Child Psychiatry & Human Development (2022) 53:76–88
https://doi.org/10.1007/s10578-020-01115-0

ORIGINAL ARTICLE

Parenting Stress and Child Externalizing and Internalizing Problems Among Low-Income Families: Exploring Transactional Associations

Kristina Kochanova[1] · Laura D. Pittman[1] · Lauren McNeela[1]

Accepted: 15 December 2020 / Published online: 4 January 2021

Abstract

Although the association between parenting stress and child behavioral outcomes is well established (Deater-Deckard, Clin Psychol 5:314–332, 1998), longitudinal research examining the direction of these effects is limited. This study examined transactional associations between parenting stress and child externalizing and internalizing behaviors among 1209 low-income female caregivers (M_{age} = 34.51) with children in early childhood or early adolescence (i.e., either 2- to 5-years-olds or 9- to 15-year-olds at Time 1) across a 6 year time span using three time points. Parent-driven associations between parenting stress and child internalizing problems for the early childhood group were found. In the early adolescent group, transactional and child-driven associations were found between parenting stress and child externalizing problems, but only child-driven associations for internalizing problems. Thus, transactional associations were only supported for the early adolescent group. These findings suggest developmental differences in how parenting stress and child behavioral problems are linked among low-income families. Clinical implications are discussed.

Keywords Parenting stress · Child behavioral problems · Transactional · Low-income families

Parenting stress has been investigated for more than four decades to understand its influences on child developmental and socioemotional outcomes [2]. Parenting stress is conceptualized as a type of stress parents experience in raising children in the context of both daily hassles (i.e., minor daily stressors associated with childrearing) [3] and major stressors (e.g., parent and child psychopathology, dysfunctional parent-child relationships) [1, 2]. Parenting stress is thought to lead to physiological and psychological reactions emerging from attempts to meet the challenges of parenting [4]. These challenges can include adjusting to the child's characteristics (e.g., behavioral problems, temperament), juggling work and parenthood, and meeting the child's physical and emotional needs [4]. Stress related to parenting is a normal response to the demands of family life and is experienced at one point or another by all parents [3]. The parenting stress response can be helpful because it prompts the utilization of available resources to support parenting behaviors [2]. However, lack of resources (e.g., less social support) or the use of ineffective coping strategies can lead to chronic elevations in parenting stress levels [1, 2].

Chronic elevations in parenting stress are associated with a myriad of negative outcomes including poor parental psychological well-being [1, 2, 4, 5], more frequent punitive and withdrawn parent-child interactions [4–6], and higher levels of externalizing and internalizing behavioral problems in children [e.g., 7, 8]. However, theories related to parenting stress posit that the associations with child outcomes are bidirectional, where both constructs influence each other. Specifically, both the Parent-Child-Relationship (P-C-R) [4] and the Parenting Daily Hassles (PDH) [3] theories suggest that parenting stress contributes to child behavioral problems over time and child behavioral problems increase parenting stress over time [4, 5]. These theories positing bidirectional associations mirror the transactional model that conceptualizes development as a product of ongoing interactions between the individual and the environment, where children are both the producer and product of their environment [9–11]. The core component of the transactional framework is that it places equal emphasis on the child influencing the environment and the environment influencing the child [9–11]. Yet, despite these theories, most studies exploring the associations between parenting stress and

✉ Kristina Kochanova
kristinakochanova@gmail.com

[1] Psychology Department, Northern Illinois University, DeKalb, IL, USA

child behavioral outcomes are cross-sectional [e.g., 12, 13], limiting the ability to determine which construct is influencing the other.

Parenting Stress and Child Externalizing Problems

The majority of research on parenting stress and child socioemotional outcomes has been focused on externalizing problems in children, including aggressive, oppositional, noncompliant, hostile, hyperactive, and/or destructive behavioral problems [4, 14]. These early externalizing behaviors are concerning because they can lead to more severe and persistent externalizing behaviors and behavioral disorders later in childhood and adolescence (e.g., conduct disorder) [4]. In addition, overt behavioral problems emerging early in childhood are significant sources of parental distress [4, 15]. The link between parenting stress and child externalizing behaviors is well established cross-sectionally, with higher levels of parenting stress associated with more externalizing behavioral problems as early as toddlerhood [e.g., 12, 13, 16]. Similar patterns have been found in middle childhood [17, 18] and adolescence [8, 19]. However, there is lack of studies with adolescent, diverse, and low-income samples.

Although the majority of literature on parenting stress and externalizing problems is cross-sectional, the association between these constructs has also been supported in longitudinal studies. Specifically, Bagner et al. [20] found that higher parental stress when children were 4 months of age was associated with more externalizing problems among children at 36 months. Similarly, Tharner et al. [21] found that higher parenting stress when children were 18 months was associated with higher externalizing symptoms (i.e., symptoms of aggression and attention problems) in children at age 3. Lastly, mothers' stress related to parenting at 36 months was associated with higher child externalizing problems (e.g., oppositional behaviors) at age 6 [22]. Studies with young children have also found that children's externalizing behavioral problems increased parenting stress and led to dysfunctional parent-child relationships over time [2, 4, 5, 23]. However, longitudinal studies examining the association between parenting stress and externalizing problems across middle childhood and adolescence are rare.

While uncommon, a few studies have examined transactional associations between parenting stress and child behavioral problems. Looking at child behavioral problems broadly (i.e., CBCL total score), Neece et al. [24] found support for the transactional model, where parenting stress was both an antecedent and consequence of child behavioral problems across early and middle childhood (ages 3–9). Mackler et al. [25] also found a transactional association between child externalizing problems and parenting stress from ages 4 to 10. Similarly, during early childhood (examined from ages 4 to 9) Stone et al. [7] found transactional relations between parenting stress and child externalizing problems for boys, but not girls. However, a different pattern was found when investigating transactional relations between parenting stress and externalizing problems across 15 years. Specifically, externalizing behaviors at age 5 and 10 significantly predicted parenting stress at age 10 and 15, respectively, while parenting stress at age 15 significantly predicted externalizing behaviors at age 18, but bidirectional associations were not supported at any time point [11]. Thus, more research is needed across ages to see whether parenting stress influences children's externalizing problems, children's externalizing problems influence parenting stress, or both.

Parenting Stress and Child Internalizing Problems

While the parenting stress literature mainly focuses on child externalizing behaviors, the link between parental stress and child internalizing behaviors has also been investigated [4, 11]. Internalizing behaviors, which include symptoms of depression, somatic complaints, withdrawal, and anxiety, reflect children's internal states that often go undetected by others, but these emotional behaviors can lead to internalizing disorders over time (e.g., separation anxiety, major depression, social anxiety) [4, 26]. Like with externalizing behaviors, cross-sectional findings indicate that parental stress is positively associated with child internalizing problems in toddlers [12, 13]. This positive association has also been found in middle childhood [17, 27, 28] and adolescence [8]. However, similar to the research on parental stress and child externalizing problems, there is limited literature exploring parenting stress and child internalizing problems with adolescent, ethnic minority, and low-income samples.

The association between parenting stress and child internalizing behaviors also has been investigated longitudinally, though the literature is limited in number. The few studies that have explored this link confirmed the cross-sectional findings. Specifically, Mäntymaa et al. [29] found that higher parenting stress at age 2 was significantly associated with more child internalizing problems at age 5. Goldberg et al. [30] also found a similar pattern where parenting stress at age 1, 2, and 3 was positively associated with child internalizing problems at age 4. Lastly, parental stress when the child was age 4–5 was significantly associated with more symptoms of child internalizing problems at age 11 [31]. Only two studies were identified examining the transactional model between parenting stress and children's internalizing problems. Woodman et al. [11] found bidirectionality between parenting stress and child internalizing problems

from age 3 to 5, but only child-driven associations from age 5 to 10, and parent-driven associations from age 15 to 18. In contrast, Stone et al. [7] found only parent-driven associations, where parenting stress was linked with internalizing problems over time following children from 4 to 9. Thus, more longitudinal research is needed to understand the nature of the transactional associations between parenting stress and children's internalizing problems, especially considering whether these links vary by children's age.

