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Latent Difference Score Modeling: A Flexible Approach for Studying Informant Discrepancies

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The current study proposes a flexible approach to studying informant discrepancies: Latent Difference Scores modeling (LDS). The LDS approach is demonstrated using an empirical example in which associations between mother–adolescent and father–adolescent discrepant parenting perceptions, and concurrent and later adolescent externalizing behaviors, were investigated. Early adolescents (N = 477, aged 12–15 years), mothers (N = 470), and fathers (N = 440) filled out questionnaires about mothers' and fathers' parenting. Results using the LDS approach are compared to results obtained by the 2 existing approaches for informant discrepancies: Observed Difference Scores modeling (ODS) and Polynomial Regression Analyses (PRA). Results from the LDS approach show that adolescents perceive their mothers' and fathers' parenting less favorably than mothers and fathers themselves, and that stronger mother–adolescent discrepancies are consistently related to stronger father–adolescent discrepancies. Parent–adolescent discrepancies were concurrently associated with more aggressive and rule-breaking behaviors, but not longitudinally. Results generalized across the 2 discrepancy approaches, but only very few significant associations were found in the PRA. Advantages and limitations of all 3 approaches to studying informant discrepancies are discussed.

Public Significance Statement
This study shows that parents perceive their own behaviors more favorably (i.e., higher levels of positive parenting, lower levels of negative parenting) than adolescents view parents' behaviors. Mother–adolescent and father–adolescent discrepant perceptions of different types of parenting are consistently interrelated, and parent–child disagreement is associated with concurrent but not later levels of aggressive and rule-breaking behaviors.

Keywords: informant discrepancies, Latent Difference Score modeling, Observed Difference Score modeling, Polynomial Regression Analyses, parenting

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The use of multiple informants' reports on the same behaviors are considered key components of best practices in psychological assessment (Hunsley & Mash, 2007). Nevertheless, inconsistencies often arise among mulitple informants' reports (hereafter referred to as "informant discrepancies"), even if informants complete parallel or identical measures (Achenbach, 2006). Rather than statistical nuisance, however, informant discrepancies can have substantive meaning above and beyond individual informant reports. Given that discrepancies can be viewed as worthwhile units of analysis, developing (statistical) approaches that can adequately assess informant discrepancies is of paramount importance (Laird & De Los Reyes, 2013). Until now, informant discrepancies have been examined using either of two approaches: Observed Difference Scores (ODS; see, e.g., De Los Reyes & Kazdin, 2005) or Polynomial Regression Analyses (PRA; Laird & De Los Reyes, 2013). Unfortunately, the validity of ODS is seriously hampered by a number of methodological issues. Furthermore, the types and complexity of research questions that can be addressed using PRA is rather limited.

The current study proposes a flexible alternative to studying informant discrepancies, the Latent Difference Scores (LDS) approach. The utility of the LDS approach is demonstrated in an empirical example, in which interrelations between mother–adolescent and father–adolescent discrepant perceptions of parent-

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ing are examined, and their simultaneous associations with concurrent and later adolescent adjustment problems are investigated. Second, to provide more comprehensive knowledge about the comparability of the different approaches, associations between parent–child discrepancies and adjustment problems obtained by ODS and PRA are also investigated.

Approaches for Studying Informant Discrepancies

Informant discrepancies are typically examined using ODS, but unfortunately, this approach is plagued by several methodological issues. Because ODS are a combination of two variables that are both measured with error, they have inflated unreliability, which may result in downwardly biased parameter estimates (J. R. Edwards, 2002; but, see Thomas & Zumbo, 2012). Furthermore, if measurement invariance across informants is not explicitly tested, parent–adolescent discrepancies may reflect informant differences in understanding the meaning of a construct (Vandenberg & Lance, 2000). Although both these issues are remediable, two other limitations pose more serious threats to the validity of ODS. First, because both individual scores have equal weight in the difference score, using ODS relies on the untested assumption that effects of both informants' reports on associated variables also are equally strong (J. R. Edwards, 2002; Laird & De Los Reyes, 2013). Second, subtracting two scores from one another reduces two scores to one, and as such, actual discrepancy effects are confounded with the main effects of both informants' scores (J. R. Edwards, 2002). Based on these issues, researchers have concluded that ODS "*do not provide valid tests of the utility of informant discrepancies*" [emphasis added] (Laird & De Los Reyes, 2013, p. 1), and several researchers now advocate against their use (Laird & De Los Reyes, 2013; Scalas, Marsh, Morin, & Nagengast, 2014).

In response to the critique of the ODS approach, the PRA approach has recently been proposed as an alternative for studying informant discrepancies (Laird & De Los Reyes, 2013). PRA comprise regression analyses with higher-order terms included, such as quadratic effects of, and interaction terms between, different informants' reports. Interaction terms between informant reports are included to examine the extent to which informant discrepancies affect outcome variables, in addition to the effects of both individual reports (J. R. Edwards, 2002; Laird & De Los Reyes, 2013). Because the impact of both informants' reports is empirically estimated, they can have different weight on associated variables. Moreover, in PRA, discrepancy effects are not confounded with the main effects of both informants' scores. Despite these advantages, the types of research questions that can be (simultaneously) addressed with PRA is rather limited. For example, using PRA does not allow for examining how informant discrepancies of multiple dyads are interrelated and together affect outcome variables, whether third variables affect the extent to which informants disagree, or whether third variables moderate associations between informant discrepancies and outcome variables.

A Flexible Alternative: Latent Difference Scores

In the current study, we propose a more flexible approach, Latent Difference Scores (LDS) modeling, to examine informant discrepancies. The LDS approach to informant discrepancies was adapted from similar approaches from various disciplines, including social psychology (Scalas et al., 2014), and developmental psychology (McArdle, 2009). In the case of informant discrepancies, LDS models use second-order latent factors to examine differences between different informants' perceptions of the same behavior (e.g., self-rating vs. other-rating). First, latent factors representing individual informant reports are created from observed item scores. Then, LDS (Δ) are created as second-order latent factors from the latent factors representing individual informant reports, as

$$Y_{\text{other-rating}} = 1 * Y_{\text{self-rating}} + 1 * \Delta_{\text{self,other}}$$

By constraining the factor loadings of $Y_{\text{self-rating}}$ and $\Delta_{\text{self,other}}$ to be equal to 1, the results of a subtraction are simulated, and the discrepancy score represents "*the part of the score of* $Y_{other\text{-}rating}$ *that is not identical to* $Y_{self\text{-}rating}$" [emphasis added] (adapted from McArdle, 2009, p. 583). As such, the discrepancy score provides information about differences in perceptions within a dyad, while the effect of the self-rating is also taken into account. Discrepancy scores contain means (μ_Δ), variances (σ^2_Δ), and a covariance with the self-rating ($\sigma_{\Delta\text{-self}}$). When specified in this manner, LDS represent directional difference scores; positive LDS means reflect higher other-ratings compared to self-ratings, and negative LDS means reflect lower other-ratings compared to self-ratings. Figure 1 shows a graphical presentation of a univariate LDS model; an Mplus syntax for an example LDS model is provided as online supplementary material (see Appendix A).

The LDS approach has several advantages over the ODS approach. First, LDS result in the construction of two latent variables that represent the common (or identical) part of the two informants' scores, and the unique part of one of the informant's scores (i.e., the part that is *not identical* to the other informant's score). As a result, effects of the discrepancy score and one informant's score on associated variables are not forced to be equal but rather can be empirically weighted within the model. Moreover, because one informant and the discrepancy score both are related to other variables, LDS do not confound the discrepancy and main effects the way ODS do. Furthermore, measurement errors of the associated constructs can be partialed out, and it is possible to test for measurement invariance using LDS (Scalas et al., 2014).

In contrast to the PRA approach, the LDS approach allows for the simultaneous examination of several aspects of informant discrepancies, and for testing more complex hypotheses. For example, the extent to which informants disagree (mean LDS), the extent to which different dyads within a sample differ in the extent to which they disagree (variance LDS), and correlates of informant discrepancies can all be studied simultaneously. Furthermore, LDS can be used as predictors, (concurrent) correlates, and outcome measures, all within one model. Using LDS further allows for testing moderation of associations between informant discrepancies and associated variables, and of changes in discrepancies over time. The LDS approach thus is a highly flexible approach to studying informant discrepancies.

