Journal of Family Psychology

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Online First Publication, September 21, 2023. https://dx.doi.org/10.1037/fam0001133

AMERICAN PSYCHOLOGICAL ASSOCIATION

Journal of Family Psychology

ISSN: 0893-3200

https://doi.org/10.1037/fam0001133

Intraindividual Variability in Parental Acceptance-Rejection Predicts Externalizing and Internalizing Symptoms Across Childhood/Adolescence in Nine Countries

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Parenting that is high in rejection and low in acceptance is associated with higher levels of internalizing (INT) and externalizing (EXT) problems in children and adolescents. These symptoms develop and can increase in severity to negatively impact adolescents' social, academic, and emotional functioning. However, there are two major gaps in the extant literature: (a) nearly all prior research has focused on between-person differences in acceptance/rejection at the expense of examining intraindividual variability (IIV) across time in acceptance/rejection; and (b) no prior studies examine IIV in acceptance/rejection in diverse international samples. The present study utilized six waves of data with 1,199 adolescents' families living in nine countries from the Parenting Across Cultures study to test the hypotheses that (1) higher amounts of youth IIV in mother acceptance/rejection predict higher internalizing and (2) externalizing symptoms, and (3) that higher youth IIV in father acceptance/rejection predict higher internalizing, and (4) externalizing symptoms. Meta-analytic techniques indicated a significant, positive effect of IIV in child-reported mother and father acceptance/rejection on adolescent externalizing symptoms, and a significant positive effect of IIV in father acceptance/rejection on internalizing symptoms. The weighted effect for mother acceptance/rejection on internalizing symptoms was not statistically significant. Additionally, there was significant heterogeneity in all meta-analytic estimates. More variability over time in experiences of parental acceptance/rejection predicts internalizing and externalizing symptoms as children transition into adolescence, and this effect is present across multiple diverse samples.

Keywords: parenting, within-person variability, internalizing, externalizing, adolescence

Supplemental materials: https://doi.org/10.1037/fam0001133.supp

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This research was funded by the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development Grant RO1-HD054805 and Fogarty International Center Grant RO3-TW008141. This research also was supported by National Institute on Drug Abuse Grant P30 DA023026, the Intramural Research Program of the National Institutes of Health/National Institute of Child Health and Human Development,

continued

Overview

Previous research has highlighted relations between negative parenting behaviors and child and adolescent psychopathology symptoms. Specifically, parental acceptance/rejection is related to both internalizing (INT) and externalizing (EXT) symptoms in children and adolescents (Duprey et al., 2021; La Buissonnière-Ariza et al., 2019; Rothenberg et al., 2020; Wu, 2007). Previous research has primarily focused on between-person differences in average parental acceptance/rejection over time. Although average scores provide useful information about the parent–child relationship, examining the within-person variability in parental acceptance/rejection across annual waves of data may also hold some unique predictive value, as this variability may indicate a distinct parenting behavior that is not captured well by average scores over time on questionnaires. Given the positive associations between inconsistent parenting (e.g., do parents' punishments depend on their mood? Can children "talk their parents out of" a punishment?) and child internalizing and externalizing symptoms (Essau et al., 2006; Lengua & Kovacs, 2005; Reid et al., 2015), it follows that within-person variability in other parenting domains (i.e., acceptance/rejection) may reflect inconsistency, and therefore relate to higher levels of internalizing and externalizing symptoms as children transition into adolescence. Understanding within-person variability in child-perceived parental acceptance/rejection may be useful for clinicians in identifying family processes that contribute to children's risk for psychopathology. The overall goal of the present study is to examine the role of intraindividual variability (IIV) in child-reported parental acceptance/rejection across middle childhood in predicting adolescent internalizing and externalizing symptoms in a diverse sample.

Adolescent Development and Parental Acceptance/Rejection

Adolescence is a time of biological and social change, including hormonal changes in puberty, changes in the parent–child relationship (e.g., increased conflict), intraindividual change (e.g., increased autonomy), and relationship change (e.g., increased time spent with peers/romantic partners and less time spent with the family; Furman & Collins, 2009; Steinberg, 2014). These changes do not occur in isolation; family systems theory and family life cycle theory (Cox & Paley, 2003; McGoldrick & Shibusawa, 2012) emphasize that adolescence is a period of change for the family system, not just the individual adolescent. Therefore, during the adolescent transition, changes in relationships between family members may influence adolescent social and emotional development. Variability in parenting or the parent–child relationship during the transition to adolescence may indicate the family struggling with this transition (Lippold et al., 2016). Thus, it is important to examine how fluctuations in parenting across childhood and during the adolescent transition may relate to the later development of internalizing and externalizing symptoms.

Parental Acceptance/Rejection and Child/Adolescent Psychopathology Symptoms

Interpersonal acceptance-rejection theory posits that humans have evolved to need positive responses from their loved ones (i.e., children and parents). Further, interpersonal acceptance-rejection theory suggests that children across the world understand themselves to be either accepted or rejected, that optimal developmental outcomes occur when adaptive and supportive parenting practices are present, and that parenting behaviors that are perceived by the child to be "rejecting" are associated with maladaptive outcomes such as anxiety, depression, and aggressive behaviors (Rohner et al., 2005). Parental acceptance-rejection is a multidimensional construct defined as the presence of warmth, and the absence of hostility/aggression, and neglect/indifference (Rohner et al., 2005). Thus, conceptually, higher acceptance/lower rejection represents more child-perceived warmth and love from their parent/caregiver, whereas lower acceptance/higher rejection represents hostility, neglect, and lack of warmth.

Why Might Variability in Parental Acceptance/Rejection Matter?

