositional difficulties in emotion regulation over time (Hypothesis 3).

The aforementioned hypotheses also suggest several potential mediating effects. If greater conflict frequency predicts increases in both day-to-day mood variability and difficulties in emotion regulation (see Hypotheses 1a and 1b), and greater mood variability predicts increased difficulties in emotion regulation (see Hypothesis 3), then we might expect mood variability to mediate overtime links between conflict frequency and dispositional difficulties in emotion regulation (Hypothesis 4). Because we hypothesized that links from conflict to mood variability and difficulties in emotion regulation would be moderated by empathy, we predicted that these indirect effects would also be especially prominent for high-empathy adolescents. By the same logic, we predicted that mood variability (Hypothesis 5a) and dispositional difficulties in emotion regulation (Hypothesis 5b) would both mediate the stability of conflict over time. Because we hypothesized that links from conflict to mood variability and difficulties in emotion regulation would be moderated by empathy, we predicted that these indirect effects would be especially prominent for high-empathy adolescents. Such mediational effects might elucidate why relatively higher levels of conflict could persist over time for high-empathy adolescents, considering that earlier literature has consistently suggested that such youths typically have better conflict resolution abilities and experience more harmonious family relationships.

Method

Participants

Participants were 467 Dutch adolescents (266 boys; age at T1: $M = 13.03$, $SD = 0.46$) enrolled in the longitudinal RADAR study (Van Lier, et al., in press). Adolescents were all Dutch nationals, although a minority (4.28%, 1 missing) indicated having a different ethnic background. Based on parents' reports of employment status and criteria of the Dutch census (Statistics-Netherlands, 1993), most of adolescents' families were classified as medium- to high-SES (9.85% low-SES, 88.43% medium- to high-SES, 8 missing). Most adolescents lived with both parents (86.72%), but a small percentage lived with either the mother or the father (7.49%), or with one biological parent and a new stepparent (3.85%, 9 missing). Adolescents at elevated risk for externalizing behavior were oversampled, based on teachers' ratings (39.61% at-risk, 60.39% normal risk).

Procedure and Design

The RADAR sample was recruited from randomly selected elementary schools in the province of Utrecht, and four main cities in The Netherlands. Of 1,544 randomly selected adolescents, 497 produced informed consent and were included in the study.[1] From 2006 to 2012, trained interviewers conducted six annual home visits to collect questionnaire data on adolescents' dispositional empathy and conflict frequency with parents. Adolescent-perceived conflict frequency was measured during each of these visits. From 2008 (age 15), dispositional difficulties in emotion regulation were also measured. Additionally, for the entire duration of the study, adolescents completed three weeks of daily mood diaries each year (5 sequential days, i.e., Monday through Friday). These three diary assessments were equally spaced within the intervening year between two home visits. E-mail invitations were sent each day at approximately 5:30 p.m. To reduce attrition, e-mail reminders, text messages, and phone calls were used. Adolescents received financial compensation for their participation in annual measurements (approximately $17 USD), and additional compensation for each Internet assessment (approximately $13 USD).

Measures

Empathy. We assessed adolescents' affective empathic concern ("I am often concerned about people less fortunate than me") and perspective taking ("Sometimes I try to understand my friends better by imagining how they see things") using Davis' (1983) Interpersonal Reactivity Index (IRI). Each subscale contains seven items, rated on a 5-point Likert scale (0 = *Doesn't describe me at all*; 4 = *Describes me very well*). Previous research reported adequate reliability and external validity for the Dutch IRI (Hawk et al., 2013). In addition to Cronbach's alpha, we will report McDonald's omega, because Cronbach's alpha is known to severely underestimate test reliability, particularly when a scale is not strictly unidimensional (see Revelle & Zinbarg, 2009). Omega reflects the proportion of test variance due to all common factors. Reliability of empathic concern was acceptable in Wave 1 (α = .62, ω_t = .70) and good in all other waves (αs between .72 and .76, ω_t between .81 and .85). Reliability for perspective taking was acceptable in Waves 1 and 2 (αs = .60 and .67, ω_t = .70 and .78) and good in all other waves (αs between .75 and .78, ω_t between .87 and .82).

Empathy classes. To include empathy as a moderating variable in multigroup cross-lagged panel modeling, we used a typology established in previous research using the same sample as the present study (Van Lissa et al., 2015). We used latent class growth analysis (Jung & Wickrama, 2008) to identify groups, or "classes," of adolescents with similar developmental trajectories of empathic concern and perspective taking, controlling for known gender differences (see Van der Graaff et al., 2014). A three-class solution

---

[1] Thirty adolescents were omitted from the sample, because it was not possible to estimate their empathy class membership due to insufficient data (Van Lissa et al., 2015).

proved superior to a two- and four-class model, as it had the lowest BIC value, a significant VLMR-test (see Jung & Wickrama, 2008), the highest entropy (.85), and high posterior predictive probabilities (between .93 and .94), suggesting that individuals could be assigned to the different classes with high accuracy. One class consisted of "high-empathy" adolescents with high, stable empathic concern and high-increasing perspective taking ($N = 105$, 29% girls), an "average-empathy" class with stable empathic concern and slightly increasing perspective taking ($N = 283$, 42% girls), and a "low-empathy" class ($N = 79$, 63% girls), whose empathic concern and perspective taking decreased from age 13 to 16, and subsequently showed a slight recovery. The distribution of sex across classes was unequal, $\chi^2(2) = 22.19$, $p < .001$. After controlling for sex differences in empathy development, girls were overrepresented in the low-empathy class, which indicates that, compared to other girls, there were relatively many girls with lower empathy. This did not appear to affect the results, however, as analyses controlled for sex yielded nearly identical results as the analyses presented here (see Appendix A). There were no significant differences between the classes in terms of age, $F(2, 464) = 0.36$, $p = .70$, socioeconomic status, $\chi^2(2) = 2.59$, $p = .27$, risk for externalizing problems, $\chi^2(2) = 4.12$, $p = .13$, or IQ at T1 (based on WISC, Wechsler & Kort, 2005), $F(2, 415) = 0.96$, $p = .39$. In the present study, we used these three empathy classes as the moderator in multigroup analysis.

Perceived conflict frequency. We used Laursen's (1993) Interpersonal Conflict Questionnaire (ICQ) to assess adolescent-reported[2] conflict regarding 10 specific topics in the past week (e.g., "autonomy, personal freedom," "school/work," "criticism or teasing"). Adolescents reported conflict with mothers and fathers separately on 5-point Likert scales (1 = *Never*; 5 = *Often*). The ICQ aims to provide an accurate and unbiased estimate of conflict frequency, by measuring conflicts about specific topics within a short and recent timeframe. The internal consistency of adolescents' reports of conflict with both parents taken together was excellent, indicating they could be used as a single index of perceived conflict frequency (αs between .90 and .92, ω_t between .92 and .94).

Day-to-day mood variability. Adolescents completed an online daily mood diary on five consecutive days, three times a year. Based on the Electronic Mood Device (Hoeksma et al., 2000), adolescents reported their levels of happiness, anger, anxiety, and sadness on 9-point Likert scales, ranging from *not at all* to *very much*, using three dictionary synonyms per emotion which were averaged into daily mood scores. From these time series data, we derived indices of day-to-day mood variability for each emotion, using the mean squared successive distances (MSSD) between reports on consecutive days. This is considered to be the best practice in capturing mood variability, because it captures the amplitude of mood changes, as well as the frequency of such changes, and is sensitive to the temporal dependency of changes in mood: Changes must occur between consecutive days to contribute to the score (Jahng, Wood, & Trull, 2008). We averaged the resulting MSSD scores over the three measurement weeks within each year, resulting in one index of variability per emotion per year (Neumann, Van Lier, Frijns, Meeus, & Koot, 2011). In line with prior literature (Maciejewski et al., 2014), we calculated the mean of day-to-day mood variability across the four emotions. However, we present supplementary analyses, conducted separately for each

emotion, in Appendix B. Reliability for the combined mood variability scores ranged from good to excellent (αs between .81 and .93, ωt between .89 and .95).