Empirical Illustration: Parent–Adolescent Discrepancies and Externalizing Problems

To empirically illustrate the LDS approach, interrelations between mother–adolescent and father–adolescent discrepant views of parenting are examined, and their simultaneous associations with concurrent

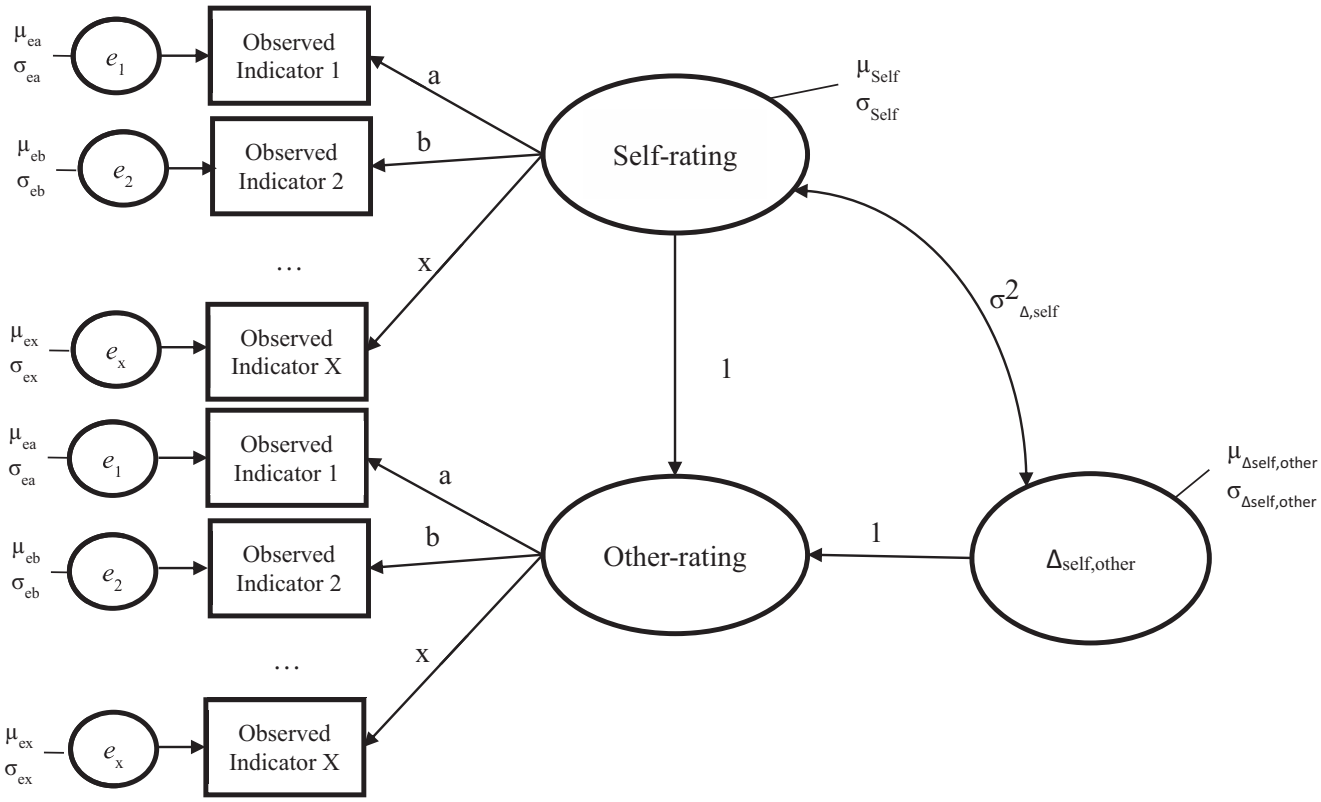

Figure 1. Graphical presentation of a Univariate LDS Model for Informant Discrepancies. Correlations between residual variances of same items across informants were also estimated, but not shown for clarity of presentation. Constraints are indicated by similar labels for the factor loadings, error intercepts, and residual error variances.

and later adolescent adjustment problems are investigated. To further demonstrate (some of) the types of research questions that can be addressed, adolescent age and gender differences in the degree to which parent–adolescent dyads disagree, and moderation of associations between the parenting factors and child adjustment problems, are explored. Parent–adolescent discrepant views of parenting were chosen because discrepancies may be particularly pronounced for parents' and children's views of parenting behaviors in early adolescence. During early adolescence, family relationships undergo pronounced changes, as children spend more time unsupervised from parents, parent–child communication decreases, and children strive for increasing autonomy from their parents (Smetana, Campione-Barr, & Metzger, 2006; Steinberg & Morris, 2001). These changes in family relationships may be associated with parent–child disagreement about parenting behaviors. A certain amount of parent–adolescent disagreement is thought to serve key developmental functions, such as the realignment of family relationships (Holmbeck & O'Donnell, 1991; Steinberg & Morris, 2001) and adolescents' striving for autonomy from parents (McElhaney, Allen, Stephenson, & Hare, 2009). Conversely however, parent–adolescent disagreements may reflect underlying problems that contribute to child psychopathology, such as family conflict, poor communication, or lack of insight (Korelitz & Garber, 2016; Ohannessian & De Los Reyes, 2014). A recent meta-analysis found parent–child discrepancies for a range of parenting behaviors; generally, parents were found to view their own parenting more favorably than children viewed their parents' behaviors (Korelitz & Garber, 2016).

Most studies examining parent–child discrepant perceptions of parenting have used the ODS approach (De Los Reyes, Goodman, Kliewer, & Reid-Quiñones, 2010; Gaylord, Kitzmann, & Coleman, 2003; Guion, Mrug, & Windle, 2009; Maurizi, Gershoff, & Aber, 2012; Ohannessian, 2012; Pelton & Forehand, 2001; Pelton, Steele, Chance, & Forehand, 2001). Some studies have employed the PRA approach and found initial, although mixed, evidence of associations between parent–child discrepancies and adolescent adjustment problems (Abar, Jackson, Colby, & Barnett, 2015; Laird & De Los Reyes, 2013; Ohannessian & De Los Reyes, 2014; Reidler & Swenson, 2012). In the current study, results from the LDS approach are compared to results obtained using the two existing approaches, ODS and PRA.

Aims of the Current Study

The first aim of this study is to demonstrate, using an empirical example, how LDS models are specified and how their results should be interpreted. It is therefore examined to what extent mother–adolescent dyads and father–adolescent dyads disagree about a large number of parenting behaviors, to what extent mother–adolescent and father–adolescent discrepancies are interrelated, and whether parenting discrepancies differ according to

adolescent age or gender. Then, using hybrid models, associations between mother–adolescent and father–adolescent discrepancies, and concurrent and later adolescent aggressive and rule-breaking behaviors, are examined. To illustrate the flexibility of this approach, moderation of associations between the parenting factors and adolescent adjustment problems by adolescent age and gender is further explored. The second aim of this study is to provide comprehensive knowledge about the comparability of results obtained by the LDS approach and the other two approaches for studying informant discrepancies. Therefore, associations between parent–adolescent discrepancies and adolescent adjustment problems that are found using the LDS approach are compared to results obtained from ODS and PRA.

Method

Procedure and Participants

This study is part of the longitudinal Flemish Study on Parenting, Personality, and Development, which started in 1999 (Prinzie et al., 2003). In 1999, a proportional stratified sample of elementary-school-age children attending regular schools was randomly selected. Strata were constructed according to geographical location, sex, and age. Participants took part voluntarily, and anonymity and confidentiality were guaranteed. All participants gave written informed consent. This study was conducted in full compliance with pertinent international treaties, national laws, regulations, and codes concerning research involving minors (children), as well as privacy. The study protocol meets the requirements of the codes of conduct of pertinent professional associations, in particular of national and international psychological and behavioral associations. Given that neither interventions nor invasive actions were part of this study, the board of the Catholic University Leuven (Belgium) approved this study, and in conformity with Belgian law, no further approval was needed. Recruitment procedures are described more extensively in Prinzie and colleagues (2003). For the current study, we used data that was collected at the beginning of adolescence (Time 1), which corresponded to the 2007 wave. At Time 1, 477 adolescents, 470 mothers, and 440 fathers provided information about mothers' and fathers' parenting behaviors. All participants had the Belgian nationality. In 2007, adolescents' ages ranged between 12 and 15 years (M = 13 years 6 months), and 52% (N = 248) were girls. Mothers' age ranged between 39 and 64 years (M = 48 years 7 months), fathers' ages ranged between 40 and 72 years (M = 47 years 7 months). At Time 2 (2009), 430 adolescents reported about their own adjustment problems.