The present study addresses the question: what might *variability* (across time) in parental acceptance/rejection (IIV) predict regarding adolescent internalizing and externalizing symptoms? First, consider the answer to this question with regard to etiology of adolescent internalizing symptoms. Scholars have more recently focused on the role of environmental harshness and unpredictability in life history theory (Ellis et al., 2009). It is posited that under conditions of harshness and unpredictability, individuals favor "fast" life history processes (i.e., prioritizing reproduction) at the expense of "slow" life history (i.e., long-term goals, quality of relationships) Empirical work has shown that unpredictable environments are related to a variety of physical and mental health outcomes, including internalizing and externalizing problems (Belsky et al., 2012). Thus, it may be that variability in parenting behaviors create unpredictable environments and would relate to internalizing and externalizing problems during adolescence. Furthermore, if children experience IIV in parental acceptance/rejection, they may perceive this variability as inconsistent parenting behaviors. Given that social learning theory and operant conditioning posit that intermittent reinforcement increases children's aggressive behaviors, greater within-person variability in parental

United States, United Nations Children's Fund, and an International Research Fellowship at the Institute for Fiscal Studies, London, United Kingdom, funded by the European Research Council under the Horizon 2020 research and innovation programme (Grant 695300-HKADeC-ERC-2015-AdG).

Parts of the findings presented in this article were disseminated at the Society for Research on Adolescence 2022 meeting (poster format, results from U.S. sample only), and the 2022 International Congress of Interpersonal Acceptance-Rejection (symposium paper presentation, country-specific analyses only). This study was not preregistered. Data may be made available upon request from the corresponding author. Code for analyses is available upon request.

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acceptance-rejection may relate to higher levels of externalizing symptoms (Bandura, 1977; Long et al., 1958).

Previous Conceptualizations of Inconsistent Parenting

Inconsistent parenting has been operationalized in previous research in different ways. For example, inconsistent discipline has primarily been measured with questionnaires that ask about behaviors such as follow-through with punishment (Essau et al., 2006) and has been linked to child emotional and behavioral problems (Cheung et al., 2018). Capturing inconsistency in this way is valuable, but there is also the possibility of error due to biases of desirability reporting, recall, and measurement error. Additionally, most conceptualizations of inconsistent parenting refer to inconsistent discipline, or simply inconsistency more broadly, and do not consider inconsistency in the broader range of parenting behaviors such as warmth, control, and hostility (Liang et al., 2021; Reid et al., 2015). Measuring inconsistent parenting/discipline in this way may preclude understanding how parenting behaviors—such as parental acceptance/rejection—differentially predict child outcomes if these parenting behaviors are not consistent.

Another methodological approach to quantifying inconsistencies in parenting is examining "lability" in parenting, defined as the magnitude of fluctuations in parenting behaviors over time, and has found significant, positive associations between lability in parenting and child and adolescent internalizing and externalizing symptoms. Longitudinal studies have found that greater lability in parenting behaviors (i.e., parental knowledge, warmth, hostility) relates to greater adolescent internalizing and externalizing symptoms (Branje et al., 2010; Fosco et al., 2019; Lippold et al., 2018; Zheng & McMahon, 2022). Studies examining lability have utilized statistical modeling techniques that allow for the estimation of variability around one's predicted slope over time. However, whereas lability focuses on short-term fluctuations (i.e., day-to-day, month-to-month) in behaviors or mood, the present study expands on the lability literature by examining year-to-year fluctuations in parental acceptance/rejection.

Gaps in Current Literature to Be Addressed

Longitudinal parenting research has primarily focused on between-person differences in average levels of parenting behaviors, or on between-person differences in stable trajectories in parenting behaviors (i.e., parental warmth, sensitivity, support, psychological control) over time (using latent growth curve modeling [LGM]), at the expense of measuring how perceptions of these parenting behaviors change within a child and adolescent over time (Kim et al., 2010; Lindhiem et al., 2011; Mabbe et al., 2018). Although methods such as LGM provide valuable insight into the complex associations between parenting behaviors such as warmth and sensitivity and child/adolescent internalizing and externalizing symptoms, LGM does not directly estimate and test within-person variability in parenting. It is plausible that two caregivers, who have the same slope for parental acceptance/rejection score over the course of several years, differ in how much they vary in parental acceptance/rejection from year-to-year (see Lippold et al., 2016, for a visual depiction of two individuals with the same slope but different amounts of variability). The present study addresses this limitation in prior research by expanding on growth curve modeling and examining within-person fluctuations in parenting year-to-year, rather than focusing on between-person differences in changes in parenting over time (e.g., linear increases vs. decreases over time). Another limitation in extant parenting research is the focus on mothers as the primary parent (Parent et al., 2017). This is an important gap to address, as fathers' and other caregivers' behaviors toward and interactions with the child also impact children's development (Fagan et al., 2014). The present study includes child reports of mothers' and fathers' behaviors, allowing for analysis of both caregivers.

Additionally, the majority of parenting research has utilized majority White, Western samples (Roberts et al., 2020), whereas the present study includes participants from nine countries. It is important to examine the effects of parent behaviors across different groups to understand how widespread these effects may be. The present study utilizes country-specific analyses (residual dynamic structural equation modeling [RDSEM]) as well as meta-analytic techniques to test (a) the presence and size of the effect in each country, and (b) the pooled effect size, which indicates the overall strength of the effect across multiple sites and showing the range of effect sizes. Given the lack of studies that have utilized RDSEM models in a multisite study, we used both country-specific and meta-analytic techniques to increase confidence in the effects.

The Present Study

The overall goal of the present study was to examine if IIV in parental acceptance/rejection between ages 8 and 14 years predicts internalizing and externalizing symptoms in adolescence at age 15 years. We hypothesized that (1) higher amounts of youth IIV in mother acceptance/rejection would predict higher internalizing symptoms, (2) higher amounts of youth IIV in mother acceptance/rejection would predict higher externalizing symptoms, and (3) that higher youth IIV in father acceptance/rejection would predict higher internalizing symptoms, and (4) higher youth IIV in father acceptance/rejection would predict higher externalizing symptoms at age 15, and that this effect would be present across multiple countries.

Method

Participants

We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study. Participants included 1,199 children (51% female), and their mothers and fathers across seven waves of data from nine countries (Colombia, $N = 99$; Italy, $N = 200$; Jordan, $N = 113$; Kenya, $N = 96$; Philippines, $N = 105$; Shanghai, $N = 101$; Sweden, $N = 98$; Thailand, $N = 109$; United States, $N = 278$) in the ongoing, longitudinal Parenting Across Cultures study. Children were $M = 8.59$ years old at Wave 1 ($SD = 0.67$), $M = 9.70$ years old at Wave 2 ($SD = 0.64$), $M = 10.71$ years old at Wave 3 ($SD = 0.67$), $M = 12.57$ years old at Wave 4 ($SD = 0.68$), $M = 13.20$ years old at Wave 5 ($SD = 0.90$), $M = 14.61$ years old at Wave 6 ($SD = 0.91$), and $M = 15.60$ years old at Wave 7 ($SD = 0.94$). Data on parental acceptance/rejection were not collected at Wave 4 (age 12), so data from that timepoint could not be included in the analysis.