Difficulties in emotion regulation. From ages 15 to 18, we administered the difficulty in emotion regulation scale (DERS, Gratz & Roemer, 2004). This 36-item scale distinguishes six aspects of difficulties in emotion regulation, including lack of emotional awareness ("I pay attention to how I feel," reverse coded), lack of emotional clarity ("I have difficulty making sense out of my feelings"), impulse control difficulties ("When I'm upset, I become out of control"), difficulties engaging in goal-directed behavior ("When I'm upset, I have difficulty thinking about anything else"), nonacceptance of emotional responses ("When I'm upset, I feel guilty for feeling that way"), and limited access to emotion regulation strategies ("When I'm upset, I start to feel very bad about myself"). Reliability analyses indicated that items measuring lack of emotional awareness correlated low or negatively with the total scale, and diminished Cronbach's alpha. Exploratory factor analysis with Oblimin rotation similarly indicated that two factors explained most of the variance (explained variance: 38% and 11%, Eigenvalues 12.16 and 3.62). The first factor contained all items except those related to lack of emotional awareness, and the second factor contained all items related to lack of emotional awareness. We therefore omitted the items related to emotional awareness from the total score for difficulties in emotion regulation, with excellent reliability (αs between .95 and .96, ωt between .96 and .97).

Strategy of Analyses

Our analyses were based on an extension of cross-lagged panel modeling (Selig & Little, 2012), with staggered measurement occasions for one of the variables (mood variability). Mood variability was measured each time during the year between two measurement waves. Thus, for mood variability, no within-wave correlations were estimated, and all links with conflict frequency and difficulties in emotion regulation were specified as (predictive) regression paths. We used this staggered cross-lagged panel model to investigate overtime predictive effects between conflict frequency, day-to-day mood variability, and difficulties in emotion regulation. First, we estimated a single-group path model with autoregressive and cross-lagged paths, as well as within-time correlations for concurrent measurements (Model 1, see Table 1). Then we introduced empathy (high, average, low) as a moderator in a multigroup model, with all parameters free to vary between groups (Model 2). To derive the best fitting, most parsimonious model, we constrained parameters that were not significantly different. We used Wald's chi-square tests to evaluate which parameters did not differ significantly, first over time and then between groups. We used the resulting final model to test our hypotheses (Model 3, see Figure 2). For hypotheses involving moderation, we used Wald tests to investigate whether parameters differed significantly between empathy groups. To test hypotheses involving

---

[2] Correlations between daily mood variability and DERS were moderate, suggesting good divergent validity (average $r = .44$ with preceding measurement of DERS, and $r = .43$ with subsequent measurement of DERS). Moreover, EFA on daily mood variability and DERS did not suggest the two measures loaded on a common factor.

Table 1
Model Fit Indices

Model	AIC	Adj BIC	χ^2	df	scf	RMSEA	CFI	TLI
1. Unmoderated model	10063.11	10137.60	183.49	63	1.207	.062	.945	.909
2. Fully free, moderated	10008.90	10210.21	482.78	198	1.065	.096	.886	.820
3. Final model	9830.35	9872.17	567.78	362	1.169	.060	.919	.929

Note. AIC = Akaike Information Criterion; Adj BIC = adjusted Bayesian Information Criterion; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker–Lewis Index.

mediation, we inspected indirect effects with bootstrapped standard errors (10,000 resamples). Furthermore, although posterior predictive probabilities were high, we conducted additional analyses, using the approach described by Asparouhov and Muthén (2014) to account for classification uncertainty. As can be seen in Appendix A, results were in line with the multigroup model reported here.

Attrition for the annual measurements ranged from 0.40% at age 13 to 14.50% at age 18, and attrition for the daily mood diaries ranged from 3.40% to 23.40%. These data were missing completely at random, Little's (2013) MCAR test $\chi^2(2179) = 2124.07$, $p = .80$. Therefore, full information maximum likelihood estimation (FIML) was warranted to make use of all available information without estimating missing data. All analyses were conducted in Mplus Version 7 (Muthén & Muthén, 1998–2012). Per the developers' recommendation, we used robust maximum-likelihood estimation, which yields a Satorra-Bentler scaled χ^2 value to account for potential non-normality (Satorra, 2000). Model fit was evaluated using the Comparative Fit Index and Tucker–Lewis Index (CFI and TLI, acceptable fit = 0.90–0.95, Bentler & Bonett, 1980), and Root Mean Square Error of Approximation (RMSEA, close fit = 0.01–0.06, acceptable fit = 0.06–0.08, Browne & Cudeck, 1993). According to these criteria, the fit of the final model was acceptable-to-good (see Table 1). In addition to these measures of objective fit, we also provide two comparative fit indices, the Akaike Information Criterion (AIC) and sample-size adjusted Bayesian Information Criterion (saBIC). Lower values on these comparative fit indices indicate a better fitting model. According to both relative and absolute fit indices, the final model had the best fit.

Results

Mean Level Differences Between Empathy Classes and Measurement Waves

Mean levels and standard deviations for conflict frequency and difficulties in emotion regulation are presented by measurement wave and empathy class in Table 2, and descriptive statistics for mood variability are presented in Table 3. Zero-order correlations between study variables are presented in Table 4. We used repeated measures GLM to explore whether levels of the study variables differed between empathy classes, and whether there was development over time (differences between measurement waves). There were no interactions between empathy class and measurement wave, which indicates that overtime development was the same for all empathy classes. Regarding mean differences between empathy classes, the only significant difference was that conflict

frequency was significantly higher for low-empathy adolescents compared to average- and high-empathy adolescents, $F(2, 367) = 8.86$, $p < .001$. There were no differences in conflict frequency between high and average-empathy adolescents. Similarly, mood variability was significantly greater for low-empathy adolescents than for average-empathy adolescents, $F(2, 353) = 3.17$, $p = .04$, with no further significant differences between empathy classes. Finally, there were no significant differences between empathy classes in difficulties in emotion regulation. Regarding development over time (differences between measurement waves), there were significant differences in conflict frequency between measurement waves, $F(5, 1835) = 10.12$, $p < .001$. Post hoc tests suggested that conflict frequency showed significant linear and cubic change over time. There were also differences across waves in mood variability, $F(4, 1412) = 10.39$, $p < .001$, and post hoc tests suggested significant linear change over time. There were no significant differences across waves in difficulties in difficulties in emotion regulation.

Rank-Order Stability and Within-Time Correlations

There was substantial stability in the rank order of participants on all variables. For conflict frequency, stability was high in all groups, although it was significantly lower in the low-empathy group than in the average- and high-empathy groups, $\chi^2(1) = 4.135$, $p = .04$. Rank-order stability was medium for mood variability, and high for difficulties in emotion regulation. There were significant within-time residual correlations between conflict frequency and difficulties in emotion regulation, which might reflect correlated change due to predictors not included in the model, rs .12–.23, $ps < .001$.

Links From Conflict Frequency to Emotion Dysregulation, Moderated by Empathy

According to Hypotheses 1a and 1b (see Figure 1), we predicted that cross-lagged effects from conflict frequency to mood variability and difficulties in emotion regulation would be stronger for high-empathy adolescents, compared to average and low-empathy adolescents. However, cross-lagged effects are likely to be inflated for all empathy classes in the first wave that mood variability and difficulties in emotion regulation were included in the model, because of the absence of an autoregressive effect controlling for prior levels. The first crosspaths thus include both covariance due to time-lagged effects, as well as any preexisting covariance.