Measures

Parenting behaviors. In 2007, four reports on a large number of parenting instruments were collected: mother self-report (MM); father self-report (FF); adolescent report of mother's parenting (AM); and adolescent reports of father's parenting (AF). The different informant reports were equivalent in content, but wording of items was adjusted slightly for each informant. All of the following instruments were included in the current study: the Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993; Prinzie, Onghena, & Hellinckx, 2007), overreactive discipline and lax discipline subscales; the EMBU-C/P, (Egna Minnen Beträffande Uppfostran-Child/Parent; Deković et al., 2006; Perris, Jacobsson, Lindström, von Knorring, & Perris, 1980), overprotective control subscale; the Parenting Practices Questionnaire (PPQ; Robinson, Mandleco, Olsen, & Hart, 1995), warmth/involvement and reasoning/induction subscales; and the Mother-Father-Peer-scale-33 (MFP-33; Epstein, 1983), autonomy granting subscale. The PS uses hypothetical discipline encounters followed by two options, which act as opposite anchor points for a 7-point scale where 1 indicates a high probability of using an effective discipline strategy (e.g., "When I misbehave" . . . *My mother speaks to me calmly*) and 7 indicates a high probability of making a discipline mistake ("*My mother raises her voice or yells*"). The EMBU-C/P has 4-point scale items, ranging from 1 = *no, never* to 4 = *yes, almost always*. The PPQ comprises 5-point scale items, ranging from 1 = *never* to 5 = *always*. The MFP-33 uses 4-point scale items, ranging from 1 = *entirely untrue* to *4 = entirely true.* Because each instrument uses different answering formats, parenting factors were derived from each instrument separately, rather than across instruments.

Parenting factors were empirically derived in two steps. First, dimensionality of the constructs was assessed using item-level exploratory factor analyses across informants. Results of these analyses indicate that all items of the a priori scale of reasoning (PPQ) loaded on equivalent factors across informants. The empirical factors of warmth (PPQ), overreactive discipline (PS), lax discipline (PS), and autonomy granting (MFP-33) contained 1–3 fewer items than their a priori scales. The overprotective control scale (EMBU-C/P) broke up into two empirical factors of three items each (supplementary online material, Appendix B).

Measurement invariance of these factors across all four informants (AM; AF; MM; FF) was assessed by comparing increasingly stringent models, reflecting (A) configural, (B) metric, (C) scalar, and (D) full uniqueness invariance (Van de Schoot, Lugtig, & Hox, 2012). For the PS and PPQ, models were analyzed using MLR estimation; for the EMBU-C/P and MFP-33, Models A–C were analyzed using the Theta parametrization and the WLSMV estimator. If imposing invariance constraints resulted in a significant increase in the Satorra-Bentler scaled chi-square value and, additionally, in $\Delta_{CFI} \geq -.01$ supplemented by $\Delta_{RMSEA} \geq .015$, or $\Delta_{SRMR} \geq .03$ (item loadings) or $\Delta_{SRMR} \geq 0.010$ (item intercepts, residual variances), the respective constraint was not tenable (Chen, 2007). In all models, residual variances of parallel items across informants were allowed to correlate (Marsh & Hau, 1996). Results show that scalar invariance held for all factors of the PS, the PPQ, and the MFP-33 (supplementary online material, Appendix C). It was, however, necessary to freely estimate intercepts of some observed indicators for overreactive discipline and warmth. The empirical factors of the EMBU-C/P were excluded from further analyses, because of several empirical and interpretive difficulties with both factors.

Adjustment problems. Adolescents rated their own aggressive and rule-breaking behaviors at T1 and T2 using the Dutch translation of the Youth Self-Report (YSR; Achenbach, 1991; Verhulst, Van der Ende, & Koot, 1997). Extensive research has shown that YSR test scores are reliable and can be validly interpreted (Vignoe, Bérubé, & Achenbach, 2000). Aggressive behaviors are rated using 17 items (e.g., "I fight a lot"), and rule-breaking behaviors are assessed using 15 items (e.g., "I steal from home"). Each item is rated as 0 = *not true*, 1 = *somewhat/sometimes true*, or 2 = *very/often true*. In this study, Cronbach's αs for the aggressive and rule-breaking scales across measurement occasions ranged between .81 and .89. Additionally, teacher-

ratings of adolescent aggressive and rule-breaking behaviors using the Teacher Report Form were used (Achenbach, 1991). At T1, correlations between adolescent-reports and teacher-reports (N = 419) of aggressive and rule-breaking behaviors were r = .08, *ns,* and r = .23, $p < .001$, respectively. At T2, correlations between adolescent-reports and teacher-reports (N = 282) were for aggression, r = .19, $p < .01$, and rule-breaking, r = .53, $p < .001$.

Analytic strategy. In the first step of the analyses, multivariate LDS models in which parenting factors regarding mothers and fathers were included simultaneously, were specified to examine the extent to which (a) mother–adolescent and father–adolescent dyads disagree on the parenting behaviors, and (b) parent–adolescent discrepancies are associated with parents' self-reported parenting as well as with the other dyad's perceptions of parenting (both self-reported parenting *and* parent–adolescent discrepancy). Because covariates can be included in these models, child age and gender differences in the parenting factors could also be investigated. For model identification purposes, means of mothers' self-reported parenting behaviors, and means of child reports of mothers' and fathers' parenting, were set to zero, and factor loadings of the first observed indicator were set to one for each informant.

Then, the extent to which the parenting factors were associated with adjustment problems was examined, and moderation of associations by child age and gender was explored. For each parenting factor, models were specified for mothers and fathers, and for concurrent and later adolescent aggressive and rule-breaking behaviors simultaneously. In these hybrid models, child age and gender were included as covariates of the parenting factors, and of children's adjustment problems. Because LDS allows for testing moderation effects, it could further be explored whether associations between the parenting factors and children's adjustment problems differed across child gender or age. To examine moderation effects, both problem behaviors assessed at T2 were regressed simultaneously on interaction terms between each mother–adolescent *or* father–adolescent LDS, and child gender *or* age (centered). Given the exploratory nature and considerable number (20) of tests for moderation, interaction effects were considered to be significant at $p < .01$.

Subsequently, associations between parent–adolescent discrepancies and adolescent adjustment problems were investigated using the two known approaches for studying informant discrepancies, ODS and PRA. For both these approaches, parenting factors were computed that were identical to the empirically derived latent parenting factors. Thus, the same items were used for the creation of all four informant reports (PRA), as well as the discrepancy scores (ODS), as in the LDS part of the analyses. In the ODS analyses, all four scores (self-report mothers; self-report fathers; mother–adolescent discrepancies; father–adolescent discrepancies) were simultaneously related to adolescent externalizing problems, using the same model specifications as in the analyses for the LDS factors. For the PRA analyses, interaction terms between informant reports (reflecting parent–child similarity) and quadratic terms were created in SPSS 23 and subsequently used in MPlus, given that including multiple latent interaction terms simultaneously in MPlus is computationally highly demanding. All analyses were conducted in MPlus 7 (Muthén & Muthén, 1998–2012).

Results

Parent–Adolescent Discrepancies: LDS Models

Model fit and model parameters of the multivariate LDS models, in which mothers' and fathers' parenting behaviors were included simultaneously, are shown in Table 1 (model fit indices, factor means and variances). Comparison of the 95% confidence intervals of the LDS means indicate that on average, adolescents rated mothers but not fathers higher on overreactive discipline and lax discipline than parents themselves did (positive LDS means). Furthermore, adolescents rated both mothers and fathers lower on warmth and reasoning than parents themselves (negative LDS means). Additionally, adolescents rated fathers but not mothers lower on autonomy granting than parents themselves. Significant variances of all LDS indicate that there were significant differences between dyads in this sample, regarding how much adolescents and parents differed in their views. Comparison of the 95% confidence intervals for the means of the LDS of mother–adolescent versus father–adolescent dyads further suggests that fathers and adolescents on average differed more in ratings of warmth than mothers and adolescents did. Mother–adolescent and father–adolescent dyads had similarly large discrepant views of overreactive discipline, lax discipline, reasoning, and autonomy granting.