Families were recruited to participate through letters sent to schools at each site. Response rates ranged from 24% to 100%, in

part due to differences in school involvement in the recruitment process. For example, for the United States sample, members of the research team brought recruitment letters and forms to the schools, and teachers sent the letters and forms home with the children, who then returned the forms with their contact information if the parent wanted to learn more about the study. For more details, see Lansford et al. (2014). Economic diversity in the sample was ensured by sampling from private and public schools and including high- to low-income families in representative proportions for each site. However, the samples are not nationally representative for each country.

Procedure

Children and their parents completed the measures at each timepoint via face-to-face interviews (in the participant's home, at the child's school, at the research site, or in another location chosen by the participant), telephone interviews, or by written questionnaires. All questionnaires/interview questions were forward- and back-translated by translators fluent in English and the target language to clarify any item-by-item ambiguities in linguistic or semantic content (Erkut, 2010). During the translation process, translators also noted any items that did not translate well (i.e., were inappropriate, not culturally sensitive, had multiple meanings), and suggested improvements (Maxwell, 1996; Peña, 2007). The procedures were approved by institutional review boards in each country. Parents and children provided consent/assent and completed measures/were interviewed separately to ensure privacy.

Measures

Parental Acceptance/Rejection

The 24-item Parental Acceptance-Rejection/Control Questionnaire-Short Form (Rohner et al., 2005) was used to assess parental acceptance/rejection. Children/adolescents completed it twice—once answering the questions about their mother, and once about their father. This questionnaire asks about the frequency of parent behaviors, and participants respond on a modified 4-point scale (1 = *almost never*, 2 = *once a month*, 3 = *once a week*, 4 = *every day*). The original response options are "almost always true" to "almost never true" on a 4-point scale but were modified for the Parenting Across Cultures study to be more comparable across cultural groups. The 24 items make up five subscales—parental warmth-affection, hostility-aggression, neglect-indifference, rejection, and control. The control subscale is not included in the computation of the overall acceptance/rejection score, because control is conceptually distinct from warmth/acceptance (Rohner & Ali, 2020). The warmth-affection subscale consists of eight items, such as "My mother/father says nice things about me." The hostility-aggression subscale consists of six items, such as "My mother/father hits me, even when I do not deserve it." The neglect-indifference subscale consists of six items, such as "My mother/father is too busy to answer my questions." The rejection subscale consists of four items, such as "My mother/father lets me know I am not wanted." A total acceptance-rejection scale was computed as the sum of the warmth-affection items (reverse-scored), hostility-aggression, rejection, and neglect-indifference subscales. Scores range from 24 to 96, with higher scores indicating higher rejection/lower acceptance behaviors, and lower scores indicating high acceptance (i.e., warmth). Subscales were combined rather than analyzed separately because prior work has shown predictive validity to be greatest when sum scores are used, rather than individual subscales (Rohner et al., 2005).

The Parental Acceptance-Rejection/Control Questionnaire has been validated in a range of countries/cultures, and a meta-analysis indicated that the internal consistency (α) exceeded .70 across eight countries for the Child Parental Acceptance-Rejection/Control Questionnaire (Khaleque & Rohner, 2002). Additionally, effect sizes have been shown to be homogenous across groups, and convergent, discriminant, and construct validities have been demonstrated (Rohner et al., 2005). In the present sample, reliabilities (α) across scales and waves ranged from .84 to .89 (Lansford et al., 2018).

Internalizing and Externalizing Symptoms

Children completed the Youth Self Report at age 15, and parents completed the Child Behavior Checklist about their children at age 15 (Achenbach & Edelbrock, 1991). Parent and child report of internalizing symptoms were modestly and significantly correlated with each other (rs = .40–.48, $p < .001$), as were parent and child report of externalizing symptoms (rs = .60–.69, $p < .001$). Aligning with previous cross-cultural investigations (e.g., Lansford et al., 2018) composite internalizing and externalizing symptoms score was created by averaging the mother, father, and child-reported subscales for internalizing and externalizing. If only one parent report was available, that report was averaged with the child-report to create the composite. The internalizing subscale consists of 29 items (youth report) or 31 items (parent report), which capture anxious/depressed mood and withdrawn behaviors. Example items include: "I am nervous or tense," and "I am secretive or keep things to myself." The externalizing subscale consists of 30 items (youth report) or 33 items (parent report), which ask about delinquent or aggressive behaviors. Example items include: "I don't feel guilty after doing something I shouldn't" and "I destroy my things." Response options are on a 3-point scale (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*). Items from the internalizing subscale were summed to create an internalizing score, and items from the externalizing subscale were summed to create an externalizing score. The Child Behavior Checklist/Youth Self Report is a widely used and accepted measure of internalizing symptoms and has been validated cross-culturally (Weisz et al., 1987). In the current sample, reliabilities (α) for internalizing across waves ranged from .84 to .87, and reliabilities (α) for externalizing across waves ranged from .84 to .88 (Lansford et al., 2018).

Data Analysis Plan

Because at least three timepoints are needed to estimate linear growth curves, only families with at least three timepoints of data for parental acceptance/rejection were included in the analysis. No statistically significant differences were found between those who were included in the analysis, and those who were excluded (independent samples t tests, all $p > .05$), for parent education, family income, initial levels of child internalizing/externalizing symptoms, or initial levels of parental acceptance/rejection. Full information maximum likelihood was used to handle missing data for the 1,199 families included in the analysis.