Mood variability. In support of Hypothesis 1a, paths from conflict frequency to mood variability were significantly greater for high-empathy adolescents than for average-and low-empathy
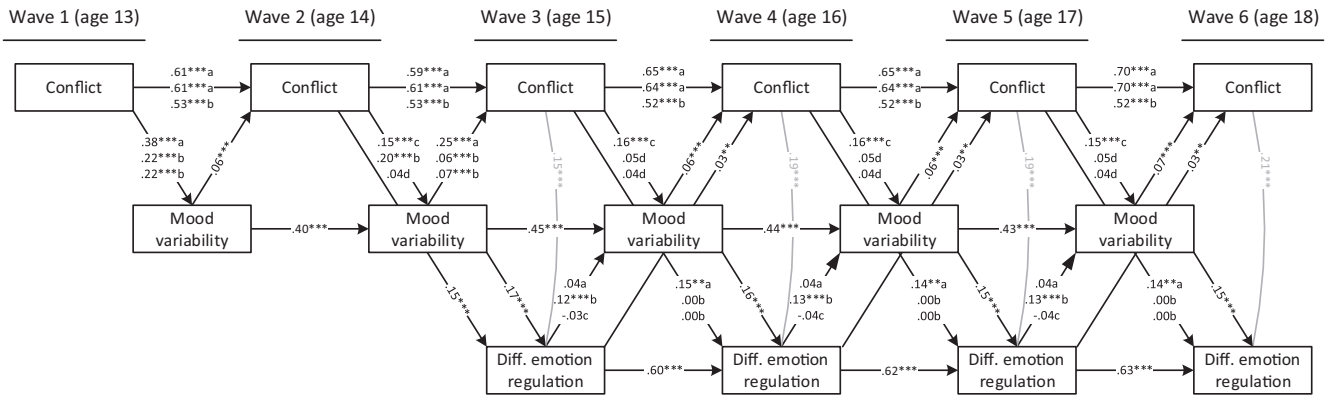
Figure 2. Final multigroup cross-lagged panel model. Coefficients are standardized. In case of significant differences between empathy classes, coefficients are printed on separate lines (from top to bottom: high, average, and low empathy).[3] Constraints between groups and/or over time are identified by lowercase letters. Straight black arrows represent direct effects, gray curved lines represent correlated residuals.

adolescents, both in Wave 1, $\chi^2(1) = 25.46$, $p < .001$, and all other waves except Wave 2, $\chi^2(1) = 13.76$, $p < .001$. In Wave 2, the crosspath for average-empathy adolescents also differed significantly from low-empathy adolescents, $\chi^2(1) = 47.95$, $p < .001$, and the difference between high- and average-empathy adolescents was not significant, $\chi^2(1) = 3.58$, $p = .058$. Overall, in support of Hypothesis 1a, relatively greater conflict frequency predicted significantly greater increases in mood variability for high-empathy adolescents than for average- and low-empathy adolescents in all waves except Waves 1 and 2, where crosspaths were equal for high- and average-empathy adolescents.

Difficulties in emotion regulation. In support of Hypothesis 1b, relatively more frequent conflict predicted significantly stronger increases in difficulties in emotion regulation for high-empathy adolescents than for average- and low-empathy adolescents in all waves except the first, $\chi^2(1) = 12.37$, $p < .001$.

Links From Emotion Dysregulation to Conflict Frequency

According to Hypotheses 2a and 2b, we predicted that greater mood variability and difficulties in emotion regulation would predict increased conflict frequency over time. In full support of these hypotheses, both mood variability and difficulties in emotion regulation predicted increased conflict with parents over time, and these effects were largely consistent over time and across empathy classes (see Figure 2). The only exception was that, in Wave 2, mood variability predicted greater conflict for high-empathy adolescents than for average and low-empathy adolescents, $\chi^2(1) = 10.83$, $p < .001$.

Links Between Mood Variability and Difficulties in Emotion Regulation

We predicted that greater day-to-day mood variability would, over time, be consolidated into dispositional difficulties in emotion regulation (Hypothesis 3). In full support of this hypothesis, mood variability predicted increased difficulties in emotion regulation over time, and this effect was consistent over time and across

empathy classes (see Figure 2). Although we did not formulate hypotheses about effects in the reverse direction, analyses revealed that greater dispositional difficulties in emotion regulation predicted increased day-to-day mood variability, but only for average-empathy adolescents. These effects were consistent over time. Although these paths were nonsignificant for high and low-empathy adolescents, they differed significantly between all three empathy classes, $\chi^2(1)s > 6.37$, $ps < .01$.

Indirect Effects

According to Hypothesis 4, we predicted that mood variability would mediate the aforementioned links between conflict frequency and difficulties in emotion regulation, particularly for high-empathy adolescents. In support of this hypothesis, we found that effects from conflict to difficulties in emotion regulation were partially mediated by day-to-day mood variability across all waves for high-empathy adolescents, indirect effect βs $= .03$, $ps = .001$. For average-empathy adolescents, this mediational effect was also significant in the first wave that difficulties in emotion regulation were included, $\beta = .04$, $p < .001$, but not in other waves. However, this indirect effect for average-empathy adolescents should be interpreted with caution, because paths from mood variability to difficulties in emotion regulation are inflated in the first wave. Thus, in support of Hypothesis 4, we found that predictive effects of conflict on dispositional difficulties in emotion regulation were mediated by day-to-day mood variability for high-empathy adolescents, suggesting that conflict might be a driver of the dysregulation consolidation process for these youths.

Finally, we hypothesized that emotion dysregulation would play a role in conflict maintenance over time, particularly for high-empathy adolescents. To test this hypothesis, we investigated whether mood variability (Hypothesis 5a) and difficulties in emotion regulation (Hypothesis 5b) mediated the overtime stability of conflict frequency, particularly for high-empathy adolescents. In

---

[3] Coefficients constrained over time and between empathy classes are averages of the three groups, which sometimes showed small discrepancies as a result of standardization differences.

Table 2
Annual Assessment Descriptive Statistics by Empathy Class and Measurement Wave

Empathy class	Wave 1 (N = 495)	Wave 2 (N = 464)	Wave 3 (N = 451)	Wave 4 (N = 437)	Wave 5 (N = 420)	Wave 6 (N = 425)
Conflict						
High	2.10 (.63)	1.92 (.62)	2.01 (.72)	1.98 (.72)	1.95 (.71)	1.90 (.66)
Average	2.21 (.63)	2.06 (.64)	2.09 (.66)	2.07 (.64)	1.97 (.64)	1.94 (.64)
Low	2.46 (.65)	2.28 (.65)	2.22 (.70)	2.23 (.61)	2.27 (.69)	2.06 (.57)
Overall	2.23 (.64)	2.06 (.65)	2.09 (.68)	2.08 (.65)	2.02 (.67)	1.95 (.63)
Difficulties in emotion regulation						
High			1.96 (.74)	1.97 (.76)	1.95 (.72)	1.96 (.75)
Average			1.99 (.67)	1.98 (.66)	1.97 (.64)	2.03 (.69)
Low			2.03 (.64)	2.10 (.73)	2.20 (.81)	2.20 (.80)
Overall			1.99 (.68)	2.00 (.70)	2.00 (.69)	2.05 (.73)

Note. Means and *SD* (in parentheses) for overall sample and by empathy group (high, average, and low).

support of Hypothesis 5a, we found that the overtime stability of conflict was partially mediated by mood variability across all waves for high-empathy adolescents, indirect effect βs between .01 and .04, *p*s ≤ .01. This indirect effect was also significant in the first two waves for average-empathy adolescents, and in the first wave for low-empathy adolescents, βs = .01, *p*s = .003. However, these indirect effects in the first wave are likely to be inflated due to the absence of autoregressive paths. In support of Hypothesis 5b, we found that the overtime stability of conflict was also partially mediated by difficulties in emotion regulation across all waves for high-empathy adolescents, indirect effect βs between .01 and .04, *p*s ≤ .01. For average- and low-empathy adolescents, this indirect effect was also significant in the first wave that difficulties in emotion regulation were included in the model, βs = .004, *p*s = .03.