Negative correlations between parents' self-reported parenting and the corresponding LDS were found for all factors, and ranged between, $r = -.17$, $p < .01$, for maternal warmth and $r = -.59$, $p < .001$, for maternal autonomy granting. The negative sign of the

Table 1
Model Fit Indices and Means and Variances of Mothers' and Fathers' Self-Reports and Parent–Child Latent Discrepancy Scores (LDS)

					Means				Variances			
	Model fit indices				Self-Report		LDS		Self-Report		LDS	
Parenting behavior	χ^2	*df*	CFI	RMSEA	MM	FF	AM	AF	MM	FF	AM	AF
Overreactive discipline	458.66	235	.91	.044	$.00^{a}$	$-.06^{a}$	$.19^{b}$	$.06^{ab}$	$.73^{***}$	$.71^{***}$	$.77^{***}$	1.07^{***}
Lax discipline	593.59	334	.91	.040	$.00^{a}$	$.15^{b}$	$.27^{b}$	$.20^{b}$	$.37^{***}$	$.43^{***}$	$.50^{***}$	$.68^{***}$
Warmth	1349.32	723	.92	.042	$.00^{a}$	$-.45^{b}$	$-.47^{b}$	$-.65^{c}$	$.31^{***}$	$.37^{***}$	$.46^{***}$	$.85^{***}$
Reasoning	511.14	240	.95	.048	$.00^{a}$	$-.24^{b}$	$-.43^{c}$	$-.43^{c}$	$.30^{***}$	$.35^{***}$	$.64^{***}$	$.76^{***}$
Autonomy granting	341.03	258	.98	.026	$.00^{a}$	$-.13^{a}$	$-.41^{ab}$	$-.58^{b}$	1.40^{***}	1.23^{***}	1.91^{***}	2.41^{***}

Note. Latent means of mothers' self-reported parenting behaviors were set to zero for identification of the model. Different superscripts indicate significant mean-levels, indicated by non-overlapping 95% confidence intervals.
*** $p < .001$.

correlation, together with the sign of the LDS mean (below/above zero), suggests that adolescents tended to *over*rate mothers' and fathers' negative parenting behaviors (overrreactive discipline, lax discipline) less if parents rated themselves higher on these behaviors, and adolescents tended to *under*rate parents' positive parenting behaviors (warmth, reasoning, autonomy granting) more if parents rated themselves higher on these behaviors.

Furthermore, correlations between mothers' and fathers' self-reported parenting behaviors ranged from $r = .17$, $p < .001$, for warmth to $r = .32$, $p < .001$, for autonomy; correlations between mother–adolescent and father–adolescent discrepant perceptions ranged from $r = .18$, $p < .01$, for overreactive discipline to $r = .45$, $p < .001$, for warmth. Thus, larger mother–child discrepancies of all parenting variables were related to larger father–child discrepancies. Only father self-reports on autonomy granting were related to smaller mother–child discrepancies for this behavior, $r = -.14$, $p < .05$. All other paternal self-reports were unrelated to mother–child discrepancies, and conversely, mothers' self-reported parenting behaviors were all unrelated to father–adolescent discrepancies.

Child Age and Gender Differences in the Parenting Factors

Then, child age and gender differences in parent–adolescent discrepant perceptions were examined (full results can be obtained from the first author upon request). Results indicate that older adolescents overrated mothers' ($b = 0.11$, $SE = 0.04$, $p < .05$) and fathers' ($b = 0.17$, $SE = 0.05$, $p < .05$) overreactive discipline more than younger adolescents. Older adolescents underrated mothers' ($b = -0.13$, $SE = 0.03$, $p < .001$) and fathers' ($b = -0.11$, $SE = 0.04$, $p < .01$) warmth more, and older adolescents underrated mothers' reasoning ($b = -0.11$, $SE = 0.03$, $p < .01$) and autonomy granting ($b = -0.20$, $SE = 0.08$, $p < .01$) more. Furthermore, daughters of mothers underrated mothers' reasoning more than sons of mothers ($b = -0.23$, $SE = 0.09$, $p < .01$); no other child gender differences in mother–child or father–child discrepancies were found. Regarding parents' self-reported parenting behaviors, mothers ($b = -0.19$, $SE = 0.09$, $p < .05$) and fathers ($b = -0.18$, $SE = 0.09$, $p < .05$) of girls rated themselves lower on overreactive discipline than parents of boys, and mothers of girls rated themselves higher on autonomy granting than mothers of boys ($b = 0.40$, $SE = 0.17$, $p < .05$). Fathers of older children rated themselves lower on warmth ($b = -0.08$, $SE = 0.03$, $p < .05$); no other child age effects on parents' self-rated parenting were found. In all hybrid models, child age and gender differences in the parenting factors were taken into account by including these background variables as covariates.

Discrepancies and Adjustment Problems: LDS Approach

Hybrid models, in which mothers' and fathers' self-reported parenting and mother–adolescent and father–adolescent discrepancies were related to concurrent and later aggressive and rule-breaking behaviors, showed adequate to excellent fit to the data. CFI values ranged between 0.91 for warmth to 0.98 for autonomy granting; RMSEA values ranged between .044 for reasoning and .027 for autonomy granting (results not shown in a table). Several parent–adolescent discrepancies were concurrently correlated with aggressive and/or rule-breaking behaviors (see Table 2). Moreover, all concurrent correlations were in the expected direction. Specifically, stronger mother–adolescent discrepancies of warmth and reasoning (i.e., more adolescent underreporting) were concurrently related to higher aggressive and rule-breaking behaviors. Furthermore, stronger mother–adolescent and father–adolescent discrepancies of laxness (i.e., more adolescent overreporting) were related to more rule-breaking behaviors. Additionally, stronger father–adolescent discrepancies of overreactive discipline were related to more concurrent aggressive behaviors. Mother–adolescent and father–adolescent discrepancies for autonomy granting were all unrelated to concurrent aggressive and rule-breaking behaviors. Additionally, only 1 (out of 20) longitudinal relation between parent–adolescent discrepancies and adolescent externalizing problems was significant. Specifically, stronger father–adolescent discrepancies on laxness were associated with relatively less aggressive behaviors two years later.[1,2,3]

[1] Coefficients obtained from the empirically derived parenting factors were compared from analyses in which latent factors identical to the a priori scales were used. Four associations were only significant for the a priori parenting factors, and conversely, four associations were only significant for the empirically derived factors; nevertheless, sizes of these coefficients were highly similar. We are therefore confident that the empirically derived factors closely resemble their a priori scales.

[2] It was explored whether associations between parent–adolescent discrepancies and adjustment problems are moderated by the direction of the discrepancy (i.e., adolescent overreporting vs. underreporting, compared to parents). Because moderation by direction of the discrepancy score cannot be modelled directly in MPlus, dummies were created from saved factor scores for each LDS separately, reflecting dyads in which adolescents had more negative versus more positive views of parenting, compared to parents themselves. It was then examined whether correlation matrices differed for the two types of dyads, by comparing model fit indices of matrices in which all correlations were estimated freely for adolescent overreporters versus underreporters, to matrices in which correlations between the measures of interest (i.e., parent–adolescent discrepancies, and adolescent aggressive and rule-breaking behaviors) were constrained to be equal for adolescent overreporters versus underreporters. Chi-square differences between the nested correlation matrices ranged between $\Delta\chi^2(4) = 0.47$, $p = .98$, for mother–adolescent discrepancies of autonomy, and $\Delta\chi^2(4) = 8.14$, $p = .09$, for mother–adolescent discrepancies of overreactive discipline. Associations between the LDS and adolescent aggressive and rule-breaking behaviors are thus similar (not significantly different) for dyads in which adolescents have more negative versus more positive views of their parents' parenting behaviors, compared to parents themselves.

[3] It was explored whether associations can be replicated on teacher-reports of adolescent aggressive and rule-breaking behaviors. Specifically, teacher-rated adolescent aggressive and rule-breaking behaviors were added to the multivariate LDS models in which adolescent adjustment problems were predicted from mothers' and fathers' self-rated parenting behaviors and adolescent–mother and adolescent–father discrepancies. Each of the models was analyzed twice: once, associations between self-ratings versus teacher-ratings of externalizing behaviors and all parenting constructs were freely estimated, and once, these were constrained to be equal across teacher-ratings and adolescent-ratings. Although increments in chi-square were significant for several models, relative fit indexes did not change substantially; all ΔCFI $\leq$ .006, ΔRMSEA $\leq$ .002, and ΔSRMR $\leq$ .007 (see supplementary online material, Appendix D for all model comparisons). Associations between the parenting factors and teacher-rated adjustment problems in the unconstrained models show that the parenting factors were generally not significantly associated with teacher-rated adjustment problems (supplementary online material, Appendix E). Nevertheless, given that constraints across reporters did not lead to appreciable changes in model fit, associations between the parenting factors could be replicated on teacher-reports of adolescent aggressive and rule-breaking behaviors. We can thus be confident that associations between parent–adolescent discrepancies and aggressive and rule-breaking behaviors are not due to same-reporter bias alone.