Within-person variability was estimated in the predictive model using RDSEM (Asparouhov & Muthén, 2020; Dixon-Gordon & Laws, 2021; Lippold et al., 2016). RDSEM consists of a measurement model to create the latent "variability" estimate and a structural model which then uses the variability estimate as a predictor. RDSEM combines multilevel modeling and structural equation modeling to simultaneously estimate within-person variability and between-person effects (Asparouhov & Muthén, 2020). In this method, using two-level Bayesian-estimated multilevel models, each person's slope was estimated, and the person-specific slope residuals were allowed to vary, which provided an estimate of variability around each participant's predicted slope (measurement model). Then, that variability around each participant's predicted slope was used as a predictor in a multiple regression analysis (structural equation modeling). Whereas traditional LGM provides estimates of the average intercept and slope, and individual differences in these estimates, RDSEM extends this by allowing for the estimation of variability around one's predicted slope as a part of the measurement model. M*plus* log-transforms the variability estimate to meet the assumption of normality when it is used as a predictor in the structural model.

RDSEM models were estimated in the full sample, and for each country separately to test the following hypotheses: (1) that higher levels of child-perceived mother IIV in parental acceptance/rejection predicts higher levels of adolescent internalizing symptoms, (2) higher levels of child-perceived mother IIV in parental acceptance/rejection predicts higher externalizing symptoms, (3) that higher levels of child-perceived father IIV in parental acceptance/rejection predicts higher levels of adolescent internalizing symptoms, (4) higher levels of child-perceived father IIV in parental acceptance/rejection predicts higher externalizing symptoms. Then, meta-analytic methods were used to test how replicable each of the hypothesized effects were across samples from nine different countries. RDSEM models were estimated in M*plus* v.8.1 (Muthén & Muthén, 1998/2017), and meta-analyses were conducted in R using the "meta" package (Balduzzi et al., 2019; R Core Team, 2021).

For the random-effects meta-analysis, we used the standardized effect size from each country-specific RDSEM model to understand the average effect size for the entire sample, and the variability in effect sizes across countries. Four random-effects meta-analyses were run: two for the effect of IIV in child-reported mother acceptance/rejection on internalizing and externalizing symptoms, and two for the effect of IIV in child-reported father acceptance/rejection on internalizing and externalizing symptoms. This meta-analytic approach allowed us to understand the overall effect of IIV in parental acceptance/rejection on adolescent internalizing/externalizing symptoms across various locations around the world, without assuming measurement invariance across these locations. Given prior research and theory that suggest there are differential effects of parenting behaviors based on parent gender (i.e., stronger effects of mother behavior, father behavior uniquely related to aggressive behaviors; Bolkan et al., 2010; Colarossi & Eccles, 2003; Gallarin & Alonso-Arbiol, 2012), mother and father reports were analyzed separately to understand if effects differed based on caregiver gender.

Meta-analytic estimates of the standardized regression coefficients were weighted by the sample size of each country. Between-country variability in the effect sizes is reported using τ^2, I^2, and the prediction interval, as recommended by Harrer et al. (2021). These metrics quantify the magnitude of between-country variability in effect size. We do not interpret any specific country differences because this was not our goal. The goal with the country-specific analyses was to understand the degree to which the statistical effect of IIV in parental acceptance/rejection as a predictor of externalizing and internalizing would replicate across multiple samples in different locations around the world. This study was not preregistered. Code and data for all analyses are available upon request to the corresponding author.

Results

Descriptive Statistics

One thousand one hundred ninety-nine children/adolescents and their parents were included in the analyses. Average parental acceptance/rejection across the five waves was 8.55 ($SD = 1.17$) for child-report about mother, and 8.47 ($SD = 1.23$) for child-report about father. Average internalizing symptoms for adolescents were 10.43 ($SD = 6.62$) at age 15, and average externalizing symptoms for adolescents were 8.09 ($SD = 5.58$) at age 15. Table 1 presents descriptive statistics for parental acceptance/rejection at each timepoint and bivariate correlations between study variables. Parental acceptance/rejection was moderately skewed (ranged from 0.88 to 1.69) and was log-transformed to meet the assumptions of normality before analysis.

IIV in Parental Rejection Predicting Internalizing and Externalizing Symptoms

Adolescent Internalizing Symptoms

The country-specific models for internalizing symptoms revealed that there was a significant, positive effect of IIV in child-reported mother acceptance/rejection on adolescent internalizing symptoms in five of the nine countries and in the full sample. For IIV in child-reported father acceptance/rejection, there was also a significant positive effect on adolescent internalizing symptoms in five of the countries and in the full sample. The coefficients for these models are presented in Table 2 (child-report about mother) and Table 3 (child-report about father).

The meta-analysis showed that for child-report about their mother, the pooled association between IIV in child-reported mother acceptance/rejection and adolescent internalizing symptoms was not statistically significant ($r = .18$, $p = .054$). The between-study heterogeneity was estimated at $\tau^2 = 0.05$ (95% CI [0.02, 0.21]), with an I^2 value of 84% (95% CI [70%–91%]), indicating significant between-country heterogeneity. The prediction interval ranged from $g = -0.35$–0.62. For child-report about their father, there was a significant and positive pooled association between IIV in child-reported father acceptance/rejection and adolescent internalizing symptoms ($r = .22$, $p = .001$). The between-study heterogeneity was estimated at $\tau^2 = 0.01$ (95% CI [<.001, 0.06]), with an I^2 value of 51% (95% CI [0%–77%]), indicating significant between-country heterogeneity. The prediction interval ranged from $g = -0.01$–0.44. Figures 1 and 2 display the weighted effect size for each country for child-report about mother and child-report about father, respectively.

