



# Household economic hardship as a moderator of the associations between maternal spanking and child externalizing behavior problems

Shawna J. Lee<sup>a,\*</sup>, Garrett T. Pace<sup>a</sup>, Kaitlin P. Ward<sup>a</sup>, Andrew Grogan-Kaylor<sup>a</sup>, Julie Ma<sup>b</sup>

<sup>a</sup> University of Michigan, Ann Arbor, United States

<sup>b</sup> University of Michigan, Flint, United States

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## ABSTRACT

**Background:** Spanking is associated with detrimental outcomes for young children. Research shows that spanking is more commonly used in low-income households.

**Objective:** To examine whether economic hardship, measured by household income-to-poverty ratio at the time of the child's birth, moderated the longitudinal associations between maternal spanking and child externalizing behavior problems during the first nine years of childhood.

**Participants and setting:** Mother-child pairs (N = 4,149) from a cohort study of urban families in 20 US cities.

**Methods:** Cross-lagged path models examined associations between maternal spanking and externalizing behavior when children were between the ages of 1 and 9. Multigroup analyses examined whether income-to-poverty ratio moderated these associations.

**Results:** Bivariate analyses showed that income-to-poverty ratio was associated with child externalizing behavior problems at each time point; income-to-poverty ratio was associated with maternal spanking at age 3 only. Longitudinal path model results indicated that, for low- and middle-income groups, maternal spanking at each age had significant associations with child externalizing behavior at each subsequent age. For the high-income group, maternal spanking at age 1 and age 3 had significant associations with child externalizing behavior at each subsequent age; however, spanking at age 5 was not associated with child externalizing behavior at age 9. **Conclusions:** Spanking is disadvantageous for children at all income levels, with more persistent effects in low- and middle-income families. For higher-income families, the associations of maternal spanking with child externalizing behavior problems may be attenuated as child age increases. Regardless of income level, parents should be advised against spanking.

## 1. Introduction

Spanking, also known as physical punishment, physical discipline, or corporal punishment, is defined as the use of physical force "with the intention of causing a child to experience pain, but not injury, for the purpose of correcting or controlling the child's behavior" (Straus & Donnelly, 2005, p. 3). A recent study indicated that longitudinal trends in parental endorsement and use of spanking have declined in the last 30 years (Ryan, Kalil, Ziol-Guest, & Padilla, 2016). Even so, the majority of U.S. parents of young

\* Corresponding author at: University of Michigan, School of Social Work, 1080 South University Ave., Ann Arbor, MI, 48109, United States.  
E-mail address: [shawnal@umich.edu](mailto:shawnal@umich.edu) (S.J. Lee).

children still use physical punishment (Gershoff & Grogan-Kaylor, 2016a, 2016b). Nationally representative data shows that the rates of spanking of young children (ages 2–4) have largely remained unchanged over the last 2 decades, declining 11% from 1995 to 2014 (Finkelhor, Turner, Wormuth, Vanderminde, & Hamby, 2019). Specifically, in 1995, approximately 76% of children ages 2–4 were spanked; in 2014, approximately 65% of children ages 2–4 were spanked (Finkelhor et al., 2019).

Declines in the use of spanking are not uniform across socioeconomic groups. There have been significantly greater declines in attitudes endorsing physical punishment among middle-income parents compared to lower-income parents. In 1988, 46% of middle-income parents and 50% of lower-income parents endorsed use of physical punishment. By 2011, 21% of middle-income parents and 30% of lower-income parents endorsed the practice (Ryan et al., 2016). While research suggests that low income, economic hardship, and the use or endorsement of spanking are correlated (e.g., Berger, 2004; Giles-Sims, Straus, & Sugarman, 1995; Wissow, 2001), few studies have examined whether the effects of spanking on child behavioral outcomes may vary as a function of economic hardship. The current study examines whether household economic hardship, measured by household income-to-poverty ratio at the time of the child's birth, moderates the associations between maternal spanking and child externalizing behavior problems in the first nine years of life. In this study, we focus on maternal spanking because prior research has shown that mothers use spanking at higher rates than fathers (Kim, Lee, Taylor, & Guterman, 2014). In addition, longitudinal path model analysis of mothers' and fathers' spanking showed that, whereas mothers' spanking was associated with elevated child externalizing behavior problems over time, fathers' spanking did not show longitudinal associations with elevated levels of child behavior problems over the same time period (Lee, Altschul, & Gershoff, 2015).