Table 2
Associations Between Parents' Self-Reports, Parent–Child Discrepant Views, and Adjustment Problems

Parenting factors	Initial time-point correlations		Longitudinal associations					
			Aggression			Rule-breaking		
	Aggression	Rule-break	*b*	*SE*	β	*b*	*SE*	β
Overreactive								
$Self_{Mother}$	.28***	.22***	.76	.22	.18**	.27	.17	.09
$Self_{Father}$	.20**	.16**	.06	.24	.02	.001	.19	.00
$\Delta_{Mother,Child}$	.05	.06	.27	.21	.07	.09	.15	.03
$\Delta_{Father,Child}$	.15*	.10	.01	.18	.01	.01	.15	.01
Laxness								
$Self_{Mother}$	.08	.15***	1.27	.43	.18**	.38	.28	.08
$Self_{Father}$	.07	.06	−.11	.33	−.02	.20	.28	.04
$\Delta_{Mother,Child}$	.11	.11*	.51	.41	.09	.01	.28	.003
$\Delta_{Father,Child}$	.01	.14*	−.78	.34	−.15*	−.37	.25	−.10
Warmth								
$Self_{Mother}$	−.07	−.10	−.21	.44	−.03	−.40	.33	−.08
$Self_{Father}$	−.20***	−.20***	.10	.46	.02	.54	.30	.11
$\Delta_{Mother,Child}$	−.18**	−.21***	−.24	.36	−.04	.03	.29	.01
$\Delta_{Father,Child}$	−.10	−.10	.23	.29	.05	.19	.21	.06
Reasoning								
$Self_{Mother}$	.03	.02	.32	.43	.04	.18	.30	.03
$Self_{Father}$	−.09	−.06	.61	.42	.09	.26	.29	.05
$\Delta_{Mother,Child}$	−.13*	−.20***	.15	.37	.03	.19	.27	.05
$\Delta_{Father,Child}$	−.01	−.08	.58	.32	.12	.19	.22	.05
Autonomy								
$Self_{Mother}$	−.10*	−.16**	−.51	.41	−.10	−.01	.29	−.003
$Self_{Father}$	−.12*	−.11*	.77	.38	.14*	.53	.27	.14
$\Delta_{Mother,Child}$	−.02	−.03	−.14	.39	−.03	−.04	.30	−.01
$\Delta_{Father,Child}$	−.04	−.06	.62	.33	.14	.32	.26	.10

Note. Results regarding within-time point correlations between all constructs, stability coefficients, and cross-lagged effects between aggressive and rule-breaking behaviors can be obtained from the first author upon request.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Then, moderation of associations between the parenting factors and adolescent adjustment problems and adolescent age or gender were explored. None of the interaction effects between the LDS and adolescent age or gender was significant at $p < .01$ (results can be obtained from the first author upon request). Associations between the LDS and adolescent aggressive and rule-breaking behaviors are thus similar (not significantly different) for younger versus older adolescents or for boys versus girls.

Discrepancies and Adjustment Problems: ODS and PRA Approaches

Comparison of standardized beta-coefficients across approaches (see Table 3) indicate that several associations between two parenting factors and concurrent adjustment problems were statistically significant across all three approaches. First, stronger mother–adolescent discrepancies in warmth (i.e., more adolescent underreporting) were consistently associated with higher concurrent adolescent rule-breaking behaviors and, second, stronger mother–adolescent discrepancies in reasoning (i.e., more adolescent underreporting) were consistently associated with higher concurrent adolescent aggressive behaviors.

Five concurrent associations were found to be significant in the LDS and ODS approaches, but were not significant, and substantially smaller in the PRA approach. In both discrepancy approaches, stronger father–child discrepancies in overreactive discipline, and stronger mother–child discrepancies in warmth, were concurrently related with more aggressive behaviors. Furthermore, stronger mother–child discrepancies in laxness and reasoning, and stronger father–child discrepancies in laxness, were concurrently associated with higher rule-breaking behaviors.

Two associations between parent–adolescent discrepancies and concurrent adjustment problems were found to be significant in the ODS approach, but not in the LDS or PRA approaches, although sizes of the standardized beta coefficients were very similar between the two discrepancy approaches. In the ODS approach only, stronger mother–adolescent discrepancies were concurrently associated with more aggression, and stronger father–adolescent discrepancies in warmth were associated with more rule-breaking behaviors.

Regarding longitudinal associations, one association was significant only in the LDS approach, one other association was significant only in the ODS approach, and yet another association was significant only in the PRA. Specifically, only in the LDS approach, stronger father-child discrepancies in laxness were associated with less aggression two years later; only in the ODS approach, stronger mother–adolescent discrepancies in overreactive discipline were associated with more aggression; and only in the PRA approach, stronger mother-child similarity for overreactive discipline was associated with more aggressive behaviors two years later. Given the number of estimated associations, and the inconsistency in results across approaches, the longitudinal associations should be interpreted with caution. All other concurrent

Table 3
Standardized Beta-Coefficients (β) Between Parent–Child Discrepant Views and Concurrent and Later Adjustment Problems: Comparing Latent Difference Scores (LDS), Observed Difference Scores (ODS), and Polynomial Regression Analyses (PRA)

Parent-child discrepancies	Initial time-point correlations						Longitudinal associations					
	Aggression			Rule-breaking			Aggression			Rule-breaking		
	LDS	ODS	PRA	LDS	ODS	PRA	LDS	ODS	PRA	LDS	ODS	PRA
Overreactive discipline												
Mother–Child	.05	.04	.03	.06	.03	.003	.07	.09*	.02	.03	.04	.11*
Father–Child	.15*	.14*	−.05	.10	.07	.02	.01	−.02	.07	.01	−.02	.07
Lax discipline												
Mother–Child	.11	.09*	−.04	.11*	.11*	−.01	.09	.05	−.003	.003	−.02	.001
Father–Child	.01	.03	.01	.14*	.13**	.05	−.15*	−.10	.02	−.10	−.06	.001
Warmth												
Mother–Child	−.18**	−.17**	−.07	−.21***	−.19***	−.09*	−.04	−.02	.05	.01	.01	.02
Father–Child	−.10	−.09	−.05	−.10	−.10*	−.02	.05	.04	.02	.06	.06	−.001
Reasoning												
Mother–Child	−.13*	−.12*	−.15**	−.20***	−.19***	−.06	.03	.05	−.03	.05	.07	.000
Father–Child	.01	.004	.03	−.08	−.05	.03	.12	.08	.03	.05	.03	.01
Autonomy granting												
Mother–Child	−.02	−.02	−.02	−.03	−.04	.06	−.03	−.01	−.05	−.01	−.004	−.03
Father–Child	−.04	.05	.03	−.06	−.09	.04	.14	.09	.01	.10	.09	−.04

Note. Main effects of parental self-reports (LDS; ODS), child reports (PRA), and higher-order effects of both informants' reports (PRA) were also estimated, but not shown for clarity of presentation.
* $p < .05$. ** $p < .01$. *** $p < .001$.

and longitudinal associations were consistently nonsignificant, and similar in size across approaches. To summarize, across approaches (LDS, ODS, PRA), several parent–adolescent discrepancies were concurrently related to higher aggressive and rule-breaking behaviors, but only very few longitudinal associations were found to be significant. Moreover, the two discrepancy approaches yielded more similar results than the PRA versus discrepancy approaches.

Discussion

Informant discrepancies of parallel and identical measures of the same construct are ubiquitous, and can have substantive meaning in and of themselves. Existing approaches to studying informant discrepancies are either limited by methodological issues, or have restricted capability for the types of research questions that can be addressed. The current study proposes an alternative, flexible approach to examining informant discrepancies, Latent Difference Scores (LDS) modeling (cf. McArdle, 2009; Scalas et al., 2014). Moreover, results obtained using the LDS approach were compared to results obtained using the two existing approaches for studying informant discrepancies: Observed Difference Scores (ODS; see De Los Reyes & Kazdin, 2005) and Polynomial Regression Analsyes (PRA; Laird & De Los Reyes, 2013). As such, the current study provides comprehensive knowledge about the comparability of the different approaches to studying informant discrepancies.