Table 1
Descriptive Statistics and Correlations for Main Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Mother rejection T1	—																	
2. Father rejection T1	.71**	—																
3. Mother rejection T2	.46**	.39**	—															
4. Father rejection T2	.37**	.45**	.66**	—														
5. Mother rejection T3	.42**	.35**	.56**	.43**	—													
6. Father rejection T3	.35**	.40**	.44**	.56**	.67**	—												
7. Mother rejection T5	.30**	.26**	.40**	.33**	.43**	.32**	—											
8. Father rejection T5	.22**	.28**	.28**	.40**	.32**	.39**	.69**	—										
9. Mother rejection T7	.23**	.23**	.27**	.26**	.36**	.30**	.54**	.42**	—									
10. Father rejection T7	.10**	.20**	.18**	.30**	.21**	.33**	.37**	.51**	.58**	—								
11. INT (m)	.05	.02	.13**	.05	.10*	.06	.18**	.19**	.22**	.15**	—							
12. EXT (m)	.14**	.11**	.21**	.17**	.15**	.16**	.33**	.28**	.31**	.25**	.62**	—						
13. INT (f)	.10**	.07	.15**	.14**	.14**	.11**	.26**	.25**	.26**	.16**	.48**	.40**	—					
14. EXT (f)	.13**	.10*	.14**	.13**	.14**	.16**	.35**	.34**	.32**	.30**	.36**	.60**	.69**	—				
15. INT (c)	.06	.10**	.11**	.12**	.10**	.09**	.24**	.19**	.37**	.25**	.40**	.17**	.29**	.14**	—			
16. EXT (c)	.03	.03	.10**	.10**	.08*	.09**	.31**	.27**	.35**	.29**	.25**	.40**	.26**	.35**	.57**	—		
17. INT (comp)	.08*	.08*	.15**	.11**	.10**	.10**	.27**	.26**	.36**	.26**	.81**	.49**	.75**	.50**	.79**	.48**	—	
18. EXT (comp)	.12**	.10**	.18**	.15**	.14**	.16**	.40**	.37**	.41**	.35**	.51**	.83**	.57**	.83**	.40**	.76**	.61**	—
N	1,187	1,119	1,179	1,108	1,167	1,090	1,072	979	964	889	938	938	721	721	935	935	973	973
M	9.00	8.81	8.57	8.46	8.39	8.30	8.36	8.30	8.37	8.43	8.86	6.95	7.98	6.73	13.76	10.47	10.43	8.09
SD	1.63	1.71	1.58	1.62	1.54	1.58	1.70	1.72	1.65	1.82	7.95	6.79	7.43	7.16	8.89	6.77	6.62	5.58

Note. INT = internalizing; EXT = externalizing. T1/2/3/5/7 refers to assessment timepoint. All parental rejection variables are child-report. Internalizing and externalizing symptoms are from age 15 (Time 8) and were reported by mothers (m), fathers (f), and the child (c). A multi-informant internalizing and externalizing composite (comp) was used in the main analyses (average of mother, father, and child-reported internalizing/externalizing).
* $p < .05$. ** $p < .001$.

Table 2
Effect of IIV in Child-Reported Mother Acceptance/Rejection on Internalizing/Externalizing Symptoms at 15

		IIV effect on internalizing			IIV effect on externalizing		
Site	*N*	Unst. est.	[95% CI]	Std. est.	Unst. est.	[95% CI]	Std. est.
Full sample	1,199	**1.19**	**[0.77, 1.63]**	**.21**	**1.27**	**[0.92, 1.62]**	**.26**
China	101	−0.45	[−2.78, 2.09]	−.07	0.93	[−0.62, 2.54]	.22
Italy	200	**1.70**	**[0.63, 2.74]**	**.28**	**1.42**	**[0.69, 2.18]**	**.32**
Kenya	96	2.68	[−0.64, 6.60]	.26	2.33	[−0.34, 5.63]	.29
Philippines	105	−0.29	[−2.43, 1.85]	−.04	1.26	[−0.53, 2.94]	.21
Thailand	109	**2.06**	**[0.50, 3.90]**	**.33**	**1.85**	**[0.46, 3.55]**	**.35**
Sweden	98	−1.74	[−4.31, 0.53]	−.25	−0.31	[−1.97, 1.16]	−.07
United States	278	**1.33**	**[0.66, 1.99]**	**.26**	**1.01**	**[0.50, 1.51]**	**.27**
Colombia	99	**1.58**	**[0.18, 2.97]**	**.29**	**2.26**	**[1.04, 3.55]**	**.46**
Jordan	113	**4.97**	**[2.30, 8.58]**	**.65**	**3.96**	**[1.26, 7.37]**	**.58**

Note. RDSEM models are estimated in a Bayesian estimator. 95% credible intervals are reported as tests of significance. If the 95% CI does not include 0, the effect is statistically significant. Significant effects are in boldface. IIV = intraindividual variability; Unst. est. = Unstandardized estimate; CI = credible interval; Std. est. = Standardized estimate; RDSEM = residual dynamic structural equation modeling.

Adolescent Externalizing Symptoms

For externalizing symptoms, the country-specific models revealed that there was a significant, positive effect of IIV in child-reported mother acceptance/rejection on adolescent externalizing symptoms in five of the nine countries, as well as in the full sample. For IIV in child-reported father acceptance/rejection, there was a significant positive effect on adolescent externalizing symptoms in five of the nine countries, as well as in the full sample. The coefficients for these models are presented in Table 2 (mother) and Table 3 (father).

For child-report about their mother, there was a significant and positive pooled association between IIV in child-reported mother acceptance/rejection and adolescent externalizing symptoms (r = .28, p = .001). The between-study heterogeneity was estimated at $\tau^2 = 0.01$ (95% CI [0.001, 0.08]), with an I^2 value of 59% (95% CI [15%–80%]), indicating significant between-country heterogeneity. The prediction interval ranged from g = −0.01–0.52. For child-report about their father; there was also a significant and positive pooled association between IIV in child-reported father acceptance/rejection and adolescent externalizing symptoms (r = .26, p < .001). The between-study heterogeneity was estimated at $\tau^2 = 0.004$ (95% CI [<.001, 0.04]), with an I^2 value of 36% (95% CI [0%–70%]), indicating significant between-country heterogeneity. The prediction interval ranged from g = 0.09–0.41. Figures 1 and 2 display the weighted effect size for each country for child-report about mother and child-report about father, respectively. Following prior research (i.e., Lippold et al., 2016), models were also estimated controlling for initial acceptance/rejection. There were a few changes to the statistical significance, effect size, and direction of effects of the findings for child-report about mother when including initial levels of parental acceptance/rejection. These results are presented in Supplemental Tables S1 and S2. Given the large correlation between the intercept and variability estimate (ranging from r = .72–.99), the estimates and standard errors for these estimates may not be reliable. Supplemental Tables S3 and S4 present the effect of the predicted intercept on internalizing/externalizing problems, controlling for IIV.