Discussion

The aim of the present study was to investigate whether adolescent empathy moderates the longitudinal interplay between conflict with parents and later emotion dysregulation. In full support of Hypothesis 1a (see Figure 1), we found that more frequent adolescent–parent conflict predicted greater day-to-day mood variability, and these effects were significantly stronger for high-empathy adolescents than for average- or low-empathy adolescents. Similarly, in line with Hypothesis 1b, greater conflict frequency predicted greater dispositional difficulties in emotion regulation only for high-empathy adolescents. In line with Hypotheses 2a and 2b, greater day-to-day mood variability and difficulties

in emotion regulation, in turn, also predicted increased conflict frequency with parents over time, and these links were consistent for adolescents in all empathy classes. In support Hypothesis 3, day-to-day mood variability predicted increasing dispositional difficulties in emotion regulation, suggesting that fluctuations in daily mood became consolidated into dispositional emotion regulation problems over time. Furthermore, in line with Hypothesis 4, day-to-day mood variability mediated links between conflict frequency and dispositional difficulties in emotion regulation for high-empathy adolescents. This suggests that, for high-empathy adolescents, conflict might drive a consolidation process from experiential to dispositional emotion dysregulation. Finally, in line with Hypotheses 5a and 5b, day-to-day mood variability and dispositional difficulties in emotion regulation mediated the overtime stability of conflict for high-empathy adolescents, suggesting that emotion dysregulation played a role in conflict maintenance over time. Our results thus provided extensive support for the hypotheses, and reinforce the notion that empathy moderates links between adolescent–parent conflict frequency and adolescents' emotion dysregulation.

The Downsides of High Empathy

Advantages conferred by high empathy, in terms of resolving conflicts and maintaining positive close relationships, have been well-established in the literature. However, there has been increasing attention to the potential cost of high empathy (Tone & Tully, 2014). In previous work, we found that high-empathy adolescents' reports of conflict were in agreement with parents' reports,

Table 3
Diary Assessment Descriptive Statistics by Empathy Class and Measurement Wave

Empathy class	Wave 1 (N = 480)	Wave 2 (N = 448)	Wave 3 (N = 425)	Wave 4 (N = 403)	Wave 5 (N = 379)	Wave 6
Mood variability						
High	.81 (.65)	.71 (.58)	.69 (.57)	.67 (.61)	.68 (.60)	
Average	.75 (.58)	.78 (.65)	.69 (.51)	.64 (.52)	.60 (.50)	
Low	.96 (.60)	.97 (.67)	.80 (.57)	.71 (.60)	.73 (.62)	
Overall	.79 (.60)	.79 (.64)	.71 (.53)	.66 (.56)	.64 (.55)	

Note. Diary data were collected during the year between consecutive annual assessments (e.g., mood variability data in the column labeled "Wave 1" are based on the year between the Wave 1 and Wave 2 annual assessments). Means and *SD* (in parentheses) for overall sample and by empathy group (high, average, and low).

Table 4
Zero-Order Correlations Between Study Variables

Group	Conflict frequency						Mood variability					Diff. ER		
	1	2	3	4	5	6	1	2	3	4	5	3	4	5
CF 2														
High	.58													
Average	.57													
Low	.57													
Overall	.59													
CF 3														
High	.45	.67												
Average	.43	.63												
Low	.25	.50												
Overall	.41	.63												
CF 4														
High	.48	.52	.72											
Average	.34	.53	.62											
Low	.25	.40	.49											
Overall	.38	.52	.63											
CF 5														
High	.45	.51	.66	.72										
Average	.30	.44	.51	.63										
Low	.24	.44	.55	.67										
Overall	.35	.47	.56	.66										
CF 6														
High	.37	.51	.68	.72	.80									
Average	.25	.35	.44	.59	.73									
Low	.17	.32	.41	.54	.52									
Overall	.28	.38	.50	.62	.71									
MV 1														
High	.26	.36	.36	.22	.17	.20								
Average	.15	.16	.16	.17	.07	.07								
Low	.21	.19	.12	.21	.33	.19								
Overall	.20	.22	.21	.20	.17	.13								
MV 2														
High	.18	.41	.44	.20	.22	.17	.64							
Average	.07	.17	.20	.15	.15	.15	.49							
Low	.33	.08	.01	.24	.10	.04	.33							
Overall	.17	.23	.23	.19	.18	.15	.50							
MV 3														
High	.20	.32	.50	.39	.29	.33	.58	.68						
Average	.09	.16	.21	.28	.19	.26	.32	.47						
Low	.16	.01	.20	.12	.14	−.01	.22	.51						
Overall	.14	.18	.29	.29	.22	.24	.37	.52						
MV 4														
High	.22	.33	.42	.45	.37	.23	.34	.40	.35					
Average	.16	.19	.26	.26	.17	.20	.38	.46	.49					
Low	.33	.05	.10	.22	.25	.05	.31	.56	.57					
Overall	.21	.20	.28	.31	.24	.19	.35	.46	.47					
MV 5														
High	.10	.24	.32	.15	.14	.10	.48	.56	.58	.58				
Average	.15	.20	.24	.38	.24	.23	.32	.46	.36	.51				
Low	.25	.05	−.05	−.09	−.08	−.12	−.06	.32	.39	.48				
Overall	.16	.19	.21	.23	.16	.14	.29	.45	.43	.53				
ER 3														
High	.28	.30	.39	.31	.18	.25	.46	.48	.50	.35	.45			
Average	.36	.34	.32	.30	.18	.17	.40	.33	.35	.29	.38			
Low	.05	.09	.27	.28	.41	.19	.25	.17	.30	.14	−.20			
Overall	.29	.30	.33	.30	.22	.19	.39	.34	.38	.29	.29			
ER 4														
High	.27	.38	.50	.47	.34	.33	.42	.42	.45	.35	.40	.81		
Average	.22	.18	.16	.30	.20	.19	.36	.25	.45	.36	.36	.64		
Low	.09	.10	.13	.32	.26	.16	.29	.37	.44	.30	.07	.71		
Overall	.22	.22	.25	.35	.25	.23	.36	.31	.45	.34	.32	.69		
ER 5														
High	.19	.22	.36	.40	.29	.23	.28	.30	.41	.50	.38	.68	.75	

(*table continues*)

Table 4 (*continued*)

Group	Conflict frequency						Mood variability					Diff. ER		
	1	2	3	4	5	6	1	2	3	4	5	3	4	5
Average	.23	.17	.20	.34	.34	.32	.33	.21	.33	.34	.40	.54	.68	
Low	.11	.01	−.01	.26	.23	.21	.30	.32	.31	.44	.14	.46	.70	
Overall	.21	.17	.21	.35	.32	.28	.32	.27	.36	.41	.34	.56	.70	
ER 6														
High	.16	.25	.40	.36	.32	.30	.27	.37	.44	.23	.21	.68	.69	.78
Average	.23	.12	.20	.28	.28	.37	.25	.27	.33	.27	.35	.47	.53	.64
Low	−.03	−.12	−.22	.07	−.02	.15	.09	.11	.20	.14	.05	.36	.49	.66
Overall	.19	.12	.17	.27	.25	.33	.24	.27	.34	.25	.26	.51	.57	.68

Note. Variable names are abbreviated as follows: Conflict frequency (CF), mood variability (MV), difficulties in emotion regulation (ER).

whereas average- and low-empathy adolescents underreported conflict relative to both parents (Van Lissa et al., 2015). We argued that these findings might indicate that high-empathy adolescents are more sensitive to disagreement with parents, detecting even minor disagreements that average- and low-empathy adolescents fail to notice. The present study built upon these prior findings, by demonstrating that such conflict sensitivity might leave adolescents vulnerable to greater conflict-related emotion dysregulation when relationships with parents are characterized by relatively more frequent conflict. The robustness of these findings is highlighted by the fact that, within a large sample, these findings were consistent over time and across two indices of emotion dysregulation that were measured in different ways and at different assessment occasions.