Parent–Adolescent Discrepant Views

With the LDS approach, it was shown that parent–child dyads differ in their ratings on a substantive number of parenting behaviors. Because the constructs were assessed using invariance constraints across all four informants, we can be confident that parent–adolescent discrepancies reflect true differences in perceptions across informants, rather than being a statistical artifact. Although the intercepts and residual variances of some indicators differed across informants, these were only few in number and are unlikely to substantially affect results (Clark et al., 2016). Moreover, given that the noninvariance was explicitly modeled in the LDS and hybrid models, its potentially deleterious effects were likely lessened (M. C. Edwards & Wirth, 2009). Generally, parents rated themselves more favorably than adolescents rated their parents, consistent with a recent meta-analysis on parent–child discrepant perceptions of parenting (Korelitz & Garber, 2016), and there were several effects of child age and parental gender on parent–child discrepancies. The pattern of results suggests that social desirability may drive parents to give consistently more favorable ratings of their own behaviors than adolescents do, and are indicative of parents' aspirations to meet the social norm of being "a good parent" (Janssens et al., 2015). Conversely, adolescents may view parents' behaviors overly negative because they have a "developmental stake" in achieving autonomy and minimizing emotional closeness with their parents (Bengtson & Kuypers, 1971; Korelitz & Garber, 2016). Adolescents may therefore rebel against, or individuate from their parents' views (Smetana et al., 2006; Steinberg & Morris, 2001), resulting in them overrating negative types of parenting, and underrating positive types of parenting.

Very few child gender differences were found for parent–child discrepancies, but there were several parental gender differences. Thus, whereas children's gender does not seem to affect how much parents and their children disagree about parenting, parental gender may affect the specific types of parenting that dyads disagree about. Mother–child dyads differed in perceptions of mothers' ineffective (overreactive, lax) discipline, but father–child dyads differed in perceptions of fathers' autonomy granting; both mother–child and father–child dyads differed in perceptions of

warmth and reasoning. The finding that adolescents disagreed with their mothers about ineffective discipline strategies could reflect the fact that the social pressure to be a "good parent" is stronger for mothers than fathers, as intensive mothering continues to be the predominant ideology in Western society. As such, mothers may be even more inclined than fathers to answer questions about ineffective parenting strategies in a socially desirable way. Furthermore, society still expects mothers to have greater responsibility for parenting than fathers do (Arendell, 2000; Moon & Hoffman, 2008). The finding that adolescents' and fathers', but not adolescents' and mothers', views of autonomy support diverged may reflect that fathers are more responsible for setting limits outside the family home, whereas mothers are more responsible for rules inside the family home (Eagly & Johannesen-Schmidt, 2001). Perceptions of warmth and reasoning differed between mothers and adolescents, and fathers and adolescents. These two types of parenting behaviors are closely related to the parent–child relationship quality, which is known to decrease during early adolescence (e.g., Smetana et al., 2006). These findings are further in line with existing work showing that there is a temporary increase in family conflict during the early adolescent years (see, Eccles et al., 1993). Parent–adolescent disagreement about these two types of parenting behaviors may thus reflect a temporary decrease in parent–child relationship quality, which may ultimately drive the realignment of family relationships in early adolescence (Holmbeck & O'Donnell, 1991; Steinberg, 1991; Steinberg & Morris, 2001).

Consistent with results from a meta-analysis on correspondence in parent–child dyads regarding parenting (Korelitz & Garber, 2016), older adolescents disagreed more with their parents than younger adolescents on several parenting behaviors, but very few differences were found between parent–son versus parent–daughter dyads. Parent–child dyads with older children may be less close, with older adolescents having gained more autonomy from their parents and spending more time unsupervised by their parents, which may in turn cause parents and children to diverge more on perceptions of parenting behaviors as children grow older. Because the LDS approach allows for examining repeatedly measured informant discrepancies, future longitudinal research could examine (true) developmental changes in parent–child discrepancies of parenting during early adolescence as well as in other developmental phases.

Within families, mother–adolescent discrepancies were consistently related to father–adolescent discrepancies. Because adolescents are in both dyads, these relations between mother–adolescent and father–adolescent dyads are of course at least in part due to same-rater bias. On a substantive level, these results may reflect differences between families in the level and quality of communication; in families wherein the quantity or quality of communication between parents and children is lower, discrepant views are likely more prevalent (De Los Reyes & Kazdin, 2005; Treutler & Epkins, 2003). In addition to these family level factors, individual child and parental characteristics such as personality or psychopathology may affect the extent to which adolescents and their mothers and fathers differ in their views (De Los Reyes, Goodman, Kliewer, & Reid-Quinones, 2008; Korelitz & Garber, 2016). Because LDS can be used as a predictor and outcome variable in the same model, using LDS allows for an examination of whether parent–child discrepant views indeed explain (mediate) associations between predictor variables and outcomes. Future research that includes multiple types of predictors can provide comprehensive knowledge about the factors that affect the extent to which mother–adolescent and father–adolescent dyads differ in their views of parenting.

Parent–Adolescent Discrepancies and Adjustment Problems Across Approaches

Regardless of the analytic approach (LDS, ODS, PRA), several parent–adolescent discrepancies were concurrently related to higher aggressive and rule-breaking behaviors, but only very few longitudinal associations were found to be significant. This pattern of findings is supportive of the notion that parent–adolescent disagreement reflects underlying problems that contribute to child psychopathology, such as family conflict, poor communication, or lack of insight (Guion et al., 2009; Ohannessian & De Los Reyes, 2014), but in the short term only. Nevertheless, because adjustment problems are known to be persistent (Dishion & Patterson, 2006), parent–child disagreement regarding parenting behaviors may still have substantive long-term consequences for adolescents, above and beyond parents' "actual" parenting behaviors. Conversely, however, these results may suggest that adjustment problems are the cause of, rather than the result of, parent–adolescent discrepancies, consistent with ideas that psychopathology affects one's perceptions of behavior (Barker, Bornstein, Putnick, Hendricks, & Suwalsky, 2007; De Los Reyes et al., 2008; Korelitz & Garber, 2016). Research that utilizes a repeated-measures design, in which informant perceptions of parenting *and* adjustment problems are assessed repeatedly, is necessary to provide knowledge about the direction of effects between parent–adolescent discrepancies and adolescent externalizing behaviors. The LDS approach allows for investigating repeated measures of informant discrepancies, thus providing a much-needed opportunity for examining direction of effects between parent–child discrepancies and children's adjustment problems specifically, and informant discrepancies and associated constructs more generally.

Across approaches, stronger mother-child discrepancies of warmth were associated with more concurrent rule-breaking behaviors, and stronger mother-child discrepancies of reasoning were associated with more aggression. In both discrepancy score approaches, but not in the polynomial regression analyses, stronger mother–child discrepancies of warmth were additionally related with more aggressive behaviors, and stronger mother–child discrepancies of reasoning were also associated with more rule-breaking behaviors. Furthermore, stronger mother–child and father–child discrepancies of lax discipline were associated with more concurrent rule-breaking behaviors, and stronger father–child discrepancies of overreactive discipline were associated with more aggressive behaviors. Parent–adolescent discrepant views of autonomy granting were, however, not associated with adjustment problems. Overall, mother–child discrepancies were thus associated more often with adjustment problems than father–child discrepancies. This difference in results for mothers versus fathers may be because of gender roles, which expect women to act in a caring and nurturing fashion and to be the main caregiver, whereas men are expected to take on more agentic roles (Eagly & Johannesen-Schmidt, 2001).

Overall, only very few (two) concurrent associations between interaction terms created from informant reports of parenting and adolescent adjustment problems were significant in the PRA, much less than found in the LDS and ODS approaches. This difference may be due to the fact that, in the difference scores approaches, the adolescent report is taken into account in the discrepancy (i.e., "the part of the adolescent score that is not identical to the parent score"), whereas in the PRA approach, the effects of *both* informant reports are partialed out from the similarity index (interaction term). Although it may appear that the PRA approach provides a more stringent test of the extent to which informant discrepancies are associated with outcome variables, it is important to note that interaction terms do not provide knowledge about whether *more* under- or overreporting of a construct by one informant versus the other is associated with other constructs, but rather, whether the effect one informant's report on an outcome variable is affected by the other informant's report. These results may also be due to a power issue in the PRA approach, which is reflected by the often small sizes of interaction effects. Research that can compare the discrepancy and PRA approaches using large samples will likely shed more light on the reasons underlying the relative lack of significant interaction effects in the PRA approach, compared to the number of significant associations found in the discrepancy approaches.