Discussion

These findings support the hypotheses that higher within-person variability in child-reported mother and father parental acceptance/

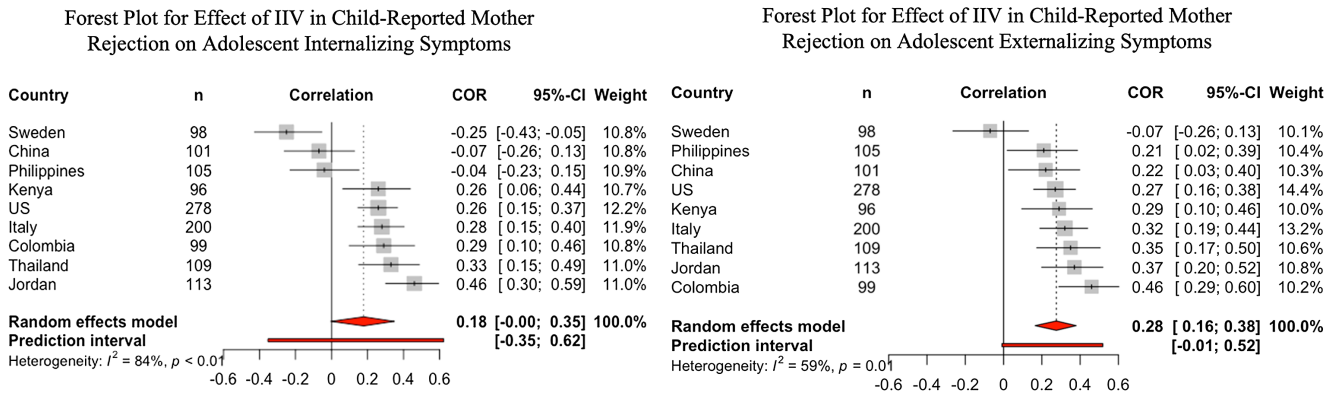
Table 3
Effect of IIV in Child-Reported Father Acceptance/Rejection on Internalizing/Externalizing Symptoms at 15

		IIV effect on internalizing			IIV effect on externalizing		
Site	*N*	Unst. est.	[95% CI]	Std. est.	Unst. est.	[95% CI]	Std. est.
Full sample	1,199	**1.14**	**[0.70, 1.56]**	**.20**	**1.06**	**[0.68, 1.42]**	**.22**
China	101	−0.03	[−2.04, 1.95]	−.01	1.13	[−0.20, 2.49]	.32
Italy	200	**1.03**	**[0.03, 2.02]**	**.17**	**0.75**	**[0.04, 1.48]**	**.17**
Kenya	96	1.21	[−28.12, 12.78]	.09	2.41	[−16.37, 15.45]	.22
Philippines	105	1.03	[−0.88, 2.95]	.15	**1.80**	**[0.23, 3.46]**	**.32**
Thailand	109	**2.09**	**[0.38, 4.10]**	**.34**	**2.38**	**[0.94, 4.09]**	**.45**
Sweden	98	1.86	[−0.18, 3.96]	.32	0.32	[−1.00, 1.71]	.08
United States	278	**1.08**	**[0.33, 1.88]**	**.21**	**0.88**	**[0.35, 1.43]**	**.23**
Colombia	99	**1.97**	**[0.76, 3.22]**	**.38**	**1.63**	**[0.47, 2.80]**	**.35**
Jordan	113	**3.14**	**[1.01, 5.51]**	**.35**	2.03	[−0.16, 4.52]	.23

Note. RDSEM models are estimated in a Bayesian estimator. 95% credible intervals are reported as tests of significance. If the 95% CI does not include 0, the effect is statistically significant. Significant effects are in boldface. IIV = intraindividual variability; Unst. est. = Unstandardized estimate; CI = credible interval; Std. est. = Standardized estimate; RDSEM = residual dynamic structural equation modeling.

Figure 1

Forest Plots for Random-Effects Meta-Analyses for Child-Reported Mother IIV in Acceptance/Rejection Predicting Internalizing and Externalizing Symptoms



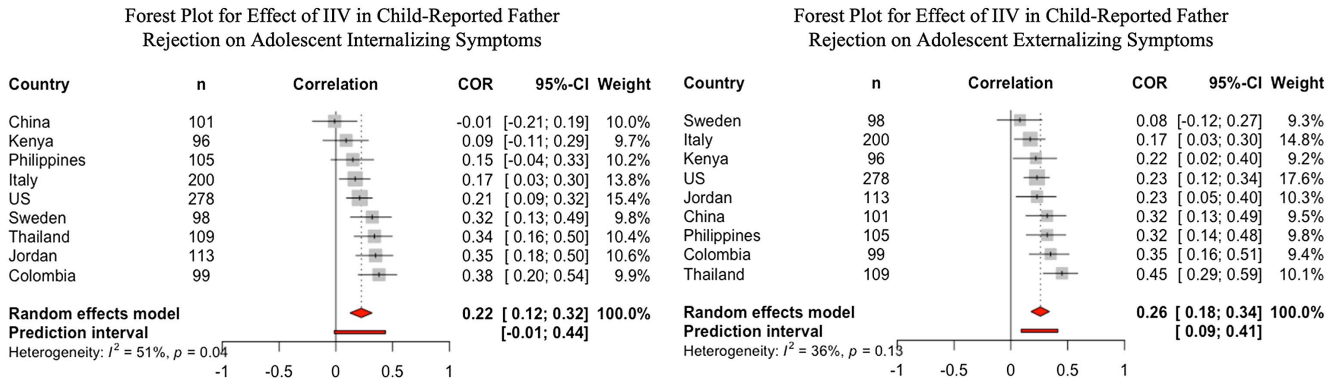
Note. There was significant between-country heterogeneity in the effect of child-reported mother IIV in rejection on internalizing ($\tau^2 = 0.05$, 95% CI [0.02, 0.21]; $I^2 = 88\%$, 95% CI [79%–93%]; prediction interval: $g = -0.35$–0.62) and externalizing symptoms ($\tau^2 = 0.01$, 95% CI [0.001, 0.08]; $I^2 = 59\%$, 95% CI [15%–80%]; prediction interval: $g = -0.01$–0.52). CI = confidence interval; IIV = intraindividual variability; COR = correlation. See the online article for the color version of this figure.

rejection is related to higher internalizing and externalizing symptoms in adolescence. Although the pooled effect size from the meta-analysis for child reported IIV in mother acceptance/rejection predicting internalizing symptoms was not statistically significant, the country-specific RDSEM models indicated that this effect was present in the full sample as well as in five of the nine countries. The results of the meta-analyses demonstrate that the pooled effects of child-reported IIV in father acceptance/rejection on adolescent internalizing and externalizing symptoms, as well as child-reported IIV in mother acceptance/rejection on externalizing symptoms are statistically significant. Overall, effect sizes ranged from .17 to .65, suggesting moderate to large effects of IIV in parental acceptance/rejection on adolescent internalizing/externalizing symptoms. However, the meta-analysis results revealed that the effect of child-reported mother IIV on adolescent internalizing symptoms was not significant. The results from the RDSEM analysis may be biased due to sample size and should be replicated in future research.