These findings are important from a developmental perspective, because adolescence is a sensitive period for developing mature emotion regulation strategies (Zimmermann & Iwanski, 2014). For high-empathy adolescents, relatively frequent conflict with parents might interfere with this developmental challenge. These findings also have implications for research and practice, as they highlight the importance of considering the interplay between empathy and the relationship context. Many interventions currently exist that aim to promote adolescents' empathy (see: Feshbach & Feshbach, 2011). Based on prior research, one might expect such interventions to be beneficial for reducing adolescent–parent conflict. However, the present results suggest that promoting empathy might leave adolescents vulnerable to emotion dysregulation when conflicts with parents are relatively more frequent. Clinicians should take this interplay between empathy and relationship context into account by attempting to explicitly reduce family conflict in conjunction with attempts to increase empathy, or at least be mindful of adolescents' conflict frequency with parents and monitor adolescents' emotional adjustment. Moreover, if high-empathy adolescents present with problems attributable to more frequent conflict with parents, clinicians might focus on helping adolescents develop effective emotion regulation skills to minimize the adverse effects of these disagreements.

The finding that conflict predicted greater emotion dysregulation for high-empathy adolescents cannot be explained by mean-level differences in the study variables between the empathy classes. High-empathy adolescents did not differ significantly from average-empathy adolescents in terms of any of the study variables, but did show significant links from conflict frequency to mood variability and difficulties in emotion regulation, which were nonsignificant for average-empathy adolescents. Low-empathy adolescents, in contrast, distinguished themselves by reporting significantly greater conflict frequency than average- and high-empathy adolescents, but showed a pattern of cross-lagged effects similar to average-empathy adolescents. Thus, although high- and average-empathy adolescents had similar mean levels of conflict, mood variability, and difficulties in emotion regulation, the processes linking these variables differed significantly for high-empathy adolescents. Moreover, the findings from our previous work suggest that high-empathy adolescents might be referring to more minor disagreements than average-empathy adolescents, even when they report the same level of conflict (Van Lissa et al., 2015). If this is indeed the case, our conclusions would be further reinforced, because high-empathy adolescents would then be displaying greater conflict-related emotion dysregulation than average-empathy adolescents, in response to more minor disagreements. However, future research with objective measures or manipulations of conflict is required to assess whether high-empathy adolescents indeed respond more strongly than average-empathy adolescents to conflicts of the same intensity.

Our results suggest that high empathy might involve a trade-off: On the one hand, high empathy is known to enable adolescents to detect even minor disagreements with parents, and to resolve conflicts more constructively (Van Lissa et al., 2015; Van Lissa et al., 2016). On the other hand, the present study demonstrated that high empathy leaves adolescents vulnerable to emotion dysregulation when conflicts are relatively more frequent. Thus, high empathy appears to be associated with sensitivity to conflict, both for better and for worse. Although our results did not bear this out, it is conceivable that low-empathy adolescents experience a different trade-off: While they are less adept at addressing conflicts constructively, their low empathy may serve as a buffer, protecting them from experiencing increased emotion dysregulation if they have relatively frequent conflicts with parents. This reasoning is based on the notion that even apparently negative characteristics, such as avoidant attachment, may confer benefits to children who are born into unpredictable and unsupportive environments (Ein-Dor, Mikulincer, Doron, & Shaver, 2010). Although we did not find that low-empathy adolescents were less sensitive to conflict than average-empathy adolescents, future research might investigate whether children growing up in especially harsh environments become desensitized to conflict at an early age. Perhaps adverse experiences in particular developmental periods lead children to develop poorer empathic abilities, which in turn serve as a partial buffer against further adverse emotional consequences resulting from conflict with parents in adolescence.

The Interplay Between Experiential and Dispositional Indices of Emotion Dysregulation

The present study provided, to our knowledge, the first investigation of the overtime interplay between experiential and dispositional indices of emotion dysregulation. Our results suggested that day-to-day mood variability is consolidated into dispositional difficulties in emotion regulation over time. These findings are important, because they suggest that experiencing emotional turmoil in adolescence can interfere with the development of adaptive emotion regulation strategies. Thus, parents and practitioners should be aware of adolescents' mood swings, as these might be an indicator and precursor of more stable dispositional emotion regulation problems. Moreover, in line with social baseline theory (Beckes & Coan, 2011) and the literature on emotion coregulation (Gee et al., 2013), parents and clinicians might play an important role in helping adolescents regulate volatile emotions, breaking the cycle of dysregulation consolidation.

Although it was not a focus of our study, we also found that average-empathy adolescents' dispositional difficulties in emotion regulation predicted increased day-to-day mood variability over time. These effects were not present for high- or low-empathy adolescents, which might suggest a nonlinear effect. If conflict with parents is considered an external source of day-to-day mood variability, and dispositional difficulties in emotion regulation as a potential internal source of mood variability, then the results seem to suggest that high-empathy adolescents' external relationships with others is a more important source of mood variability than internal sources. For low-empathy adolescents, neither internal nor external sources strongly predicted mood variability, which might suggest they are more callous. Average-empathy adolescents might lack both the greater social sensitivity associated with high-empathy, and the relative callousness associated with low empathy. In that case, internal sources of variance, such as difficulties in emotion regulation, might become a more important predictor of their day-to-day mood variability. Future research is required to address such nonlinear effects.

Empathy and Conflict Maintenance

Finally, we found that both indices of emotion dysregulation played a mediating role in maintaining the stability of conflict over time for high-empathy adolescents. For most families, early adolescence is marked by an increase in adolescent–parent conflicts, which diminish from mid- to late-adolescence as the relationship becomes increasingly egalitarian (Branje et al., 2013). For some families, however, the disruption remains stable over time. Although previous research has implicated empathy in the maintenance of positive close relationships (Davis & Oathout, 1987), our findings provide novel evidence that empathy-related emotional reactivity can also play a role in maintaining negativity in relationships over time, through the reciprocal effects between conflict and emotion dysregulation. This finding also suggests, however, that stable adolescent–parent conflict might be overcome by improving adolescents' emotion regulation strategies. This could be accomplished at an individual level by helping adolescents to regulate and cope with conflict-related emotions, or at a dyadic level, by teaching adolescents and parents to negotiate conflicts in a less emotionally volatile manner.