Comparison of associations between analyses using the LDS and ODS approaches indicate that both types of analyses yield highly similar results, which is not surprising given that in both approaches, discrepancy scores are similarly construed. Moreover, if ODS are created from items that have been empirically demonstrated to be invariant across informants, the increased unreliability of discrepancy scores thus do not necessarily result in downwardly biased estimates. Other researchers have similarly argued that, when research aims to provide knowledge about group-level processes, the standard interpretation of reliability does not always hold and therefore lower reliability may not substantively affect results (Thomas & Zumbo, 2012). It should be noted, however, that the similarity in findings across the two approaches in the current study do not necessarily generalize to other constructs. Moreover, the LDS approach has several methodological and theoretical advantages compared to the observed difference scores approach, such as not confounding both informant reports with the discrepancy score, not assuming that both informants' reports have equal effects on associated variables, and taking into account the fact that the two informant reports may have different variances (cf. Laird & De Los Reyes, 2013).

Limitations and Future Research

This study provides valuable knowledge about within-family processes of parent–adolescent discrepancies, and the effects of such disagreements for adolescent functioning. Nevertheless, several limitations warrant caution in the interpretation of results. Although in the current study, parent–adolescent discrepancies were conceptualized as the difference between parental self-reports and adolescent reports of parents, results cannot inform other research about which informant provides "better" information of parenting, because no "objective" measures of parenting (e.g., observations) were available to compare both informants' reports with. Because additional analyses showed that all models replicated well on teacher-reports of adolescent adjustment problems,[3] we are confident that relations between parenting discrepancies and adolescent aggressive and rule-breaking behaviors are not due to same-rater bias alone. Nevertheless, studies that include other measures of parenting, such as observations of parent–child interactions, can yield crucial knowledge about the validity and usefulness of both informants' (parents and adolescents) reports of parenting.

Several limitations specific to the LDS approach should also be noted. First, a prerequisite for the LDS approach, and for all research examining informant discrepancies, is measurement invariance of the constructs across informants. Obtaining invariant constructs allows researchers to make substantive conclusions about informant differences, whereas failing to assess measurement invariance may lead to incorrect conclusions, as informant differences may be due to statistical artifacts. However, achieving measurement invariance can be very difficult. For example, because of statistical and interpretative difficulties with the factors derived from one instrument, the EMBU-C/P, these factors could not be used in further analyses. At the other hand, the factors for warmth and reasoning strongly resembled the original scales. Thus, although measurement invariance can be difficult to obtain, it may be different for different types of instruments and constructs. Generally, researchers interested in multi-informant data are strongly advised to make sure different informants apply the same meaning to the underlying construct. Second, the specification of the LDS scores prohibits an examination of the effects of *both* individual scores, in addition to the discrepancy score. The polynomial regression analyses are better suited for examining questions of how both informants affect an outcome, in addition to their discrepant perception. Third, the interpretation of associations between the discrepancy scores and other variables can be complex, given that the direction of the discrepancy (e.g., adolescent overreporting compared to parents) has to be taken into account for a correct interpretation. Researchers should thus be careful when interpreting their results.

Conclusions

The current study aimed to apply a flexible approach to examining parent–adolescent discrepant perceptions, Latent Difference Score modeling. Furthermore, this study demonstrated the utility of this approach by examining how mother–adolescent and father–adolescent discrepancies of a variety of parenting behaviors were interrelated, and together affected concurrent and later adolescent aggressive and rule-breaking behaviors. Moreover, results obtained from this approach were compared to results obtained by the two existing approaches for studying informant discrepancies, Observed Difference Scores and Polynomial Regression Analyses. Parents and adolescents were found to differ in their perceptions of most parenting behaviors, but the types of parenting that parent–child dyads disagreed on were somewhat different for mothers versus fathers. Furthermore, discrepancies were smaller in parent–adolescent dyads in which parents rated themselves less favorably. Discrepant perceptions of mother–adolescent and father–adolescent dyads were consistently interrelated. Moreover, several parent–adolescent discrepancies were related to con-

current higher aggressive and rule-breaking behaviors. Although most significant results generalized across the two discrepancy approaches, only very few significant interaction terms were found in the polynomial regression analyses. Overall, results suggest that parent–adolescent discrepancies are ubiquitous, and are consistently related to higher adjustment problems in the short term. Using Latent Difference Scores provides a flexible tool for examining several aspects of informant discrepancies simultaneously.

References

Abar, C. C., Jackson, K. M., Colby, S. M., & Barnett, N. P. (2015). Parent-child discrepancies in reports of parental monitoring and their relationship to adolescent alcohol-related behaviors. *Journal of Youth and Adolescence, 44,* 1688–1701. http://dx.doi.org/10.1007/s10964-014-0143-6

Achenbach, T. M. (1991). *Integrative guide for the 1991 CBCL/4-18, YSR, and TRF profiles*. Burlington, VT: Department of Psychiatry, University of Vermont.

Achenbach, T. M. (2006). As others see us. Clinical and research implications of cross-informant correlations for psychopathology. *Current Directions in Psychological Science, 15,* 94–98. http://dx.doi.org/10.1111/j.0963-7214.2006.00414.x

Arendell, T. (2000). Conceiving and investigating motherhood: The decade's scholarship. *Journal of Marriage and the Family, 62,* 1192–1207. http://dx.doi.org/10.1111/j.1741-3737.2000.01192.x

Arnold, D. S., O'Leary, S. G., Wolff, L. S., & Acker, M. M. (1993). The Parenting Scale: A measure of dysfunctional parenting in discipline situations. *Psychological Assessment, 5,* 137–144. http://dx.doi.org/10.1037/1040-3590.5.2.137

Barker, E. T., Bornstein, M. H., Putnick, D. L., Hendricks, C., & Suwalsky, J. T. D. (2007). Adolescent–mother agreement about adolescent problem behaviors: Direction and predictors of disagreement. *Journal of Youth and Adolescence, 36,* 950–962. http://dx.doi.org/10.1007/s10964-006-9164-0

Bengtson, V. L., & Kuypers, J. A. (1971). Generational difference and the developmental stake. *International Journal of Aging & Human Development, 2,* 249–260. http://dx.doi.org/10.2190/AG.2.4.b

Chen, F. F. (2007). Sensitivity of Goodness of Fit indexes to lack of measurement invariance. *Structural Equation Modeling, 14,* 464–504. http://dx.doi.org/10.1080/10705510701301834

Clark, D. A., Listro, C. J., Lo, S. L., Durbin, C. E., Donnellan, M. B., & Neppl, T. K. (2016). Measurement invariance and child temperament: An evaluation of sex and informant differences on the Child Behavior Questionnaire. *Psychological Assessment, 28,* 1646–1662. http://dx.doi.org/10.1037/pas0000299

Deković, M., Ten Have, M., Vollebergh, W. A. M., Pels, T., Oosterwegel, A., Wissink, I. B., . . . Ormel, J. (2006). The cross-cultural equivalence of parental rearing measure: EMBU-C. *European Journal of Psychological Assessment, 22,* 85–91. http://dx.doi.org/10.1027/1015-5759.22.2.85

De Los Reyes, A., Goodman, K. L., Kliewer, W., & Reid-Quiñones, K. (2008). Whose depression relates to discrepancies? Testing relations between informant characteristics and informant discrepancies from both informants' perspectives. *Psychological Assessment, 20,* 139–149. http://dx.doi.org/10.1037/1040-3590.20.2.139

De Los Reyes, A., Goodman, K. L., Kliewer, W., & Reid-Quiñones, K. (2010). The longitudinal consistency of mother–child reporting discrepancies of parental monitoring and their ability to predict child delinquent behaviors two years later. *Journal of Youth and Adolescence, 39,* 1417–1430. http://dx.doi.org/10.1007/s10964-009-9496-7

De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin, 131,* 483–509. http://dx.doi.org/10.1037/0033-2909.131.4.483

Dishion, T. J., & Patterson, G. R. (2006). The development and ecology of antisocial behavior in children and adolescents. In D. J. Cohen & D. Cicchetti (Eds.), *Developmental Psychopathology: Vol. 3. Risk, Disorder and Adaptation* (pp. 503–551). Hoboken, NJ: John Wiley & Sons.

Eagly, A. H., & Johannesen-Schmidt, M. C. (2001). The leadership styles of women and men. *Journal of Social Issues, 57,* 781–797. http://dx.doi.org/10.1111/0022-4537.00241

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. M. (1993). Development during adolescence. The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48,* 90–101. http://dx.doi.org/10.1037/0003-066X.48.2.90

Edwards, J. R. (2002). Alternatives to difference scores: Polynomial regression and response surface methodology. In F. Drasgow & N. W. Schmitt (Eds.), *Advances in measurement and data analysis* (pp. 350–400). San Francisco, CA: Jossey-Bass.