It is important to note the significant between-country heterogeneity in effects in each of the meta-analysis models. Prior cross-cultural research has demonstrated differences in parenting attributions and attitudes (i.e., Swedish culture emphasizing children's agency and egalitarian relationships between parents and their children, and China, Sweden, and the U.S. parents being lower in authoritarian attitudes relative to Colombia, Kenya, and the Philippines) within and between cultures (Bornstein et al., 2011). The same parenting practices may be perceived differently by children depending on the culture they are in. While there were no clear patterns in rank-order of countries across models in the present study (i.e., it was not that one country had the smallest effect across all models), there were some

Figure 2

Forest Plots for Random-Effects Meta-Analyses for Child-Reported Father IIV in Acceptance/Rejection Predicting Internalizing and Externalizing Symptoms



Note. There was significant between-country heterogeneity in the effect of child-reported father IIV in rejection on internalizing ($\tau^2 = 0.01$, 95% CI [<.001, 0.06]; $I^2 = 51\%$, 95% CI [0%–77%]; prediction interval: $g = -0.01$–0.44), and externalizing symptoms ($\tau^2 = 0.004$, 95% CI [<.001, 0.04]; $I^2 = 36\%$, 95% CI [0%–70%]; prediction interval: $g = 0.09$–0.41). CI = confidence interval; IIV = intraindividual variability; COR = correlation. See the online article for the color version of this figure.

general trends that emerged. For example, Sweden had the smallest effect in all models except the father internalizing model, Colombia and Thailand had the strongest effects in most models, and the United States fell generally in the middle of effect sizes for all models. Notably, Sweden had the smallest effects in the mother models and did not show statistically significant effects in the country-specific models. This may be because of the normalization of children being seen as equal to parents (Durrant & Olsen, 1997). Adolescents may not perceive variability as negative given the egalitarian relationship between them and their parents. Additionally, it is important to note prior work that has shown substantial within- and between-country variability in parenting behaviors (Deater-Deckard et al., 2018). Thus, while there are differences between countries, there is likely also substantial variation within individual in countries as well. Further, the samples from each site were not representative of each country, but rather of the area they were sampled from. Therefore, we cannot make generalizations about between-country differences. Overall, the present study provides evidence of the effects in a large sample that is generalizable to the world's population, but the meta-analysis shows that there is significant heterogeneity between samples.

These results replicate previous findings of within-person variability in parental knowledge, warmth, and hostility to predict internalizing and externalizing symptoms in children/adolescents (Branje et al., 2010; Fosco et al., 2019; Lippold et al., 2018, 2021; Zheng & McMahon, 2022). The present study's findings build on that research, demonstrating that year-to-year within-person variability in parental acceptance/rejection predicts internalizing and externalizing symptoms as children transition into adolescence, and underscoring the reproducibility of the effect across developmental periods and countries. It was surprising, however, that the meta-analytic estimate for IIV in child-reported mother acceptance/rejection predicting adolescent internalizing symptoms was not statistically significant. One potential explanation is the timescale at which variability was measured in the present study. One study found that adolescent internalizing symptoms were associated with short-term unpredictability related to maternal behaviors (i.e., routines; daily unpredictability), whereas externalizing symptoms were associated with long-term unpredictability (i.e., moves; yearly unpredictability; Farkas et al., 2022). It may be that for mothers' behaviors, longer term IIV is not as salient to adolescents as short-term rejecting behaviors are in contributing to internalizing problems. Farkas et al. (2022) did not consider paternal behaviors, however, so this cannot explain why the present study found effects for father IIV on internalizing behaviors, but not mother.

Additionally, as seen in Supplemental Tables S1 and S2, when controlling for initial levels of parental acceptance/rejection in the RDSEM models, the statistical significance and effect sizes changed for some of the countries (i.e., direction of effect became negative in Jordan, effect became non-significant but increased in magnitude in Thailand and the United States). While this may be due to multicollinearity within the models that controlled for intercept, it is an important limitation to keep in mind when interpreting the results.

Theoretical Implications

These findings highlight the importance of IIV in parental acceptance/rejection as a predictor of adolescent internalizing and externalizing symptoms. Although studies have focused on between-person differences in average levels of parenting behaviors for child/adolescent internalizing and externalizing symptoms (Kingsbury et al., 2020; Ugarte et al., 2020), the present study's findings add that child-perceived within-person variability is also important in understanding how parenting behaviors across time relate to internalizing and externalizing problems in adolescence.

Furthermore, the methodological approach used to assess the predictive effect of IIV in parental acceptance/rejection points to the utility of the multilevel modeling approach to quantify within-person variability in parenting behaviors. This approach underscores the importance of quantifying year-to-year variability in reported parenting behaviors and provides evidence that these fluctuations are not measurement error, but rather provide important information about the parenting environment and the development of child/adolescent psychopathology symptoms.

Practical Implications

The findings from the present study underscore that IIV in parental acceptance/rejection captures a distinct aspect of parenting and the parent–child relationship that is not captured by average parental acceptance/rejection over time. This finding may be particularly useful for clinicians and other healthcare professionals working with families, as it underscores the importance of not only considering average levels of parental acceptance/rejection, but also variability in child-reported parenting behaviors when considering risk for the development of internalizing and externalizing problems as children transition into adolescence. Additionally, the emphasis on child-perceptions of the parenting environment highlights the importance of clinicians and health care providers focusing on what the child reports about the home/parenting environment when identifying risk for the development of internalizing and externalizing problems. The present analysis did not examine or compare child-reported parental acceptance/rejection to parent-reported acceptance/rejection. Additionally, based on the prior work, it may also be that discrepancies between the child and parent reports of parenting behaviors are related to child outcomes (De Los Reyes, 2011). Future work should consider examining these effects to understand if the effects differ based on respondent.