Consideration of Effect Sizes

It should be noted that, although all results were in line with hypotheses, the cross-lagged effect sizes were quite small by conventional standards. One contributing factor might be that we assessed predictive effects of conflict frequency in one year on mood variability throughout the next year, and on difficulties in emotion regulation one year later. If one were to examine the putative processes likely to give rise to these effects—the way in which conflict experiences directly affect adolescents' emotions—effects might be stronger. Future research might use experience sampling methods to examine these links. Second, cross-lagged effects in longitudinal studies are often substantially smaller than corresponding effects in cross-sectional studies, and no formal guidelines exist for the interpretation of cross-lagged effects in longitudinal research (Adachi & Willoughby, 2015). Cross-lagged effects reflect the extent to which a variable at once measurement occasion predicts change in the outcome at the next measurement occasion, after controlling for stability of the outcome through the autoregressive coefficient. This also controls for correlations between the two variables that existed at the first measurement occasion. Adachi and Willoughby argue that, in the interpretation of cross-lagged effects, the original bivariate correlations corresponding to the cross-lagged effect and the stability of the outcome should be considered. With regard to our cross-lagged effects from conflict frequency to difficulties in emotion regulation, for example, it can be seen that the average cross-lagged correlation between conflict in one year and difficulties in emotion regulation in the next year is $r = .38$ in the high empathy group (see Table 4). The average stability correlation for difficulties in emotion regulation are $r = .70$ in the high-empathy group. Thus, although the cross-correlation from conflict to difficulties in emotion regulation is moderate for high-empathy adolescents, it is substantially attenuated by the high stability of difficulties in emotion regulation, as reflected in the standardized coefficient $\beta = .15$. Although this effect might be small by conventional standards, the moderate cross-correlation suggests that it is nonetheless relevant.

Strengths and Limitations

The present study has several important strengths. First, our 6-year longitudinal design allowed us to investigate links between conflict and emotion dysregulation throughout the entirety of adolescence, which is an important developmental period for both of these constructs (Branje et al., 2013; Zimmermann & Iwanski, 2014). Second, the present study offers high ecological validity by investigating real conflicts in stable, close relationships. Third, we found the same pattern using two widely different operationalizations of emotion dysregulation, namely online diaries administered during three weeks within each year of the study, as well as annual questionnaire measures of difficulties in emotion regulation. The fact that we replicated our findings using different measures highlights the robustness of the results, and indicates that the effects of conflict with parents are salient both in adolescents' daily experience and retrospectively, one year later. Finally, and most importantly, the longitudinal nature of the study reveals that, for high-empathy adolescents, effects from conflict to dispositional difficulties in emotion regulation are substantial, even with a

1-year time lag. These findings were consistent over time, and across two different dependent variables that were recorded at different assessment occasions. Such consistency is important, because it suggests a high likelihood that these findings can be replicated.

Nevertheless, the study has several limitations. One limitation is that all measurements were adolescent-reported. Although replicating the analyses using parent-reported conflict resulted in the same pattern of results as for adolescents' reports (see Appendix A), we chose to focus on adolescents' reports because previous research with this sample found that high-empathy adolescents and their parents report similar levels of conflict frequency, whereas average and low-empathy adolescents report lower levels of conflict frequency than both parents (Van Lissa et al., 2015). This suggests that, when it comes to adolescent–parent conflict, interrater reliability differs between the empathy classes. Furthermore, emotion dysregulation is an internal process, which is likely to be predicted more strongly by adolescents' perceptions of conflict than by parents' reports. In support of this argument, a recent study found that, although parents' and adolescents' reports are equally good predictors of overt aspects of adjustment, only children's reports predicted children's emotional functioning (Cheung et al., 2016). A potential downside of using only adolescent-reported data is that effects might be inflated, due to common method variance. Future research might overcome these limitations by using outside reporter ratings. In light of this caveat, the results of the present study should be interpreted as stemming from adolescents' *perceptions* of conflict with parents, rather than absolute levels of conflict.

Another potential limitation is that we chose to focus on general mood variability, which has been conceptualized as an indicator of emotion dysregulation (Hoeksma et al., 2004), and did not examine variability in specific emotions. We do provide additional analyses, conducted separately for each emotion, in Appendix B. Despite small differences in effect sizes, the general pattern of results was replicated across emotions, with a few notable exceptions. For example, cross-lagged effects from conflict to mood variability appeared to be a bit stronger in the average and low-empathy groups for anger variability. This might be related to anger being an especially salient emotion in relation to conflict. Second, the dysregulation consolidation effect appear to be a bit stronger for variability in anxiety and sadness variability, than for anger and happiness. Third, happiness variability did not significantly predict increased conflict. As these results are exploratory and a-theoretical, future researchers might further examine the interplay between conflict frequency and dynamics for specific emotions. A further limitation of our operationalization of mood variability is that the scales were positively skewed; consequently, adolescents' moods can change more for the worse than they can for the better. This introduces confounding between mood variability and mean mood level. Additional analyses which controlled for mood level are provided in Appendix A. These analyses showed that effects involving mood variability, predictably, decreased in size, but the pattern of results remained in line with the findings reported here, and consistent with our hypotheses.

Another potential limitation of the present study is that the empathy classes were based on only two dimensions of empathy,

empathic concern and perspective taking, but omitted *personal distress* (Davis, 1983), an affective empathy dimension which captures individuals' tendency to experience *self-focused* negative emotions in response to others' misfortunes. The common denominator of empathic concern and perspective taking is that both refer to individuals' tendencies to engage in *other-oriented* (affective and cognitive) empathic responses. Thus, our empathy classes differentiate adolescents based on other-oriented empathic responses only. Personal distress was assessed only in the first wave of this dataset. To exclude the possibility that the three classes differed in levels of personal distress, and that these differences might provide an alternative explanation for our results, we tested for mean differences in Wave 1 levels of personal distress between the three empathy classes using ANOVA, and found no significant differences, $F(2, 255) = 2.02$, $p = .14$.

Another potential limitation pertains to the generalizability of the findings. The sample, which consisted primarily of native Dutch, middle- to high-SES adolescents, is not representative of the population of Dutch adolescents as a whole. Future research is required to examine whether our findings can be generalized to the entire population of adolescents. Furthermore, the present findings cannot address the question whether empathy-related conflict sensitivity plays a role in relationships other than that between adolescents and parents, although the recent work by Righetti and colleagues (2016) suggests that it might. Moreover, our sample may not have included many adolescents in families with severe conflict. Although adolescents at-risk for externalizing symptoms were oversampled, they were equally distributed among the empathy classes. Future research should examine whether, for adolescents growing up in extremely high-conflict families, low empathy can function as a buffer to protect them from emotion dysregulation. One final limitation is that the fit indices of our final model were only in the acceptable-to-good range according to commonly used criteria. However, it is not well known how these fit indices perform when estimating longitudinal, multigroup models, as relative fit indices may underestimate model fit if the data show changes over time, or differences between groups (Little, 2013, p. 113).

Conclusions

The present study offered compelling evidence that high empathy comes at a cost, sensitizing adolescents to emotion dysregulation when relationships with parents are characterized by relatively more frequent conflict. We further unveiled two novel processes pertaining to conflict-related emotion dysregulation. First, our findings revealed a dysregulation consolidation process, which involves the consolidation of day-to-day mood variability into dispositional difficulties in emotion regulation. For high-empathy adolescents, conflict was a driver of this dysregulation consolidation process. Second, we found that conflict-related emotion dysregulation played a role in conflict maintenance for high-empathy adolescents. These findings suggest several promising avenues of further research; for example, the longitudinal links from conflict to emotion dysregulation might be explained by processes playing out in specific conflict interactions, and could be further examined using interaction studies. The dysregulation consolidation and conflict maintenance processes, on the other hand, might reflect the long-term, cumulative impact of many conflict interactions on

adolescents' emotion regulation abilities and adolescent–parent relationships, respectively. Future research should examine the diverging destinies of high-empathic children in low versus high-conflict family environments. These findings have clear implications for clinical practice, as they highlight the importance of considering the interplay between adolescent–parent conflict, and adolescents' empathic sensitivity. Our research suggests that there may be marked benefits for high-empathy adolescents' emotion regulation development and family functioning, if the cycles of dysregulation consolidation and conflict maintenance can be broken.