The Present Study

The link between parenting stress and child externalizing and internalizing problems has been established both cross-sectionally [e.g., 12, 13] and longitudinally [e.g., 21]. However, current longitudinal studies are limited because they tend to focus on unidirectional associations and primarily explore longitudinal relations across early childhood. Examining the influence of parenting stress on children's outcomes at different developmental periods is needed. It may be that as children's relationship networks are expanding to include more peers and others outside the family [32], the associations between parenting stress and children's behavior problems are weaker. However, the literature suggests parents remain an important influence even into adolescence [33] and, thus, the associations may be consistent across development. The present study addresses these gaps by examining how parenting stress is linked with child externalizing and internalizing behaviors among families with children in early childhood (i.e., 2- to 5-year-olds at Time 1) or early adolescence (9- to 15-year-olds at Time 1) across a 6 year time span using three time points.

Additionally, most studies that investigate the link between parenting stress and child externalizing and internalizing problems have samples that are primarily Caucasian and middle class to upper class [e.g., 13]. This limits the generalizability of findings to other populations including low-income minority samples. Exploring these relations with samples from diverse economic and ethnic backgrounds is important because research demonstrates that minorities (e.g., African-American, Hispanic) have higher levels of parenting stress than Caucasians [34]. The negative effects of parenting stress may be amplified for minorities due to the multiple risk factors they face (e.g., poverty) and could potentially lead to more adverse child socioemotional development [34]. For example, among low-income and African American families, there is a high percentage of single-parent families which presents additional challenges and unique stressors related to parenting [35]. Specifically, research suggests that first-time single parents report higher levels of parenting stress than those who are married [36]. Additionally, there is a direct association between single parenthood and increases in parenting stress over time [37]. Thus, the present study investigated transactional associations between parenting stress and child behavioral problems among a sample of low-income families who were primarily African American or Hispanic American and had a high number of single-parent households.

Overall, this study sought to expand upon the literature by investigating transactional associations between parenting stress and child externalizing and internalizing behaviors among a low-income sample for children in early childhood and early adolescence separately. It was hypothesized that bidirectional relations would be found between parenting stress and child externalizing and internalizing problems, where parenting stress would predict child behavioral problems and child behavioral problems would predict parenting stress over time for both age groups.

Method

Participants and Procedure

Data were drawn from the three time points of *Welfare, Children, and Families: A Three-City Study*, a random sample of 2402 low-income families in Boston, Chicago, and San Antonio. For full details of sample and procedure see Winston et al. [38]. The sample at Time 1 was randomly selected from low-income households with children who were either age 0–4 or 10–14 years old living in low-income neighborhoods in three cities (i.e., Boston, Chicago, and San Antonio). Of families considered eligible (based on child's age, race/ethnicity, family income, parents' marital status, and receipt of Medicaid or Food Stamps) from the screening, 82.5% agreed to participate. Longitudinal survey data were collected on a computerized interview instrument (i.e., Computer-Assisted Personal Interview) in 1999 ($N=2402$), 2001 ($N=2158$), and 2005 ($N=1944$) during a 2.5 h in-home interview with caregivers and children [38]. In approximately 12% of these families, the mother preferred being given a Spanish translation of the interview. On average, Time 1 and 2 were 16 months apart and Time 2 and 3 were 53 months apart. The retention rate was 87.8%, 84%, and 80% from Time 1 to Time 2, Time 2 to Time 3, and Time 1 to Time 3, respectively [39]. The analyses focused on 1918 female caregivers ($M_{age}=34.53$) who reported having a 2- to 5- year-old ($n=761$) or 9- to 15-year-old ($n=1157$) child at Time 1. Participants with children below 2 years old were excluded because child behavioral outcomes were not assessed for 0- to 1-year-old children.

Demographic characteristics of the sample, split by age group, are shown in Table 1. The majority of caregivers were Hispanic or Black, with the remaining sample of White and Other (e.g., Asian American, Biracial) ethnicities. Further,

Table 1 Demographic characteristics of subsamples

Variable	Early Childhood Subsample ($n=761$)	Early Adolescent Subsample ($n=1157$)
Child characteristics		
Age		
Time 1	3.02 ($SD=0.87$)	11.92 ($SD=1.45$)
Time 2	4.42 (SD = 0.97)	13.31 (SD = 1.51)
Time 3	8.80 (SD = 0.96)	17.52 (SD = 1.48)
Gender	52.8% male	48.7% male
Maternal characteristics		
Race/ethnicity		
African-American	44.4%	40.8%
Hispanic American	47.3%	46.2%
Caucasian	6.0%	11.1%
Other ethnicities	2.2%	1.9%
Biological mothers	92.1%	89.5%
Cumulative Risk Index		
Single parenthood	76.7%	78.8%
Teen motherhood	5.1%	0.1%
Household below poverty line	76.6%	74.5%
Maternal less than High School education	34.0%	35.2%
Presence of one or more neighborhood problems	70.3%	69.5%
Clinical levels of maternal depression	9.6%	10.7%

most caregivers were biological mothers, not married/cohabitating, and some had less than high school education. Child gender was nearly equally divided with 52.8% ($n=402$) of the 2-to 5-year-old sample and 48.7% ($n=563$) of the 9- to 15-year-old sample being boys. Lastly, the majority of the families were at or below the federal poverty line.

Measures

Demographic and Family Risk Information

Caregivers answered questions about their family's demographic information at each of the three time points [38]. The collected demographic information included caregiver and child gender, age, and ethnicity, caregiver education, and caregiver relationship status. Based on reported household income and the number of individuals in the home, an income-to-needs ration was calculated and those with a value under 1.0 was considered to be living below the poverty line. In addition, mothers reported on their current depressive symptoms using the 6 items from the depression scale from the Brief Symptom Inventory-18 at Time 1 (BSI-18) [40]. Items were rated on a 5-point frequency scale (i.e., 0 = *not at all*, 1 = *a little bit*, 2 = *moderately*, 3 = *quite a bit*, and 4 = *extremely*) based on the depressive symptoms that has been experienced in the past 7 days. In this study, internal consistency was good for the measure with an alpha of .83. The responses were summed to yield a raw score, which was standardized using *t*-scores based on a community sample from previous studies [40]. Based on the suggested cutoff *t*-score of 63 for clinical depression [40], participants' scores were dichotomized to indicate the presence or absence of clinical depression.

A cumulative risk index was created by summing the following six risk factors: (a) single parenthood (i.e., not married and/or not cohabitating with a partner), (b) teen motherhood (i.e., mothers below 20 years old), (c) living below the poverty line, (d) maternal education less than high school, (e) presence of 1 or more neighborhood problems, and (f) clinical levels of maternal depression. Thus, cumulative risk index ranged from 0 (i.e., no risk factors present) to 6 (i.e., all risk factors present). Cumulative risk has been found to be negatively associated with both parenting stress and child outcomes [41].