### 1.1. Association between maternal spanking and economic hardship

Researchers have long posited that low income, poverty, and economic hardship are associated with harsh parenting practices, including higher levels of spanking and physical punishment. Family stress theory (Boss, 1987) suggests that fluctuations in income (e.g., moving from middle or high income to low income, or experiencing unanticipated economic strain) contribute negatively to parental psychological functioning (e.g., higher levels of parenting stress and depression), thus increasing risk for harsh parenting (Conger, Rueter, & Conger, 2000, 2002). Similar mechanisms may be at play for low-income families who experience chronic levels of economic distress (McLoyd, 1998). Families living in chronic conditions of poverty and economic strain are more likely to experience high levels of parenting stress and depression, which in turn are detrimental to parenting processes (Berger, 2004).

The basic supposition that family economic deprivation is associated with parental physical punishment is largely - but not uniformly - supported by empirical evidence. Studies show that low income and economic hardship are correlated with parents' greater use of physical punishment (e.g., Berger, 2004; Berlin et al., 2009; Giles-Sims et al., 1995; Lee, Brooks-Gunn et al., 2013; Linver, Brooks-Gunn, & Kohen, 2002; Straus & Stewart, 1999; Wissow, 2001). For example, one study using data from the Early Head Start National Research and Evaluation Project found that lower family income predicted more frequent maternal spanking in early childhood (Berlin et al., 2009). Another study that used data from the National Longitudinal Survey of Youth found that higher levels of family income were associated with a decrease in the likelihood of children being spanked four or more times per week (Berger, 2004). However, some studies do not report a relation between family economic deprivation and physical punishment (Socolar, Savage, Keyes-Elstein, & Evans, 2005; Zolotor, Robinson, Runyan, Barr, & Murphy, 2011), suggesting the need for further research.

Ryan et al. (2016) provide compelling evidence for the correlation between income, parental socioeconomic status, and spanking in analysis of trends over four decades using nationally representative data. At all four time points, when compared to middle- and upper-income mothers, lower-income mothers were more likely to endorse the use of spanking and also more likely to report that they used spanking recently (Ryan et al., 2016). Beginning in 1997, mothers in the lowest 10th percentile of income were at least twice as likely to report spanking their child in the last week when compared to mothers in the top 10th percentile of income. One explanation for this correlation is that the stresses associated with parenting in a low-income context contribute to spanking (Masarik & Conger, 2017). For example, higher-income mothers may have childcare and other resources that decrease parental stress, thus decreasing the likelihood of spanking. In sum, although the association between economic deprivation and spanking cannot be viewed as causal, there is evidence from a number of large representative data sets that low income is associated with spanking.

### 1.2. Using income-to-poverty ratio as an indicator of economic deprivation

A wide variety of measures have been used in family research to assess household economic deprivation, with no widely accepted "gold standard" measure. Commonly used measures include annual household income, maternal socioeconomic status, the federal poverty threshold, indices capturing receipt of benefits, or some combination of those measures. In the current study, we used the income-to-poverty ratio as a measure of economic hardship for several reasons. The income-to-poverty ratio indicates how far above or below a family is from the poverty threshold (McLoyd, 1998). As a point of reference, in 2019 the federal poverty threshold for a family of three (e.g., single mother with two children) was \$21,330; for a family of four (e.g., two parents and two children), it was \$25,750 (U.S. Department of Health & Human Services, 2019). An income-to-poverty ratio of 1.0 (or 100%) conveys that a family's income is equal to the poverty threshold for their particular family size and composition. The income-to-poverty ratio is a useful representation of family economic hardship, as this ratio indicates how far above or below the federal poverty line a family is, based on household income and accounting for family size (Dearing, McCartney, & Taylor, 2001; Mayer & Jenks, 1989). In addition, because of the way the income-to-poverty ratio is calculated, sources of household income (not including capital gains, noncash benefits, and tax credits) as well as the number of adults and children in the household are accounted for in analyses. Another advantage of using a measure that references the federal poverty guidelines is that the federal poverty guidelines serve as the

benchmark on which benefits eligibility is determined for many programs in the U.S. Finally, prior studies of spanking (Berlin et al., 2009) and studies that have used the Fragile Families and Child Wellbeing Study (FFCWS) to examine issues related to family income and wellbeing (Gottlieb, Pilkauskas, & Garfinkel, 2014) have elected to use the income-to-poverty ratio, viewing it as a measure of overall economic deprivation.