References

Adachi, P., & Willoughby, T. (2015). Interpreting effect sizes when controlling for stability effects in longitudinal autoregressive models: Implications for psychological science. *European Journal of Developmental Psychology, 12,* 116–128. http://dx.doi.org/10.1080/17405629.2014.963549

Adams, R., & Laursen, B. (2001). The organization and dynamics of adolescent conflict with parents and friends. *Journal of Marriage and Family, 63,* 97–110. http://dx.doi.org/10.1111/j.1741-3737.2001.00097.x

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30,* 217–237. http://dx.doi.org/10.1016/j.cpr.2009.11.004

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using mplus. *Structural Equation Modeling, 21,* 329–341. http://dx.doi.org/10.1080/10705511.2014.915181

Barber, B. K. (1994). Cultural, family, and personal contexts of parent-adolescent conflict. *Journal of Marriage and the Family, 56,* 375–386. http://dx.doi.org/10.2307/353106

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science, 16,* 351–355. http://dx.doi.org/10.1111/j.1467-8721.2007.00534.x

Beckes, L., & Coan, J. A. (2011). Social baseline theory: The role of social proximity in emotion and economy of action. *Social and Personality Psychology Compass, 5,* 976–988. http://dx.doi.org/10.1111/j.1751-9004.2011.00400.x

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88,* 588–606. http://dx.doi.org/10.1037/0033-2909.88.3.588

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54,* 579–616. http://dx.doi.org/10.1146/annurev.psych.54.101601.145030

Branje, S. J. T., Laursen, B., & Collins, W. A. (2013). Parent-child communication during adolescence. In A. L. Vangelisti (Ed.), *The Routledge handbook of family communication* (2nd ed., pp. 271–286). New York, NY: Routledge.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (p. 162). Newbury Park, CA: Sage.

Buchanan, T. W., Bagley, S. L., Stansfield, R. B., & Preston, S. D. (2012). The empathic, physiological resonance of stress. *Social Neuroscience, 7,* 191–201. http://dx.doi.org/10.1080/17470919.2011.588723

Cheung, C. S., Pomerantz, E. M., Wang, M., & Qu, Y. (2016). Controlling and autonomy-supportive parenting in the united states and china: Beyond children's reports. *Child Development, 87,* 1992–2007. http://dx.doi.org/10.1111/cdev.12567

Chung, G. H., Flook, L., & Fuligni, A. J. (2009). Daily family conflict and emotional distress among adolescents from Latin American, Asian, and European backgrounds. *Developmental Psychology, 45,* 1406–1415. http://dx.doi.org/10.1037/a0014163

Cole, P. M., Hall, S. E., & Hajal, N. (2008). Emotion dysregulation as a risk factor for psychopathology. *Child and Adolescent Psychopathology, 2,* 341–373.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44,* 113–126. http://dx.doi.org/10.1037/0022-3514.44.1.113

Davis, M. H., & Oathout, H. A. (1987). Maintenance of satisfaction in romantic relationships: Empathy and relational competence. *Journal of Personality and Social Psychology, 53,* 397–410. http://dx.doi.org/10.1037/0022-3514.53.2.397

Deković, M., Noom, M. J., & Meeus, W. (1997). Expectations regarding development during adolescence: Parental and adolescent perceptions. *Journal of Youth and Adolescence, 26,* 253–272. http://dx.doi.org/10.1007/s10964-005-0001-7

de Vos, B., van Zomeren, M., Gordijn, E. H., & Postmes, T. (2013). The communication of "pure" group-based anger reduces tendencies toward intergroup conflict because it increases out-group empathy. *Personality and Social Psychology Bulletin, 39,* 1043–1052. http://dx.doi.org/10.1177/0146167213489140

De Waal, F. B. M. (2010). *The age of empathy: Nature's lessons for a kinder society.* New York, NY: Broadway Books.

Dix, T. (1991). The affective organization of parenting: Adaptive and maladaptive processes. *Psychological Bulletin, 110,* 3–25. http://dx.doi.org/10.1037/0033-2909.110.1.3

Downey, G., Purdie, V., & Schaffer-Neitz, R. (1999). Anger transmission from mother to child: A comparison of mothers in chronic pain and well mothers. *Journal of Marriage and the Family, 61,* 62–73. http://dx.doi.org/10.2307/353883

Ein-Dor, T., Mikulincer, M., Doron, G., & Shaver, P. R. (2010). The attachment paradox: How can so many of us (the insecure ones) have no adaptive advantages? *Perspectives on Psychological Science, 5,* 123–141. http://dx.doi.org/10.1177/1745691610362349

Eisenberg, N., & Fabes, R. A. (1992). Emotion, regulation, and the development of social competence. In M. S. Clark (Ed.), *Emotion and social behavior: Review of personality and social psychology* (pp. 119–150). Thousand Oaks, CA: Sage.

Feshbach, N. D., & Feshbach, S. (2011). Empathy and education. In J. Decety & W. J. Ickes (Eds.), *The social neuroscience of empathy* (pp. 85–97). Cambridge, MA: MIT Press.

Gee, D. G., Humphreys, K. L., Flannery, J., Goff, B., Telzer, E. H., Shapiro, M., . . . Tottenham, N. (2013). A developmental shift from positive to negative connectivity in human amygdala-prefrontal circuitry. *The Journal of Neuroscience, 33,* 4584–4593. http://dx.doi.org/10.1523/JNEUROSCI.3446-12.2013

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment, 26,* 41–54. http://dx.doi.org/10.1023/B:JOBA.0000007455.08539.94

Gross, J. J. (2013). *Handbook of emotion regulation.* New York, NY: Guilford Press publications.

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85,* 348–362. http://dx.doi.org/10.1037/0022-3514.85.2.348

Gruber, J., Kogan, A., Quoidbach, J., & Mauss, I. B. (2013). Happiness is best kept stable: Positive emotion variability is associated with poorer psychological health. *Emotion, 13,* 1–6. http://dx.doi.org/10.1037/a0030262

Hawk, S. T., Keijsers, L., Branje, S. J., Graaff, J. V., Wied, M., & Meeus, W. (2013). Examining the Interpersonal Reactivity Index (IRI) among

early and late adolescents and their mothers. *Journal of Personality Assessment, 95,* 96–106. http://dx.doi.org/10.1080/00223891.2012.696080

Hoeksma, J. B., Oosterlaan, J., & Schipper, E. M. (2004). Emotion regulation and the dynamics of feelings: A conceptual and methodological framework. *Child Development, 75,* 354–360. http://www.jstor.org/stable/3696642. http://dx.doi.org/10.1111/j.1467-8624.2004.00677.x

Hoeksma, J. B., Sep, S. M., Vester, F. C., Groot, P. F. C., Sijmons, R., & De Vries, J. (2000). The electronic mood device: Design, construction, and application. *Behavior Research Methods, Instruments, & Computers, 32,* 322–326. http://dx.doi.org/10.3758/BF03207801

Hoffman, M. L. (2000). *Empathy and moral development: Implications for caring and justice.* New York, NY: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511805851

Houben, M., Van Den Noortgate, W., & Kuppens, P. (2015). The relation between short-term emotion dynamics and psychological well-being: A meta-analysis. *Psychological Bulletin, 141,* 901–930. http://dx.doi.org/10.1037/a0038822

Jahng, S., Wood, P. K., & Trull, T. J. (2008). Analysis of affective instability in ecological momentary assessment: Indices using successive difference and group comparison via multilevel modeling. *Psychological Methods, 13,* 354–375. http://dx.doi.org/10.1037/a0014173

Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass, 2,* 302–317. http://dx.doi.org/10.1111/j.1751-9004.2007.00054.x

Klimes-Dougan, B., Brand, A. E., Zahn-Waxler, C., Usher, B., Hastings, P. D., Kendziora, K., & Garside, R. B. (2007). Parental emotion socialization in adolescence: Differences in sex, age and problem status. *Social Development, 16,* 326–342. http://dx.doi.org/10.1111/j.1467-9507.2007.00387.x

Laursen, B. (1993). The perceived impact of conflict on adolescent relationships. *Merrill-Palmer Quarterly, 39,* 535–550.