Parenting Stress

At all three time points, female caregivers reported on their parenting stress with 7 items on the Challenges to Parenting measure [42], which was adapted from measures used in the Panel Study of Income Dynamics and New Chance Study [43]. Participants indicated the degree to which they agreed or disagreed with each item using a 5-point scale (i.e., 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither*

Disagree or Agree, 4 = *Agree*, and 5 = *Strongly Agree*) [42]. The included items were statements related to stress in the parenting role (e.g., "I don't have as much patience with my child as I should," "I feel overwhelmed by my responsibilities as a parent") [42]. At each time point, items were averaged into a parenting stress composite and higher scores indicated greater parental stress. All time points had acceptable internal consistency, with alphas of .75 for Time 1 and 2 and .79 for Time 3 [44].

Child Behavioral Problems

At all three time points, caregivers reported on their children's socioemotional outcomes using age-appropriate Child Behavior Checklist (CBCL) [45–47] or Adult Behavior Checklist (ABCL) [48]. These reliable and valid measures are commonly used to assess a wide range of youth behaviors, including internalizing (e.g., anxiety, depression) and externalizing problems (e.g., rule-breaking, aggression) [45–48]. For all versions, caregivers rated how true each item was for their child using a 3-point scale (0 = *Not True (as far as you know)*, 1 = *Somewhat or Sometimes True*, 2 = *Very True or Often True*). For the current study, only the Internalizing and Externalizing Problems subscales were utilized. The internal consistency of all versions was good across time points for both the Internalizing and Externalizing subscales (alphas ranged from .83 to .92) [44]. Due to the use of different versions across age groups and time points, raw scores for Externalizing and Internalizing Problems subscales for each measure were standardized and combined to yield Externalizing and Internalizing Subscales across age groups for Time 1, 2, and 3. This standardization process is consistent with other studies using this data [e.g., 42]. Higher scores indicated more behavioral problems.

Analytic Plan

Transactional associations between parenting stress and child behavior problems were examined in four parallel cross-lagged panel models, one for child externalizing problems and one for child internalizing problems for each of the 2- to 5-year-old and 9- to 15-year-old age groups. Specifically, in these models, two sets of cross-lag associations (i.e., T1 to T2 and T2 to T3) were added from early parenting stress to later child behavioral problems, as well as from earlier child behavioral problems to later parenting stress. In addition, paths indicating stability of parenting stress and child outcomes across time were included in the model (i.e., Time 1 [T1] parenting stress to Time 2 [T2] and Time 3 [T3] parenting stress; T2 parenting stress to T3 parenting stress; T1 child behavioral problems to T2 and T3 child behavioral problems; and T2 child behavioral problems to T3 child behavioral problems). Finally, scores on parenting stress and child behavioral problems were allowed to correlate cross-sectionally at each time point. Thus, these models allow examination of the complexity of developmental patterns between parenting stress and child externalizing and internalizing behavioral problems separately over time for early childhood and early adolescence.

Analyses were conducted using path analyses in AMOS Version 21.0 [49]. Parameters were generated using the full information maximum likelihood estimation (i.e., a technique that estimates the maximum likely value for missing data points given relations and trends among non-missing values) to account for missing data [50]. Fit indices used to determine good model fit included: (1) the chi-square statistic (χ^2), where non-significant *p*-values are expected; (2) Tucker–Lewis Index (TLI), where good fit is indicated by values of 0.90 or higher; (3) the Comparative Fit Index (CFI), where a good fit is indicated by values of 0.90 or higher; and (4) the Root Mean Squared Error of Approximation Index (RMSEA), where good fit is indicated by values of 0.10 or lower [51].

Results

Preliminary Analyses

Mean, standard deviations, and skew and kurtosis of all variables were calculated separately for early childhood and early adolescent groups (see Table 2). As reported elsewhere, behavioral problems for this sample are more common than in a nationally representative sample; specifically, 21% of preschoolers and 29% of adolescents have behavioral problem scores that are elevated (i.e., in the borderline or clinical range) [42]. Because of significant kurtosis for Time 3 (T3) internalizing behaviors for the early childhood group and Time 2 (T2) externalizing behaviors for the early adolescent group, these variables were transformed using log transformation. Although significant kurtosis was present for T3 externalizing behaviors for both the early childhood and early adolescent groups, all available transformations, as described in Field [52], did not resolve significant kurtosis and in some cases resulted in significant skew. Thus, the non-transformed T3 externalizing behavior variables for both groups were used in the primary analyses.

Bivariate correlations among all variables are presented on Table 3. All study independent and dependent variables were significantly correlated in the positive direction. Analyses for both age groups revealed parenting stress was positively correlated with child externalizing and internalizing problems at Time 1, 2, and 3. Particularly high correlations were obtained between externalizing and internalizing problems within each time point.

Table 2 Descriptive statistics of primary variables

Variable	Early Childhood Subsample ($n = 761$)		Early Adolescent Subsample ($n = 1157$)	
Parenting Stress	Mean (SD)	Skewness (Kurtosis)	Mean (SD)	Skewness (Kurtosis)
Time 1	2.82 (0.83)	0.33 (−0.42)	2.82 (0.87)	−0.01 (−0.53)
Time 2	2.81 (0.85)	−0.03 (−0.51)	2.76 (0.85)	0.00 (−0.59)
Time 3	2.64 (0.86)	−0.05 (−0.63)	2.66 (0.88)	0.03 (−0.50)
Internalizing Symptoms				
Time 1 CBCL 2–3 version*	9.83 (6.29)	0.89 (1.06)	–	–
Time 1 CBCL 4–18 version*	5.21 (4.93)	1.81 (4.45)	9.05 (7.81)	1.20 (1.32)
Time 1 standardized across measures	0.00 (1.00)	0.98 (1.07)	0.00 (1.00)	1.22 (1.54)
Time 2 CBCL 2–3 version*	8.76 (6.06)	0.64 (−0.03)	–	–
Time 2 CBCL 4–18 version*	5.21 (4.85)	1.32 (1.85)	7.88 (7.38)	1.35 (1.79)
Time 2 standardized across measures	0.00 (1.00)	1.11 (1.16)	0.00 (1.00)	1.36 (1.94)
Time 3 CBCL 6–18 version*	7.05 (6.62)	1.77 (4.18)	8.29 (7.58)	1.19 (1.28)
Time 3 CBCL 19+ version*	–	–	8.46 (8.21)	1.43 (1.76)
Time 3 standardized across measures	0.00 (1.00)	1.74 (3.94)	0.00 (1.00)	1.23 (1.35)
Time 3 standardized transformed	−0.45 (1.31)	−1.37 (1.92)	–	–
Externalizing Symptoms				
Time 1 CBCL 2–3 version*	14.52 (9.45)	.71 (0.19)	–	–
Time 1 CBCL 4–18 version*	10.35 (7.39)	1.17 (1.81)	10.90 (9.20)	1.35 (1.99)
Time 1 standardized across measures	0.00 (1.00)	.75 (0.44)	0.00 (1.00)	1.35 (1.95)
Time 2 CBCL 2–3 version*	12.43 (8.26)	.62 (0.14)	–	–
Time 2 CBCL 4–18 version*	10.95 (8.19)	1.02 (1.45)	10.32 (9.16)	1.40 (2.44)
Time 2 standardized across measures	0.00 (1.00)	.92 (1.26)	0.00 (1.00)	1.40 (2.32)
Time 2 standardized transformed	–	–	−0.43 (1.37)	−1.39 (1.75)
Time 3 CBCL 6–18 version*	8.83 (8.08)	1.55 (3.04)	9.71 (9.81)	1.58 (2.48)
Time 3 CBCL 19+ version*	–	–	11.75 (10.53)	1.32 (1.57)
Time 3 standardized across measures	0.00 (1.00)	1.58 (3.29)	0.00 (1.00)	1.51 (2.16)
Cumulative risk	2.72 (1.10)	−0.20 (−.32)	2.70 (1.04)	−.21 (−0.17)
Number of people in household	4.13 (1.62)	1.02 (1.32)	4.29 (1.58)	0.85 (0.92)