### 1.3. The current study

A recent meta-analysis established that parental physical punishment is linked to child externalizing behavior problems and higher levels of child aggression (Gershoff & Grogan-Kaylor, 2016b). Building on this, our primary research question was whether the associations between maternal spanking and child externalizing behavior vary by household economic hardship. One hypothesis is that children in low-income households may be *more* likely to exhibit negative consequences related to maternal physical punishment, in that parents and children have fewer resources to protect them from the effects of physical punishment. From this perspective, it is possible to imagine that spanking compounds other risks that children face in low-income contexts that are also associated with heightened levels of externalizing behavior problems (Evans, 2004). However, a second hypothesis is that spanking may be *less* problematic in poorer families, in part because spanking is more normative in those contexts (see similar arguments as presented in prior research, e.g., Benjet & Kazdin, 2003). Finally, one could imagine that spanking is equally detrimental in poor and non-poor families because spanking strains the parent-child relationship in a manner that contributes to greater risk of child externalizing behavior problems, independent of other factors. This view would be consistent with prior research examining moderating effects of the longitudinal associations between maternal spanking and child behavior problems. These studies have shown that race and ethnicity (Gershoff & Grogan-Kaylor, 2016a), maternal warmth (Lee, Altschul, & Gershoff, 2013), and maternal-child attachment relationship (Ward, Lee, Pace, Grogan-Kaylor, & Ma, 2020) do not moderate the association of maternal spanking with child behavior problems.

In the current study, we tested whether economic hardship, measured by the household income-to-poverty ratio, moderated the associations between maternal spanking and child externalizing behavior during the first nine years of life. We focused on the first nine years of life for several reasons. It is well established that parental spanking often begins at early ages, with approximately one-third of parents in the Fragile Families and Child Wellbeing Study (FFCWS) using physical punishment around the time their child is 1 year of age. Parental spanking is used most frequently during the toddler and preschool years (e.g., approximately ages 3–5) (Finkelhor et al., 2019), with FFCWS data showing that 56% of 3-year-olds and 51% of 5-year-olds were spanked in the past month (Maguire-Jack, Gromoske, & Berger, 2012). By including data of associations up to age 9, we were able to examine the longitudinal associations of early experiences of physical punishment and behavior problems into middle childhood. We controlled for key variables that are associated with maternal use of spanking and child externalizing behavior problems such as race and ethnicity (Gershoff & Grogan-Kaylor, 2016a), maternal depression (Berlin et al., 2009; Chung, McCollum, Elo, Lee, & Culhane, 2004), and maternal education level (Ryan et al., 2016). We conducted analyses to assess whether the study results were robust to inclusion of a variable assessing neighborhood poverty context, as well as robust to a variable assessing family poverty category mobility during the waves of the study.

## 2. Method

### 2.1. Data and participants

This study used data from mothers who participated in FFCWS core interviews and supplemental In-Home studies. The FFCWS is a birth-cohort study that sampled children born between 1998–2000 to mothers in 20 U.S. cities with populations over 200,000. Unmarried mothers were purposively oversampled. Respondents were recruited at hospitals at the time of their child's birth. Interviews were conducted either over the phone or in person. Verbal and/or written informed consent was obtained from participants at each interview, and respondents were informed of the interviewers' obligation to report observations of child abuse. The compensation participants received varied across multiple waves of data collection. A detailed description of the sampling strategy, and participant compensation is detailed in Reichman, Teitler, Garfinkel, and McLanahan (2001). Core FFCWS interviews were conducted with parents at baseline, shortly after the focal child's birth, and at 1 year, 3 years, 5 years, and 9 years following the focal child's birth. Families who completed the core interviews when children were age 3 were invited to participate in an add-on study called the *In-Home Longitudinal Study of Pre-School Aged Children*, which collected child behavioral assessments via a primary caregiver survey, who was usually the child's mother (age 3,  $n = 3,288$ ; age 5,  $n = 2,989$ ; age 9,  $n = 3,630$ ). To generate the analytic sample for this study, we began with the full sample ( $N = 4,898$  children), then dropped 109 cases who were part of FFCWS through the Time, Love, and Cash in Couples with Children Study. These cases were not selected at random and were not eligible to participate at year 9. We also dropped 640 observations with no data on externalizing behavior at any wave between age 3 and age 9. Our final analytic sample was 4,149.