Finally, the findings from the present study are important for informing interventions aimed at parenting and child/adolescent development. Understanding the importance of IIV as a predictor of adolescent internalizing and externalizing symptoms allows for interventions targeted at reducing year-to-year variability in the parenting environment. It may be beneficial to monitor and reduce the amount of variability in child-perceived parental acceptance/rejection across time, and not just at any one snapshot in time, to promote optimal outcomes.

Strengths and Limitations

One strength of the present study is the use of child reports of parental acceptance/rejection, as the child's perception of parents' behaviors provides valuable insight into the child's private phenomenology, the family system, and children's well-being that parent-report may not offer (Rohner et al., 2005). Additionally, the present study's large, international, and diverse sample increases the generalizability of the study findings and redresses the ongoing issue of using predominantly Western European and North American samples in psychological research (Roberts et al., 2020). The meta-

analytic technique demonstrates the replication of the effect of IIV on adolescent internalizing/externalizing symptoms, further underscoring the importance of considering variability as a source of information in predicting outcomes. Last, utilizing RDSEM to isolate person-specific variability is a relatively novel approach to quantifying within-person variability in parenting behaviors. This method has been used with intensive longitudinal data as well as monthly data (Dixon-Gordon & Laws, 2021; Lippold et al., 2016, 2018), but to our knowledge, the present study is the first to apply this statistical method to yearly observations. This report gives evidence that this technique can be used with measures of perceived parenting and with longer term data to estimate variability around a predicted slope.

This study is not without limitations. It is important to consider that parenting behaviors are themselves influenced by child and adolescent behaviors and attributes (i.e., "child effects"), and therefore, the observed association between parental acceptance/rejection and child emotional and behavioral problems is bidirectional (Lengua & Kovacs, 2005; Reitz et al., 2006; Wiggins et al., 2015). Relatedly, parenting effects may vary depending on the child's gender—prior work has found larger effect sizes of parental support and behavior on girls' mental health outcome compared to boys' (Colarossi & Eccles, 2003). Because the primary aim of this study was to understand the basic association between within-person variability in reported parental acceptance/rejection and adolescent internalizing/externalizing symptoms, child effects, or differential effects by child gender were not included in the model. However, future work may consider these effects. Additionally, the present study relied on child-reports of parenting behaviors, and no observational data were collected. While child-reported data are valuable, observational data would provide additional information about parenting behaviors. It is also important to recognize the heterogeneity in this effect when interpreting the results, and future work may explore reasons for this heterogeneity in samples from different cultural groups.

Furthermore, the spacing between timepoints limits the practical utility of the findings, as needing at least three annual assessments to estimate year-to-year IIV in parental acceptance/rejection is not always practical or feasible. Additionally, some of the effects were not stable when controlling for initial levels of parental acceptance/rejection, and intercept and IIV were highly correlated. This presents conceptual concerns of how IIV differs from initial levels, and how to effectively test for their independent effects. These limitations should be kept in mind when interpreting the results. Although the findings demonstrate that year-to-year IIV in parental acceptance/rejection is a predictor of externalizing symptoms in adolescence, it is not yet known if this effect is present when thinking about IIV in parental acceptance/rejection on other (e.g., day-to-day, week-to-week) timescales, as has been shown with other constructs (i.e., warmth, hostility; Branje et al., 2010; Fosco et al., 2019; Lippold et al., 2018). It may be that short-term IIV in acceptance/rejection more strongly relates to outcomes because experiencing daily variability in behavior from a parent may create a much more unpredictable environment compared to variability across years, thus increasing internalizing and externalizing problems (Belsky et al., 2012). It will be important for future work to examine how different types of IIV work together (i.e., is there a cumulative or interactive effect of daily and yearly IIV?) to better understand how IIV relates to adolescent psychopathology symptoms. The present study's findings provide preliminary evidence for the importance of considering yearly IIV in parental acceptance/rejection as a predictor of adolescent internalizing and externalizing problems and lays the groundwork for future work to assess IIV in parental acceptance/rejection on different timescales. Last, although longitudinal data were used in the analysis, data were correlational; thus, no causal claims can be made about the direction of the effect.

Conclusion and Future Directions

Future work should incorporate effects of child behavior on parenting. Examining how child behavior covaries with parental acceptance/rejection year-to-year would provide insight into how parents and their children interact in the family system, and how their interactions relate to the development of internalizing and externalizing symptoms as children transition into adolescence. Additionally, future work should examine the association of IIV in parental acceptance/rejection with other outcomes in childhood/adolescence (e.g., social adjustment, risky behaviors) to understand other possible outcomes associated with increased variability in parenting behaviors. Similarly, considering additional household/environmental factors (e.g., socioeconomic status, household chaos) that relate to or covary with IIV in parental acceptance/rejection represents an important next step in identifying factors to target in interventions aimed at reducing IIV in parental acceptance/rejection, thus buffering against negative effects for children/adolescents. Further exploration of factors that covary with and predict IIV in parental acceptance/rejection would highlight *why* variability in parenting behaviors is occurring, identify factors that may explain this variability (e.g., parents exhibiting more rejecting behavior during years with less financial stability or more stress), and pinpoint ways in which interventions can be targeted to promote positive emotional development for adolescents. Finally, the present study focused on the development of internalizing and externalizing symptoms during the transition from childhood to adolescence, future work should consider examining the effects of IIV in parental acceptance/rejection during other developmental periods (i.e., early childhood) to understand if effects are similar across development, or unique to specific developmental stages.

Despite these limitations, the findings provide preliminary evidence for the effect of year-to-year variability (IIV) in child-perceived parental acceptance/rejection on internalizing and externalizing symptoms as families navigate the transition from childhood to adolescence. More broadly, the findings underscore the utility of considering within-person variability in the parenting environment as a predictor of child and adolescent outcomes, which has important practical and theoretical implications.

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Received August 24, 2022
Revision received June 30, 2023
Accepted June 30, 2023 ■