Note. *Original raw scores that were used to create standardized variables for the primary analyses

Table 3 Bivariate correlational analyses

Variables	Correlations											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Parenting Stress T1	–	.52***	.35***	.36***	.23***	.16***	.37***	.25***	.21***	.17***	.05	.02
2. Parenting Stress T2	.48***	–	.42***	.30***	.35***	.22***	.31***	.40***	.22***	.18***	.08*	−.03
3. Parenting Stress T3	.31***	.38***	–	.24***	.28***	.41***	.26***	.29***	.43***	.12**	.11**	−.03
4. Internalizing T1[a]	.32***	.15**	.14**	–	.54***	.45***	.67***	.31***	.34***	.11**	.04	−.001
5. Internalizing T2[a]	.15**	.28***	.13**	.39***	–	.46***	.38***	.54***	.35***	.12**	.05	−.04
6. Internalizing T3[a]	.16**	.19***	.30***	.21***	.22***	–	.32***	.28***	.65***	.12**	.04	−.06
7. Externalizing T1[a]	.39***	.21***	.10*	.72***	.35***	.24***	–	.49***	.53***	.13***	.05	−.02
8. Externalizing T2[a]	.24***	.36***	.12*	.35***	.68***	.22***	.46***	–	.42***	.11**	.04	−.04
9. Externalizing T3[a]	.13**	.23***	.33***	.22***	.28***	.50***	.32***	.44***	–	.10*	.06	−.05
10. Cumulative Risk	.08*	.14***	.05	.14**	.16***	.06	.17***	.17***	.14**	–	−.05	−.02
11. # of People[+]	.07	.07	.04	.07	.07	.04	.02	.04	.07	−.02	–	−.02
12. Child Age	−.02	−.05	−.14**	−.02	.01	−.05	−.04	−.02	−.01	−.08*	.08*	–

Note. Correlations above the diagonal are for participants ages 9–15 and those below the diagonal are for participants ages 2–5. [a]All child outcome variables are standardized. Internalizing T3 and Externalizing T2 are transformed for the 2–5 and 9–15 groups, respectively. [+] # of People = Number of people in household. * $p < .05$; ** $p < .01$; *** $p < .001$

To determine which variables would be used as covariates in primary analyses, correlations were run with continuous demographic variables (i.e., cumulative risk, number of people in household, and child age) and all dependent variables (see Table 3). Cumulative risk was significantly positively associated with T2 parenting stress, T2 externalizing and internalizing behaviors, and T3 externalizing behaviors for the early childhood group, while it was positively associated with all dependent variables for early adolescent group. Number of people in the household was not significant for any of the dependent variables for the early childhood group. However, it was positively associated with T2 and T3 parenting stress for the early adolescent group. Child age was negatively associated with T3 parenting stress for early childhood group and was not significantly associated with any dependent variables for the early adolescent group. Further, *t*-tests indicated that for early childhood group parents who identified as a biological mother had higher parenting stress at Time 3 ($M = 2.66$ [$SD = 0.85$]) compared to non-biological parents ($M = 2.35$ [$SD = 0.95$]; $t(564) = -2.37$, $p = 0.018$). For the early adolescents group, parents who identified as a biological mother had higher parenting stress at Time 2 ($M = 2.78$ [$SD = 0.85$]) and Time 3 ($M = 2.68$ [$SD = 0.87$]) compared to non-biological parents at Time 2 ($M = 2.57$ [$SD = 0.83$]; $t(1018) = -2.44$, $p = 0.015$) and Time 3 ($M = 2.41$ [$SD = 0.94$]; $t(783) = -2.38$, $p = 0.017$). Additionally, for early childhood group, children who were identified as a non-ethnic minority had higher internalizing behaviors at Time 2 ($M = 0.41$[$SD = 01.54$]) and externalizing behaviors at Time 3 ($M = 0.43$ [$SD = 1.15$]) compared to children who were identified as ethnic minorities at Time 2 ($M = -0.02$ [$SD = 0.96$]; $t(493) = 2.05$, $p = 0.041$) and Time 3 ($M = -0.02$ [$SD = 0.99$]; $t(493) = 2.17$, $p = 0.031$). In comparison, for the early adolescent group, adolescents who were identified as non-ethnic minorities had higher internalizing behaviors at Time 2 ($M = 0.40$ [$SD = 1.09$]) and externalizing behaviors at Time 2 ($M = 0.03$ [$SD = 1.18$]) compared to adolescents who were identified as ethnic minorities ($M = -0.03$ [$SD = 0.99$] and $M = -0.46$ [$SD = 1.38$], respectively; $t(713) = 3.01$, $p = 0.003$ and $t(713) = 2.51$, $p = 0.012$, respectively). Lastly, for the early adolescent group, parents of female adolescents had higher parenting stress at Time 3 ($M = 2.72$ [$SD = 0.89$]) compared to parents of male adolescents ($M = 2.59$ [$SD = 0.86$]; $t(783) = -2.09$, $p = 0.037$). Adolescent females also reported higher internalizing behaviors at Time 3 ($M = 0.13$ [$SD = 1.03$]) compared to adolescent males ($M = -0.13$ [$SD = 0.95$]; $t(713) = -3.48$, $p = 0.001$). Based on these results, cumulative risk, number of people in the household, child gender and age, type of mother, and ethnic minority status were used as covariates in the primary analyses.

Given the longitudinal nature of this study, some data were missing for both the early childhood and early adolescent groups. Percentage of missing data ranged from 0.3 to 35% per construct for the early childhood group and from 0.1 to 38.2% per construct for the early adolescent group. Little's MCAR test [53] was not significant ($\chi^2(58) = 56.763$, $p = 0.521$) for the early childhood group, suggesting that data were missing completely at random. However, the Little's MCAR test [53] was significant ($\chi^2(108) = 143.733$, $p = 0.012$) for the early adolescent group, suggesting that data were not missing completely at random. Based on recommendation of Tabachnick and Fidell [50], multiple univariate *t*-tests were conducted to determine significant predictors of missingness. Those missing data were more likely to be an older adolescent, identify as being a non-biological mother, and identify as an adolescent from ethnic minority background. Thus, missingness was accounted for by already previously identified variables included in the primary analyses as covariates (i.e., child age, type of mother, and child ethnic minority).

Primary Analyses

Early Childhood

A path analysis model was explored for parenting stress and child externalizing behaviors at all three time points (see Fig. 1) using the early childhood subsample. The model demonstrated adequate model fit (i.e., $\chi^2(2) = 4.08$, $p = 0.13$; $TLI = 0.887$; $CFI = 0.997$; $RMSEA = 0.037$). Path analyses revealed that parenting stress and child externalizing behaviors were significantly correlated cross-sectionally at each time. Parenting stress and child externalizing behaviors also demonstrated continuity over time. However, no significant cross-lag associations were found for parenting stress and child externalizing behaviors.

A path analysis model was also explored for parenting stress and child internalizing behaviors at all time points (see Fig. 2). The model demonstrated good model fit (i.e., $\chi^2(2) = 0.88$, $p = 0.64$; $TLI = 1.082$; $CFI = 1.000$; $RMSEA = 0.000$). Analyses revealed that parenting stress and child internalizing behaviors were significantly correlated cross-sectionally at each time. Similar to the model with externalizing behaviors, continuity in parenting stress and child internalizing behaviors was found across all three time points. In addition, while most cross-lag associations were not significant, a positive association was found from T2 parenting stress to T3 internalizing behaviors.