Edwards, M. C., & Wirth, R. J. (2009). Measurement and the study of change. *Research in Human Development, 6,* 74–96. http://dx.doi.org/10.1080/15427600902911163

Epstein, S. (1983). *The Mother—Father—Peer scale*. Unpublished manuscript. Amherst, MA: University of Massachusetts.

Gaylord, N. K., Kitzmann, K. M., & Coleman, J. K. (2003). Parents' and children's perceptions of parental behavior: Associations with children's psychosocial adjustment in the classroom. *Parenting: Science and Practice, 3,* 23–47. http://dx.doi.org/10.1207/S15327922PAR0301_02

Guion, K., Mrug, S., & Windle, M. (2009). Predictive value of informant discrepancies in reports of parenting: Relations to early adolescents' adjustment. *Journal of Abnormal Child Psychology, 37,* 17–30. http://dx.doi.org/10.1007/s10802-008-9253-5

Holmbeck, G. N., & O'Donnell, K. (1991). Discrepancies between perceptions of decision making and behavioral autonomy. In R. L. Paikoff (Ed.), *New directions for child development: Shared views in the family during adolescence* (No. 51, pp. 51–69). San Francisco, CA: Jossey-Bass. http://dx.doi.org/10.1002/cd.23219915105

Hunsley, J., & Mash, E. J. (2007). Evidence-based assessment. *Annual Review of Clinical Psychology, 3,* 29–51. http://dx.doi.org/10.1146/annurev.clinpsy.3.022806.091419

Janssens, A., Goossens, L., Van Den Noortgate, W., Colpin, H., Verschueren, K., & Van Leeuwen, K. (2015). Parents' and adolescents' perspectives on parenting: Evaluating conceptual structure, measurement invariance, and criterion validity. *Assessment, 22,* 473–489. http://dx.doi.org/10.1177/1073191114550477

Korelitz, K. E., & Garber, J. (2016). Congruence of parents' and children's perceptions of parenting: A meta-analysis. *Journal of Youth and Adolescence, 45,* 1973–1995. http://dx.doi.org/10.1007/s10964-016-0524-0

Laird, R. D., & De Los Reyes, A. (2013). Testing informant discrepancies as predictors of early adolescent psychopathology: Why difference scores cannot tell you what you want to know and how polynomial regression may. *Journal of Abnormal Child Psychology, 41,* 1–14. http://dx.doi.org/10.1007/s10802-012-9659-y

Marsh, H. W., & Hau, K. T. (1996). Assessing goodness of fit: Is parsimony always desirable? *Journal of Experimental Education, 64,* 364–390. http://dx.doi.org/10.1080/00220973.1996.10806604

Maurizi, L. K., Gershoff, E. T., & Aber, J. L. (2012). Item-level discordance in parent and adolescent reports of parenting behavior and its implications for adolescents' mental health and relationships with their parents. *Journal of Youth and Adolescence, 41,* 1035–1052. http://dx.doi.org/10.1007/s10964-011-9741-8

McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology, 60,* 577–605. http://dx.doi.org/10.1146/annurev.psych.60.110707.163612

McElhaney, K. B., Allen, J. P., Stephenson, J. C., & Hare, A. L. (2009).

Attachment and autonomy during adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology* (pp. 358–403). New York, NY: John Wiley & Sons, Inc. http://dx.doi.org/10.1002/9780470479193.adlpsy001012

Moon, M., & Hoffman, C. D. (2008). Mothers' and fathers' differential expectancies and behaviors: Parent × child gender effects. *The Journal of Genetic Psychology: Research and Theory on Human Development, 169,* 261–280. http://dx.doi.org/10.3200/GNTP.169.3.261-280

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

Ohannessian, C. M. (2012). Discrepancies in adolescents' and their mothers' perceptions of the family and adolescent externalizing problems. *Family Science, 3,* 135–140. http://dx.doi.org/10.1080/19424620.2012.704596

Ohannessian, C. M., & De Los Reyes, A. (2014). Discrepancies in adolescents' and their mothers' perceptions of the family and adolescent anxiety symptomatology. *Parenting: Science and Practice, 14,* 1–18. http://dx.doi.org/10.1080/15295192.2014.870009

Pelton, J., & Forehand, R. (2001). Discrepancy between mother and child perceptions of their relationship: I. Consequences for adolescents considered within the context of parental divorce. *Journal of Family Violence, 16,* 1–15. http://dx.doi.org/10.1023/A:1026527008239

Pelton, J., Steele, R. G., Chance, M. W., & Forehand, R. (2001). Discrepancy between mother and child perceptions of their relationship: II. Consequences for children considered within the context of maternal physical illness. *Journal of Family Violence, 16,* 17–35. http://dx.doi.org/10.1023/A:1026572325078

Perris, C., Jacobsson, L., Linndström, H., von Knorring, L., & Perris, H. (1980). Development of a new inventory assessing memories of parental rearing behaviour. *Acta Psychiatrica Scandinavica, 61,* 265–274. http://dx.doi.org/10.1111/j.1600-0447.1980.tb00581.x

Prinzie, P., Onghena, P., & Hellinckx, W. (2007). Reexamining the Parenting Scale: Reliability, factor structure, and concurrent validity of a scale for assessing the discipline practices of mothers and fathers of elementary-school-aged children. *European Journal of Psychological Assessment, 23,* 24–31. http://dx.doi.org/10.1027/1015-5759.23.1.24

Prinzie, P., Onghena, P., Hellinckx, W., Grietens, H., Ghesquière, P., & Colpin, H. (2003). The additive and interactive effects of parenting and children's personality on externalizing behaviour. *European Journal of Personality, 17,* 95–117. http://dx.doi.org/10.1002/per.467

Reidler, E. B., & Swenson, L. P. (2012). Discrepancies between youth and mothers' perceptions of their mother–child relationship quality and self-disclosure: Implications for youth- and mother-reported youth adjustment. *Journal of Youth and Adolescence, 41,* 1151–1167. http://dx.doi.org/10.1007/s10964-012-9773-8

Robinson, C. C., Mandleco, B., Olsen, S. F., & Hart, C. H. (1995). Authoritative, authoritarian and permissive parenting practices: Development of a new measure. *Psychological Reports, 77,* 819–830. http://dx.doi.org/10.2466/pr0.1995.77.3.819

Scalas, L. F., Marsh, H. W., Morin, A. J. S., & Nagengast, B. (2014). Why is support for Jamesian actual-ideal discrepancy model so elusive? A latent-variable approach. *Personality and Individual Differences, 69,* 62–68. http://dx.doi.org/10.1016/j.paid.2014.05.010

Smetana, J. G., Campione-Barr, N., & Metzger, A. (2006). Adolescent development in interpersonal and societal contexts. *Annual Review of Psychology, 57,* 255–284. http://dx.doi.org/10.1146/annurev.psych.57.102904.190124

Steinberg, L. (1991). Parent–adolescent relations. In R. M. Lerner, A. C. Petersen, & J. Brooks-Gunn (Eds.), *Encyclopedia of adolescence* (pp. 724–728). New York, NY: Garland.

Steinberg, L., & Morris, A. S. (2001). Adolescent development. *Annual Review of Psychology, 52,* 83–110. http://dx.doi.org/10.1146/annurev.psych.52.1.83

Thomas, D. R., & Zumbo, B. D. (2012). Difference scores from the point of view of reliability and repeated-measures ANOVA: In defense of difference scores for data analysis. *Educational and Psychological Measurement, 72,* 37–43. http://dx.doi.org/10.1177/0013164411409929

Treutler, C. M., & Epkins, C. C. (2003). Are discrepancies among child, mother, and father reports on children's behavior related to parents' psychological symptoms and aspects of parent–child relationships? *Journal of Abnormal Child Psychology, 31,* 13–27. http://dx.doi.org/10.1023/A:1021765114434

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3,* 4–70. http://dx.doi.org/10.1177/109442810031002

Van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement invariance. *European Journal of Developmental Psychology, 9,* 486–492. http://dx.doi.org/10.1080/17405629.2012.686740

Verhulst, F. C., Van der Ende, J., & Koot, H. M. (1997). *Handleiding voor de Youth Self-Report (YSR)* [Manual for the Youth Self-Report (YSR)]. Rotterdam, the Netherlands: Department of Child and Adolescent Psychiatry, Sophia Children's Hospital/Erasmus University.

Vignoe, D., Bérubé, R. L., & Achenbach, T. M. (2000). *Bibliography of published studies using the Child Behavior Checklist and related materials*. Burlington, VT: Department of Psychiatry, University of Vermont.

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