### 2.2. Study participants

See Table 1 for all sample descriptive statistics. Approximately half of the mothers indicated their race or ethnicity was non-Hispanic Black (49%), roughly one quarter of the sample reported being Hispanic (27%), nearly one quarter reported being non-Hispanic White (21%), and 3% reported being of another race. Most mothers (77%) were not married to their child's biological father

**Table 1**  
Analysis of differences in study variable values by poverty group.

	Total Sample		Poverty Group		p
	(N = 4,149)	0-99% (n = 1,510)	100-199% (n = 1,100)	200+% (n = 1,539)	
Maternal spanking, age 1, %					.278
0 times in the past month	72.39	70.57	72.45	74.09	
Once or twice or a few times in the past month	21.28	23.04	21.18	19.66	
Few times a week or every day in the past month	6.33	6.39	6.37	6.25	
Maternal spanking, age 3, %					.001
0 times in the past month	46.80	50.11	48.24	42.66	
Once or twice or a few times in the past month	41.49	39.19	39.12	45.34	
Few times a week or every day in the past month	11.71	10.70	12.65	12.00	
Maternal spanking, age 5, %					.130
0 times in the past month	53.01	54.57	52.55	51.82	
1-3 times in the past month	41.69	39.28	42.74	43.28	
Few times or every day in the past month	5.31	6.16	4.70	4.90	
Maternal spanking, age 9, %					.234
0 times in the past year	52.32	50.05	51.77	54.77	
Low frequency spanking in the past year	43.94	45.95	44.20	41.94	
High frequency spanking in the past year	3.74	4.01	4.03	3.29	
Child externalizing behavior, age 3	0.65	0.70	0.68	0.58	< .001
Child externalizing behavior, age 5	0.53	0.58	0.55	0.48	< .001
Child externalizing behavior, age 9	0.24	0.28	0.26	0.21	< .001
Maternal race or ethnicity, %					
White	20.85	7.91	16.39	36.67	< .001
Black	48.67	60.37	48.91	37.06	< .001
Hispanic	27.03	29.65	31.60	21.20	< .001
Other	3.45	2.06	3.10	5.07	< .001
Maternal relationship status with biological father, baseline, %					
Married	23.43	7.68	17.09	43.40	< .001
Cohabiting	36.62	38.24	39.64	32.88	< .001
Not married or cohabitating	39.95	54.08	43.27	23.72	< .001
Maternal age, baseline	25.09	23.88	24.19	26.91	< .001
Maternal education, baseline, %					
Less than high school	34.48	52.92	35.97	15.33	< .001
High school	31.22	33.29	35.88	25.86	< .001
Some college	24.20	13.20	25.50	34.05	< .001
College graduate	10.11	0.60	2.64	24.76	< .001
Maternal depression, age 1, %					< .001
Yes	15.54	17.05	17.83	12.48	
No	84.46	82.95	82.17	87.52	
Child sex, %					.930
Male	51.96	51.79	52.45	51.79	
Female	48.04	48.21	47.55	48.21	
Child temperament, age 1	1.84	1.95	1.89	1.69	< .001

Results are presented as means, unless otherwise specified. Child externalizing behavior ranged from 0 to 2. Maternal age ranged from 15 to 43 years. Child temperament ranged from 0 to 4. Chi-square tests were used for categorical variables. ANOVAs were used for continuous variables, and Bonferroni corrections were used to adjust for multiple testing.

at the time of the birth. Relatively few mothers had a college degree or higher (10%); one third had less than a high school degree (34%), followed by a high school degree or equivalent (31%) and some college or technical school (24%). At the three-year core interview, focal children were on average 35.7 months old ( $SD = 2.5$  months). At the five-year core interview, focal children were on average 61.8 months old ( $SD = 2.8$  months). At the nine-year core interview, focal children were on average 112.6 months old ( $SD = 4.5$  months).