Early Adolescence

A path analysis model was explored for parenting stress and child externalizing behaviors at all three time points (see Fig. 3) using the early adolescent sample. The model demonstrated good model fit ($\chi^2(2) = 2.79$, $p = 0.25$; $TLI = 0.977$;

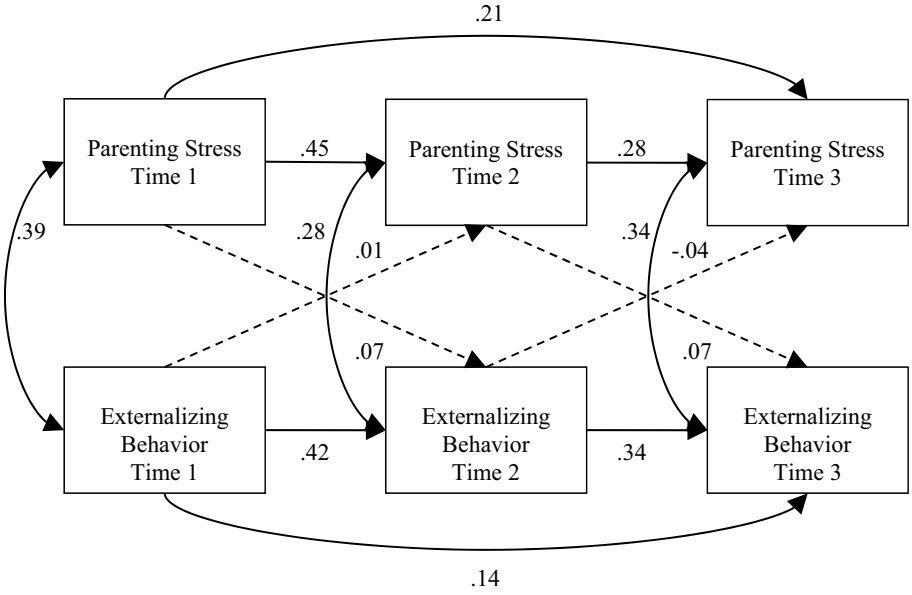

Fig. 1 Path analysis examining parenting stress and child externalizing behaviors for the early childhood age group ($n = 761$) ———— significant association ($p < .05$), ---------- non-significant association ($p > .05$). All values presented are standardized. Controlled for cumulative risk, number of people in household, child gender and age, type of mother, and minority status

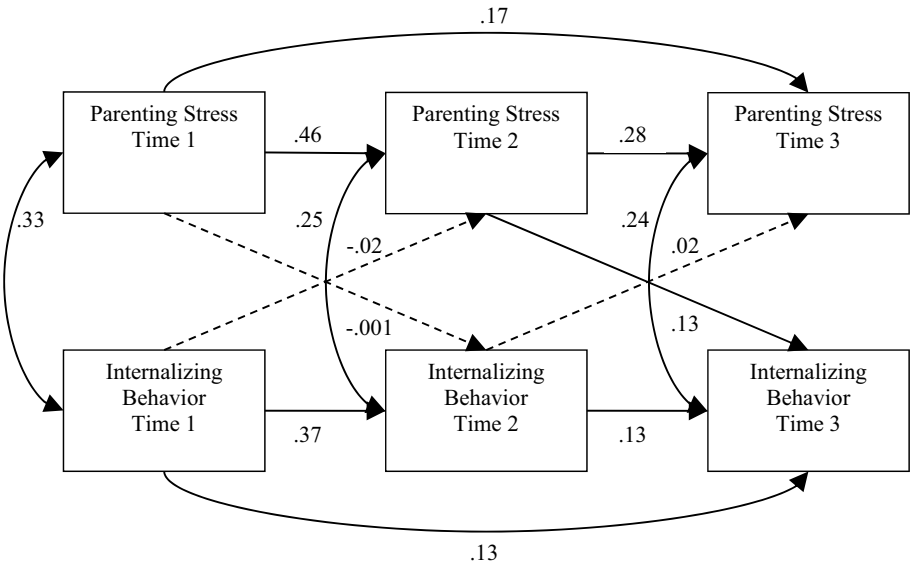

Fig. 2 Path analysis examining parenting stress and child internalizing behaviors for the early childhood age group ($n = 761$) ———— significant association ($p < .05$), ---------- non-significant association ($p > .05$). All values presented are standardized. Controlled for cumulative risk, number of people in household, child gender and age, type of mother, and minority status

CFI = 0.999; *RMSEA* = 0.018). Path analyses revealed that parenting stress and child externalizing behaviors were significantly correlated cross-sectionally at each time point. Parenting stress and child externalizing behaviors demonstrated continuity over time. Significant transactional associations were found between T1 externalizing behaviors and T2 parenting stress and T1 parenting stress and T2 externalizing behaviors. However, only child-driven associations were found to be significant from T2 to T3, where T2 externalizing behaviors predicted T3 parenting stress.

A path analysis model was also explored for parenting stress and adolescent internalizing behaviors at all three time points (see Fig. 4). The model demonstrated good model fit ($\chi^2(2) = 2.31$, $p = 0.32$; *TLI* = 0.991; *CFI* = 1.000; *RMSEA* = 0.011). Path analyses revealed that parenting stress and child internalizing behaviors were significantly correlated cross-sectionally at each time point. Like the other models, parenting stress and child internalizing behaviors demonstrated continuity over time. Compared to the externalizing behaviors early adolescence model, no transactional associations were found. However, child-driven associations were found, such that T1 internalizing behaviors predicted T2 parenting stress and T2 internalizing behaviors predicted T3 parenting stress. No significant associations were found from parenting stress to internalizing behaviors.

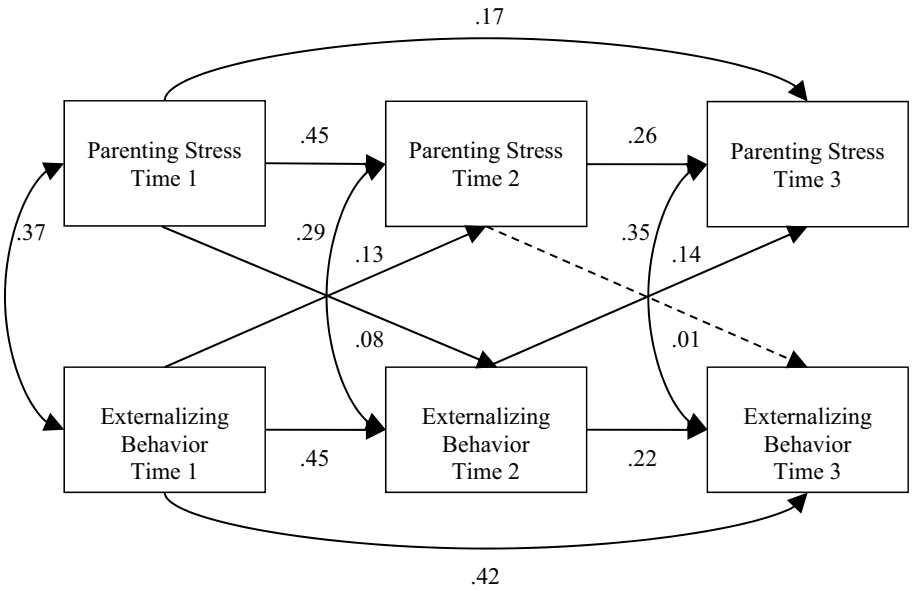

Fig. 3 Path analysis examining parenting stress and child externalizing behaviors for the early adolescence age group ($n = 1157$) ———— significant association ($p < .05$), ---------- non-significant association ($p > .05$). All values presented are standardized. Controlled for cumulative risk, number of people in household, child gender and age, type of mother, and minority status