Leith, K. P., & Baumeister, R. F. (1998). Empathy, shame, guilt, and narratives of interpersonal conflicts: Guilt-Prone people are better at perspective taking. *Journal of Personality, 66,* 1–37. http://dx.doi.org/10.1111/1467-6494.00001

Little, T. D. (2013). *Longitudinal structural equation modeling.* New York, NY: Guilford Press.

Maciejewski, D. F., van Lier, P. A. C., Neumann, A., Van der Giessen, D., Branje, S. J. T., Meeus, W. H. J., & Koot, H. M. (2014). The development of adolescent generalized anxiety and depressive symptoms in the context of adolescent mood variability and parent-adolescent negative interactions. *Journal of Abnormal Child Psychology, 42,* 515–526. http://dx.doi.org/10.1007/s10802-013-9797-x

McCullough, M. E., Worthington, E. L., Jr., & Rachal, K. C. (1997). Interpersonal forgiving in close relationships. *Journal of Personality and Social Psychology, 73,* 321–336. http://dx.doi.org/10.1037/0022-3514.73.2.321

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development, 16,* 361–388. http://dx.doi.org/10.1111/j.1467-9507.2007.00389.x

Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus User's guide* (7th ed.). Los Angeles, CA: Author.

Neumann, A., van Lier, P. A. C., Frijns, T., Meeus, W., & Koot, H. M. (2011). Emotional dynamics in the development of early adolescent psychopathology: A one-year longitudinal study. *Journal of Abnormal Child Psychology, 39,* 657–669. http://ukpmc.ac.uk/abstract/MED/21494863. http://dx.doi.org/10.1007/s10802-011-9509-3

Neumann, A., van Lier, P. A. C., Gratz, K. L., & Koot, H. M. (2010). Multidimensional assessment of emotion regulation difficulties in adolescents using the Difficulties in Emotion Regulation Scale. *Assessment, 17,* 138–149. http://dx.doi.org/10.1177/1073191109349579

Nezlek, J. B., Feist, G. J., Wilson, F. C., & Plesko, R. M. (2001). Day-to-day variability in empathy as a function of daily events and mood. *Journal of Research in Personality, 35,* 401–423. http://dx.doi.org/10.1006/jrpe.2001.2332

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88,* 879–903. http://dx.doi.org/10.1037/0021-9010.88.5.879

Revelle, W., & Zinbarg, R. E. (2009). Coefficients alpha, beta, omega, and the glb: Comments on sijtsma. *Psychometrika, 74,* 145–154.

Richardson, D. R., Green, L. R., & Lago, T. (1998). The relationship between perspective-taking and nonaggressive responding in the face of an attack. *Journal of Personality, 66,* 235–256. http://dx.doi.org/10.1111/1467-6494.00011

Righetti, F., Gere, J., Hofmann, W., Visserman, M. L., & Van Lange, P. A. M. (2016). The burden of empathy: Partners' responses to divergence of interests in daily life. *Emotion, 16,* 684–690.

Satorra, A. (2000). Scaled and adjusted restricted tests in multi-sample analysis of moment structures. In R. D. H. Heijmans, D. S. G. Pollock, & A. Satorra (Eds.), *Innovations in multivariate statistical analysis. A festschrift for Heinz Neudecker* (pp. 233–247). London, UK: Kluwer Academic Publishers. http://dx.doi.org/10.1007/978-1-4615-4603-0_17

Selig, J. P., & Little, T. D. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (pp. 265–278). New York, NY: Guilford Press.

Skripkauskaite, S., Hawk, S. T., Branje, S. J., Koot, H. M., van Lier, P. A., & Meeus, W. (2015). Reactive and proactive aggression: Differential links with emotion regulation difficulties, maternal criticism in adolescence. *Aggressive Behavior, 41,* 214–226. http://dx.doi.org/10.1002/ab.21583

Somerville, L. H., Jones, R. M., & Casey, B. J. (2010). A time of change: Behavioral and neural correlates of adolescent sensitivity to appetitive and aversive environmental cues. *Brain and Cognition, 72,* 124–133. http://dx.doi.org/10.1016/j.bandc.2009.07.003

Sonnby-Borgström, M. (2002). Automatic mimicry reactions as related to differences in emotional empathy. *Scandinavian Journal of Psychology, 43,* 433–443. http://dx.doi.org/10.1111/1467-9450.00312

Statistics-Netherlands. (1993). *Standaard beroepenclassificatie 1992* [standardized classification of occupations 1992]. Voorburg/Heerlen: Netherlands Central Bureau of Statistics.

Tone, E. B., & Tully, E. C. (2014). Empathy as a "risky strength": A multilevel examination of empathy and risk for internalizing disorders. *Development and Psychopathology, 26,* 1547–1565. http://dx.doi.org/10.1017/S0954579414001199

Van der Graaff, J., Branje, S., De Wied, M., Hawk, S., Van Lier, P., & Meeus, W. (2014). Perspective taking and empathic concern in adolescence: Gender differences in developmental changes. *Developmental Psychology, 50,* 881–888. http://dx.doi.org/10.1037/a0034325

Van Kleef, G. A. (2009). How emotions regulate social life the emotions as social information (EASI) model. *Current Directions in Psychological Science, 18,* 184–188. http://dx.doi.org/10.1111/j.1467-8721.2009.01633.x

Van Lier, P. A. C., Frijns, T., Neumann, A., Den Exter Blokland, E., Koot, H. M., & Meeus, W. (in press). The RADAR young study: Design, description of sample, and validation of cohort assignment.

Van Lissa, C. J., Hawk, S. T., Branje, S., Koot, H. M., & Meeus, W. H. J. (2016). Common and unique associations of adolescents' affective and cognitive empathy development with conflict behavior towards parents. *Journal of Adolescence, 47,* 60–70. http://dx.doi.org/10.1016/j.adolescence.2015.12.005

Van Lissa, C. J., Hawk, S. T., Branje, S. J., Koot, H. M., Van Lier, P. A., & Meeus, W. H. (2015). Divergence between adolescent and parental

perceptions of conflict in relationship to adolescent empathy development. *Journal of Youth and Adolescence, 44,* 48–61.

Van Lissa, C. J., Hawk, S. T., & Meeus, W. H. J. (2017). The effects of affective and cognitive empathy on adolescents' behavior and outcomes in conflicts with mothers. *Journal of Experimental Child Psychology, 158,* 32–45. http://dx.doi.org/10.1016/j.jecp.2017.01.002

Vescio, T. K., Sechrist, G. B., & Paolucci, M. P. (2003). Perspective taking and prejudice reduction: The mediational role of empathy arousal and situational attributions. *European Journal of Social Psychology, 33,* 455–472. http://dx.doi.org/10.1002/ejsp.163

Wechsler, D., & Kort, W. (2005). *WISC-IIInl: Wechsler intelligence scale for children.* New York, NY: Harcourt Assessment.

Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion-specific developmental variations. *International Journal of Behavioral Development, 38,* 182–194. http://dx.doi.org/10.1177/0165025413515405