### 3. Measures

#### 3.1. Income-to-poverty ratio

FFCWS staff constructed the income-to-poverty ratio, which is defined as the ratio of total household income reported by the mother to the U.S. Census Bureau's poverty thresholds for the size of the household (U.S. Department of Health & Human Services, 2019). We categorized families into 3 groups: "low-income" with a 0–99% poverty threshold (median = \$7500; range = \$0–\$35,649), "middle-income" with a 100–199% poverty threshold (median = \$22,500; range = \$10,759–\$67,590), and "high-income" including all families with a 200% or higher poverty threshold (median = \$42,500; range = \$22,009–\$133,750). A lower income-to-poverty ratio is indicative of having lower income for a household's needs, and is synonymous with poverty status. Families in the 0–99% poverty group are considered to be in poverty by the U.S. federal government. Because the experience of

hardship in early childhood sets up the long-term trajectory for child wellbeing (Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Duncan, Ziol-Guest, & Kalil, 2010), we focus on the income-to-poverty ratio at the time of the child's birth. We use the income-to-poverty ratio at subsequent waves as part of robustness checks.

### 3.2. Maternal spanking

When the focal child was age 1, age 3, and age 5, mothers responded to two questions: "Sometimes children behave pretty well and sometimes they don't. In the past month, have you spanked (child) because (he/she) was misbehaving or acting up?" (1 = no, 2 = yes). If the mother reported spanking the child in the past month, the parent was then asked, "Did you do this. . . 1 = every day or nearly every day, 2 = a few times a week, 3 = a few times this past month, or 4 = only once or twice?" Consistent with prior FFCWS studies, mother's responses to these two questions were combined to create an ordinal variable of spanking (0 = never in the past month, 1 = only once or twice or a few times this past month, 2 = a few times a week or every day or nearly every day) (Altschul, Lee, & Gershoff, 2016; Lee et al., 2015; Lee, Altschul et al., 2013; Ma, 2016; Ma, Grogan-Kaylor, & Klein, 2018; Taylor, Manganello, Lee, & Rice, 2010).

At year 9, the spanking data were found in the Conflict Tactics Scale, which had different response categories than previous waves with spanking data. Parents were asked how many times in the past year they had spanked the child on the bottom with a bare hand. The response categories were *once*, *twice*, *3–5 times*, *6–10 times*, *11–20 times*, *more than 20 times*, *yes but not in past year*, and *this has never happened*. We created an ordinal variable (0 = no spanking in the past year, 1 = low frequency spanking defined as 1–10 times in the past year, and 2 = high frequency spanking defined as 11 or more times in the past year).

### 3.3. Child externalizing behavior problems

Externalizing behavior problems were measured during the In-Home survey with the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000). The CBCL/2–3 was administered to primary caregivers when the child was age 3 (15 items;  $\alpha = .86$ ). Sample items include: "(He/she) is defiant" and "(He/she) gets in many fights." The CBCL/4–18 was administered to primary caregivers when the child was age 5 (20 items;  $\alpha = .84$ ). Sample items include: "Child is cruel, bullies, or shows meanness to others", "Child destroys his/her own things", and "Child physically attacks people." The CBCL/6–18 was administered to primary caregivers when the child was age 9 (18 items;  $\alpha = .89$ ). Sample items include: "Child is cruel, bullies, or shows meanness to others", "Child has temper tantrums or a hot temper", and "Child physically attacks people." Response categories were consistent across waves (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true) and items were averaged with higher values indicating higher child externalizing behavior problems.

Studies have shown that behavior problems in childhood have significant stability over time (e.g., Gray, Indurkha, & McCormick, 2004), and the CBCL items were slightly modified to reflect developmental changes in childhood. The CBCL items and procedures are outlined in the FFCWS user's guide for year 3 data (Bendheim-Thoman Center for Research on Child Wellbeing, 2018a, pg. 65), year 5 data (Bendheim-Thoman Center for Research on Child Wellbeing, 2019, pg. 61), and year 9 data (Bendheim-Thoman Center for Research on Child Wellbeing, 2018b, pg. 47).

### 3.4. Child characteristics

Child temperament at age 1 was used as an early proxy for whether mothers found the child's behavior difficult and was assessed with the Emotionality, Activity, and Sociability (EAS) Temperament Survey for Children (Mathiesen & Tambs, 1999). Mothers indicated (1 = not at all like my child to 5 = very much like my child) the extent to which their child "often fusses and cries," "gets upset easily," and "reacts strongly when upset" ( $\alpha = .60$ ). Mothers also reported child sex at baseline (indicated by 0 = girl, 1 = boy).