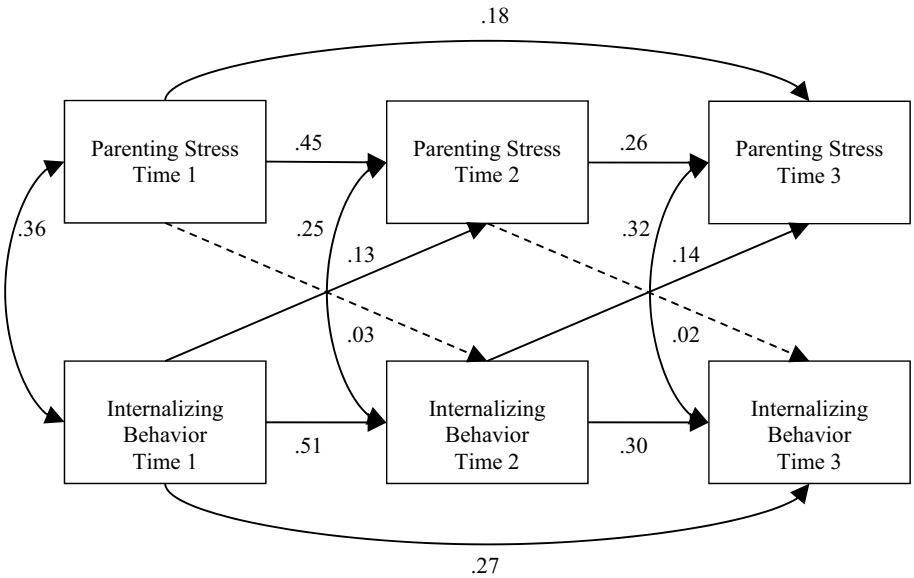

Fig. 4 Path analysis examining parenting stress and child internalizing behaviors for the early adolescence age group ($n = 1157$) ———— significant association ($p < .05$), ---------- non-significant association ($p > .05$). All values presented are standardized. Controlled for cumulative risk, number of people in household, child gender and age, type of mother, and minority status

Discussion

The present study examined how parenting stress is linked with child externalizing and internalizing behaviors over time among a low-income sample with children initially in early childhood or early adolescence. Employing a transactional perspective, the direction of associations between parenting stress and child externalizing and internalizing behaviors were examined. While parenting stress and child outcomes were associated cross-sectionally, longitudinal transactional associations between parenting stress and child externalizing behaviors were supported for only early adolescent group. Further, the longitudinal patterns differed by age group.

Early Childhood

Among families with young children, only one positive parent-driven association was found where parenting stress when children were 3 to 6 years old was linked to child internalizing problems when they were 7 to 11 years old. This pattern matches what was found by Stone et al. [7] where a significant positive association from parenting stress to internalizing problems was found over time during early childhood (ages 4 to 9). Because parents are one of the most

important socializing agents, especially for young children [54], parental distress may influence young children's internalizing problems more than child internalizing problems influence parenting stress. It is noticeable that this significant association was not found when the children in our sample were younger. It may be that children that are particularly young are not as aware of their parents' distress, although parenting stress when children were 1, 2, and 3 years old has been linked to children's internalizing symptoms as early as age 4 among a sample of families with children with severe disabilities and illnesses [30]. Children, even at young ages, may be more in tune with their parents' stress when they have disabilities, as they recognize their problems are contributing to the stress. However, in normally developing children, they may be less aware of their parents' stress and, thus, are less impacted by it.

It was surprising that the hypothesized links from child internalizing problems to parenting stress over time were not supported, especially when these links have been found by some researchers [e.g., 11]. Perhaps the young children in our sample did not have levels of initial internalizing symptoms that were noticeable by their parents because they were limited in their capacity to describe their internalizing states [55]. It could be that these internalizing symptoms would be noticed more by parents of older children, who better vocalize their negative emotions [4].

Interestingly, neither parent-driven nor child-driven associations were found for the early childhood model for externalizing problems, which is inconsistent with previous studies [e.g., 7, 11]. Perhaps this discrepancy can be explained by differences in the sample, where previous studies mainly collected data from Caucasian and middle to high socioeconomic status participants. This suggests that for low-income, primarily single parenthood, and African American and Hispanic American families with 2- to 5-year-old children, early parenting stress is not significantly associated with later child externalizing problems and early child externalizing problems are not linked with later parenting stress, although cross-sectional associations between the variables remain. It may be that the context of living in poverty influences the lack of associations over time. While the cross-sectional associations would be expected as the low-income neighborhoods in which families in this population live are linked with more stress among parents and child behavioral problems [56], children's behavioral problems may not be directly linked to their parents' level of parenting stress. Parenting stress may be more strongly linked to navigating the challenging contexts in which they live. Further, young children may be expected to display certain developmentally appropriate externalizing behaviors (e.g., temper tantrums, pushing limits), which may lead to parents in our sample not to worry about it as much as other contextual stressors (e.g., food insecurity).

Early Adolescence

In contrast to the findings for families with children in early childhood, for families with early adolescents, the externalizing model had significant transactional association between T1 parenting stress and T2 externalizing behavior and T1 externalizing behavior and T2 parenting stress, suggesting parents and adolescents simultaneously influence each other. Additionally, the externalizing model from Time 2 to Time 3 had significant child-driven association and the internalizing model had significant child-driven associations only. That is, child externalizing problems during middle adolescence led to increases in parenting stress during late adolescence, while child internalizing problems during early adolescence led to increases in parenting stress over time. These findings are generally consistent with one study that found child-driven associations from age 10 to 15 for externalizing, but not internalizing, problems [11]. Unlike at younger ages, externalizing behaviors that are displayed by older children, especially in a more public context, have more severe consequences (e.g., detention, expulsion from school, arrest), especially for African American and Hispanic American children. Thus, parents report greater stress related to these behaviors and use more strict parenting strategies [57, 58], which can lead to more parental distress about these behaviors. Similarly, adolescents' internalizing symptoms may raise more concerns for parents because of increased risk of long-term mental health disorders and other possible consequences (e.g., suicide).

Among families with early adolescents, there were no parent-driven associations only, where parenting stress was not solely linked to children's behavior problems over time. Compared to early childhood, during early adolescence youth's relationship networks expand and their behaviors could be influenced more by peers and less by their immediate family (e.g., parents) [32, 54]. While few have examined longitudinally how parenting stress is linked to adolescents' behavior problems, our findings are inconsistent with one study that found parent-driven associations only between parenting stress and both internalizing and externalizing problems at older ages (i.e., from age 15 to 18) [11]. However, this could be due to their sample being primarily non-minority families with children who have developmental disabilities and the specific ages being assessed [11]. Collectively, this study suggests the need to examine further how the transactional associations between parenting stress and child outcomes vary across different age, socioeconomic, and racial/ethnic groups.

Limitations and Future Directions

Although the current study has several strengths (e.g., longitudinal design, diverse sample), there are a few limitations

that should be considered when interpreting the findings. First, parenting stress and child behavioral problems were all collected through parent-reports and questionnaires, which is a potential limitation because distressed parents may inflate their reports of child externalizing and internalizing symptoms as a function of their own stress and not the child's behaviors [4]. To address this limitation, future studies could include multiple informants (e.g., child, parent, teacher) when collecting data or utilize multiple formats of measures (e.g., questionnaires, observations). These methods would be a more conservative assessment of the interrelations between parenting stress and child behavioral problems [7].

As discussed earlier, this study focuses on families from low-income minority populations and, thus, should not be generalized to more affluent or Caucasian populations. Some of the patterns of results that differ from previous studies may be related to the characteristics of this sample compared to those in other studies (e.g., race/ethnicity, single parent status, socioeconomic status). The field would benefit from future studies considering the influence of these characteristics as potential moderators in the links between parenting stress and child outcomes.

The current study does not address the mechanisms by which parents' stress and children's behavior problems may be linked. Future studies should consider adding parenting to the current study's cross-lagged models to explore how parenting stress, parenting, and child behavioral problems are linked over time. Parenting stress may lead to ineffective and dysfunctional parenting (e.g., inconsistent, rejecting, less involved) [e.g., 2, 4, 5], which in turn unfavorably contribute to child development and outcomes [1, 2, 59]. Similarly, parents may alter their parenting practices in response to their children's behavior problems. Thus, adding parenting behaviors to the existing models could provide more information about how parenting stress and child behavioral problems are linked over time for both age groups. While there are still many questions remaining related to links between parenting stress and child outcomes, this study adds to the literature using a longitudinal design with a unique sample of children at two different developmental periods.

Implications

Despite the limitations of this study, the findings have interesting clinical implications for low-income families with 2- to 5- year-old or 9- to 15-year-old children. Overall, findings suggest that certain interventions (e.g., parent-focused) and treatment considerations may be more effective if targeted during specific developmental periods. The finding of parent-driven associations between parenting stress and child internalizing problems for early childhood age group suggests that parental distress plays a role in the development of child internalizing problems in early childhood. This means that instead of just treating the child for internalizing problems, interventions can focus on reducing parenting stress, which could subsequently reduce internalizing problems in early to middle childhood. For example, some parent-focused interventions (e.g., parent training with parent problem solving) have been found to reduce parental stress and improve child behavioral problems [60]. Perhaps, using these interventions with low-income parents of young children with internalizing problems could reduce parenting stress and, thus, child internalizing behaviors. However, based on this study, this approach is not as likely to be helpful with adolescents.

The finding of transactional associations, where early adolescents' externalizing problems predicted parenting stress during middle adolescence and parenting stress during early adolescence predicted externalizing problems during middle adolescent period, suggests addressing both components during treatment may simultaneously reduce parenting stress and externalizing problems. The finding of child-driven associations, where middle adolescents' externalizing and early adolescents' internalizing problems predicted parenting stress over time, suggests that when parents of adolescents are seeking psychological treatment it is important to consider their children's behavioral problems. One way to help ameliorate parents' psychological symptoms may be to reduce their parenting stress by treating their adolescent children's externalizing and internalizing problems. Thus, it is important to keep the findings of this study in mind when determining appropriate interventions for distressed parents and children, especially for low-income minority families.

Summary

In conclusion, the transactional relations between parenting stress and child externalizing problems were only found from early adolescence to middle adolescence, but was not found from middle adolescence to late adolescence among minority low-income families. No other transactional associations were found among minority low-income families with a child in early childhood. Rather, it was found that longitudinal patterns varied across developmental periods, where parent-driven associations were only found in models of internalizing problems during early to middle childhood and child-driven associations were found in externalizing models during middle to late adolescence and for internalizing problems throughout adolescence. Understanding and further exploring these transactional complexities between parenting stress and child externalizing and internalizing problems as assessed across multiple developmental periods is important for future work with low-income minority children and their families.

Acknowledgements We gratefully acknowledge the support to gather the data for Welfare, Children, and Families: A Three-City Study, from the following government agencies and foundations: National Institute of Child Health and Human Development (RO1 HD36093,"Welfare Reform and the Well-Being of Children"), Office of the Assistant Secretary of Planning and Evaluation, Administration on Developmental Disabilities, Administration for Children and Families, Social Security Administration, National Institute of Mental Health, Boston Foundation, Annie E. Casey Foundation, Edna McConnell Clark Foundation, Lloyd A. Fry Foundation, Hogg Foundation for Mental Health, Robert Wood Johnson Foundation, Joyce Foundation, Henry J. Kaiser Family Foundation, W. K. Kellogg Foundation, Kronkosky Charitable Foundation, John D. and Catherine T. MacArthur Foundation, Charles Stewart Mott Foundation, David and Lucile Packard Foundation, Searle Fund for Policy Research, and Woods Fund of Chicago. A special thank you is also extended to the families who participated in Welfare, Children, and Families: A Three-City Study. Portions of this article were presented at Society for Research in Child Development 2017 Biennial Meeting.

Compliance with Ethical Standards

Conflict of interest The authors declare no other conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants in the study.

References

1. Deater-Deckard K (1998) Parenting stress and child adjustment: some old hypotheses and new questions. Clin Psychol 5:314–332
2. Abidin RR (1992) The determinants of parenting behavior. J Clin Child Psychol 21:407–412
3. Crnic KA, Greenberg MT (1990) Minor parenting stresses with young children. Child Dev 61:1628–1637
4. Deater-Deckard K (2004) Parenting stress. Yale University Press, New Haven/London
5. Crnic K, Low C (2002) Everyday stresses and parenting. In: Bornstein MH (ed) Handbook of parenting, volume 5: practical issues in parenting, 2nd edn. Lawrence Erlbaum Associates, Mahwah, pp 243–267
6. Holden GW (2010) Parenting: a dynamic perspective. Sage Publications, California
7. Stone LL, Mares SW, Otten R, Engels RE, Janssens JM (2016) The co-development of parenting stress and childhood internalizing and externalizing problems. J Psychopathol Behav Assess 38:76–86
8. Verkleij M, van de Griendt E, Colland V, van Loey N, Beelen A, Greenen R (2015) Parenting stress related to behavioral problems and disease severity in children with problematic severe asthma. J Clin Psychol Med Settings 22:179–193
9. Sameroff A (2009) The transactional model of development: how children and contexts shape each other. American Psychological Association, Washington DC
10. Sameroff AJ, MacKenzie MJ (2003) Research strategies for capturing transactional models of development: the limits of the possible. Dev Psychopathol 15:613–640
11. Woodman AC, Mawdsley HP, Hauser-Cram P (2015) Parenting stress and child behavior problems within families of children with developmental disabilities: transactional relations across 15 years. Res Dev Disabil 36:264–276
12. Guajardo NR, Snyder G, Petersen R (2009) Relationships among parenting practices, parental stress, child behaviour, and children's social-cognitive development. Infant Child Dev 18:37–60
13. Hart MS, Kelley ML (2006) Fathers' and mothers' work and family issues as related to internalizing and externalizing behavior of children attending day care. J Fam Issues 27:252–270
14. Keil V, Price JM (2006) Externalizing behavior disorders in child welfare settings: definition, prevalence, and implications for assessment and treatment. Child Youth Serv Rev 28:761–779
15. Morgan J, Robinson D, Aldridge J (2002) Parenting stress and externalizing child behaviour. Child Fam Soc Work 7:219–225
16. Creasey GL, Jarvis PA (1994) Relationships between parenting stress and developmental functioning among 2-year-olds. Infant Behav Dev 17:423–429
17. Anthony LG, Anthony BJ, Glanville DN, Naiman DQ, Waanders C, Shaffer S (2005) The relationships between parenting stress, parenting behaviour and preschoolers' social competence and behaviour problems in the classroom. Infant Child Dev 14:133–154
18. Barry TD, Dunlap ST, Cotton SJ, Lochman JE, Wells KC (2005) The influence of maternal stress and distress on disruptive behavior problems in boys. J Am Acad Child Adolesc Psychiatry 44:265–273
19. Wiener J, Biondic D, Grimbos T, Herbert M (2016) Parenting stress of parents of adolescents with attention-deficit hyperactivity disorder. J Abnorm Child Psychol 44:561–574
20. Bagner DM, Sheinkopf SJ, Miller-Loncar C, LaGasse LL, Lester BM, Lou J et al (2009) The effect of parenting stress on child behavior problems in high-risk children with prenatal drug exposure. Child Psychiatry Hum Dev 40:73–84
21. Tharner A, Luijk MM, van Ijzendoorn MH, Bakermans-Kranenburg MJ, Jaddoe VV, Hofman A et al (2012) Infant attachment, parenting stress, and child emotional and behavioral problems at age 3 years. Parent Sci Pract 12:261–281
22. Gerstein ED, Poehlmann-Tynan J (2015) Transactional processes in children born preterm: influences of mother–child interactions and parenting stress. J Fam Psychol 29:777–787
23. Mainemer H, Gilman LC, Ames EW (1998) Parenting stress in families adopting children from Romanian orphanages. J Fam Issues 19:164–180
24. Neece CL, Green SA, Baker BL (2012) Parenting stress and child behavior problems: a transactional relationship across time. Am J Intellect Dev Disabil 117:48–66
25. Mackler JS, Kelleher RT, Shanahan L, Calkins SD, Keane SP, O'Brien M (2015) Parenting stress, parental reactions, and externalizing behavior from ages 4 to 10. J Marriage Fam 77:388–406
26. Zahn-Waxler C, Klimes-Dougan B, Slattery MJ (2000) Internalizing problems of childhood and adolescence: prospects, pitfalls, and progress in understanding the development of anxiety and depression. Dev Psychopathol 12:443–466
27. Mesman J, Koot HM (2001) Early preschool predictors of preadolescent internalizing and externalizing DSM-IV diagnoses. J Am Acad Child Adolesc Psychiatry 40:1029–1036
28. Rodriguez CM (2011) Association between independent reports of maternal parenting stress and children's internalizing symptomatology. J Child Fam Stud 20:631–639
29. Mäntymaa M, Puura K, Luoma I, Latva R, Salmelin RK, Tamminen T (2012) Predicting internalizing and externalizing

problems at five years by child and parental factors in infancy and toddlerhood. Child Psychiatry Hum Dev 43:153–170
30. Goldberg S, Janus M, Washington J, Simmons RJ, MacLusky I, Fowler RS (1997) Prediction of preschool behavioral problems in healthy and pediatric samples. J Dev Behav Pediatr 18:304–313
31. Ashford J, Smit F, van Lier PC, Cuijpers P, Koot HM (2008) Early risk indicators of internalizing problems in late childhood: a 9-year longitudinal study. J Child Psychol Psychiatry 49:774–780
32. Collins WA, Laursen B (2004) Changing relationships, changing youth: interpersonal contexts of adolescent development. J Early Adolesc 24:55–62
33. Steinberg L (2001) We know some things: parent–adolescent relationships in retrospect and prospect. J Res Adolesc 11:1–19
34. Nam Y, Wikoff N, Sherraden M (2015) Racial and ethnic differences in parenting stress: evidence from a statewide sample of new mothers. J Child Fam Stud 24:278–288
35. Cooper CE, McLanahan SS, Meadows SO, Brooks-Gunn J (2009) Family structure transitions and maternal parenting stress. J Marriage Fam 71:558–574
36. Copeland D, Harbaugh BL (2005) Differences in parenting stress between married and single first time mothers at six to eight weeks after birth. Issues Compr Pediatr Nurs 28:139–152
37. Williford AP, Calkins SD, Keane SP (2007) Predicting change in parenting stress across early childhood: child and maternal factors. J Abnorm Child Psychol 35:251–263
38. Winston P, Angel RJ, Burton LM, Chase-Lansdale PL, Cherlin AJ, Moffitt RA et al (1999) Welfare, children, and families: a three-city study overview and design. Retrieved from http://web.jhu.edu/threecitystudy/images/overviewanddesign.pdf
39. John Hopkins University (2006) Welfare, children, and families: a three city study, wave 3 user's guide. Retrieved from http://web.jhu.edu/threecitystudy/images/publications/users_guides/Wave_3_User_Guide.pdf
40. Derogatis LR (2000) Brief symptom inventory 18, administration, scoring, and procedures manual. National Computer Systems, Minneapolis
41. Sameroff AJ, Seifer R, Bartko WT (1997) Environmental perspectives on adaptation during childhood and adolescence. In: Luthar SS, Burack JA, Cicchetti D, Weisz JR (eds) Developmental psychopathology: perspectives on adjustment, risk, and disorder. Cambridge University Press, New York, pp 507–526
42. Lohman BJ, Pittman LD, Coley RL, Chase-Lansdale PL (2004) Welfare history, sanctions, and developmental outcomes among low-income children and youth. Soc Work Rev 78:41–73
43. Quint JC, Bos JM, Polit DF (1997) New chance: final report on a comprehensive program for young mothers in poverty and their children. Manpower Demonstration Research Corporation, New York
44. Angel R, Burton L, Chase-Landsdale LP, Cherlin A, Moffitt R (2009) Welfare, children, and families: a three-city study, data documentation. Retrieved from https://doi.org/10.3886/ICPSR04701.v7
45. Achenbach TM (1991) Manual for the child behavior checklist/4–18 and 1991 profile. University of Vermont, Department of Psychiatry, USA, Burlington
46. Achenbach TM (1992) Manual for the child behavior checklist/2–3 and 1992 profile. University of Vermont, Department of Psychology, USA, Burlington
47. Achenbach TM, Rescorla LA (2001) Manual for the ASEBA school-age forms & profiles. Burlington, University of Vermont, Research Center for Children, Youth, and Families, USA
48. Achenbach TM, Rescorla LA (2001) Manual for the ASEBA adult forms & profiles. Burlington, University of Vermont, Research Center for Children, Youth, and Families, USA
49. Arbuckle JL (2012) Amos version 21.0. IBM SPSS, Chicago
50. Tabachnick BG, Fidell LS (2007) Using multivariate statistics, 5th edn. Pearson, New York
51. Kline RB (2011) Principles and practice of structural equation modeling, 3rd edn. Guilford Press, New York
52. Field A (2013) Discovering statistics using IBM SPSS statistics, 4th edn. SAGE, Thousand Oaks, California
53. Little RJ (1988) A test of missing completely at random for multivariate data with missing values. J Am Stat Assoc 83:1198–1202
54. Maccoby EE (2000) Parenting and its effects on children: on reading and misreading behavior genetics. Annu Rev Psychol 51:1–27
55. Tandon M, Cardeli E, Luby J (2009) Internalizing disorders in early childhood: a review of depressive and anxiety disorders. Child Adolesc Psychiatr Clin 18:593–610
56. Pinderhughes EE, Nix R, Foster EM, Jones D (2001) Parenting in context: impact of neighborhood poverty, residential stability, public services, social networks, and danger on parental behaviors. J Marriage Fam 63:941–953
57. Furstenberg FF, Cook TD, Eccles J, Elder GH, Sameroff A (1999) Managing to make it: urban families in high-risk neighborhoods. University of Chicago Press, Chicago
58. Roche KM, Ensminger ME, Cherlin AJ (2007) Variations in parenting and adolescent outcomes among African American and Latino families living in low-income, urban areas. J Fam Issues 28:882–909
59. Smetana JG, Campione-Barr N, Metzger A (2006) Adolescent development in interpersonal and societal contexts. Annu Rev Psychol 57:255–284
60. Kazdin AE, Whitley MK (2003) Treatment of parental stress to enhance therapeutic change among children referred for aggressive and antisocial behavior. J Consult Clin Psychol 71:504–515