### 3.5. Maternal and family characteristics

The following demographic control variables were assessed at the time of the child's birth: maternal age, maternal education level (*less than high school*, *high school degree or GED*, *some college/technical school*, *college degree or higher*), maternal race and ethnicity (*non-Hispanic white*, *non-Hispanic black*, *Hispanic*, *other race/ethnicity*), and maternal relationship status with child's father at baseline (*married*, *cohabiting*, *not married or cohabiting*). We controlled for a binary indicator for maternal depression (liberal caseness) when the child was age one (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998).

## 4. Analysis plan

Stata 15.1 was used for descriptive statistics. Path modeling was conducted in Mplus 7.4 (Muthén & Muthén, 1998–2017; Muthén & Muthén, 1998–2017) using maximum likelihood estimation with the robust standard errors estimator (MLR). A path model was preferred over a structural equation model with latent variable modeling because each CBCL outcome measure (at 3 time points) has between 15–20 items. Although the study sample size was relatively large, we would not have sufficient sample size or corresponding degrees of freedom to be able to model the CBCL as a latent variable at each time point. Further, many other spanking studies to date utilize the mean CBCL score in an autoregressive cross-lagged path analysis to examine the effects of spanking on externalizing behavior (e.g., Gromoske & Maguire-Jack, 2012; Maguire-Jack et al., 2012). For these

reasons, we utilized a path model approach.

We compared model fit between constrained and unconstrained models. In order to compare models across groups, we used the Satorra-Bentler Scaled  $\chi^2$  test (Satorra & Bentler, 2010). The comparative fit index (CFI) and the root mean square error of approximation (RMSEA) were used to evaluate fit between the hypothesized models and observed data, with values of .95 for CFI and .06 for RMSEA suggesting good fit (Hu & Bentler, 1999). The cluster option within Mplus was used to account for the city-based sampling design of the FFCWS.

Forty-six percent of the analytic sample had no missing data. Missing data occurred when participants were not in that particular wave of data collection, or the participant refused to answer the question, or the participant indicated that they did not know the answer to the question. Mothers' spanking variables were non-missing for 63.8% of cases, missing at one wave for 27.0% of cases, and missing at 2 or more waves for 9.3% of cases. Externalizing behavior problems was non-missing for 48.9% of cases, missing at one wave for 28.4% of cases, and missing at two or more waves for 22.7% of cases. There were more missing data for child behavior problems because they were drawn from the In-Home studies, which was not administered to all families at every wave. Across our control variables, only 6.73% of cases were missing on one or more control variables, primarily maternal depression.

In order to maximize sample size and to avoid biasing the sample by removing all cases with any missing data, we used full information maximum likelihood estimation (FIML) in Mplus. Rather than dropping all cases that have missing data on any variable that is included in the model (as occurs in Listwise deletion), FIML utilizes all available information about each case to be incorporated in the estimation of the model. Simulation studies that compare FIML to numerous other methods of handling missing data in the context of longitudinal and multilevel modeling – including listwise deletion, pairwise deletion, similar response pattern imputation, stochastic regression imputation, multiple imputation, and expectation-maximization imputation algorithm – suggest that FIML is superior to these analytic approaches to handling missing data (Enders & Bandalos, 2001; Larsen, 2011; Lee, Harring, & Stapleton, 2019; Newman, 2003). Furthermore, FIML is a common strategy to account for missing data in FFCWS (e.g., Carlson, McLanahan, & Brooks-Gunn, 2008; Gard, McLoyd, Mitchell, & Hyde, 2020, *In Press*; McLeod, Johnson, Cryer-Coupet, & Mincy, 2019; Meadows, McLanahan, & Knab, 2009; Waller et al., 2019).

We conducted two sets of robustness checks. First, we added a control variable of neighborhood poverty, e.g., the census tract measure for percent of families below the poverty threshold, to examine whether our results focusing on proximal level indicators of poverty (family income-to-poverty ratio) were robust to the inclusion of an indicator assessing neighborhood-level poverty. Second, we assessed whether results were robust to mobility in family poverty status. In other words, since our moderator of family income-to-poverty ratio was assessed at the time of the child's birth, we created a variable that captured whether the family income-to-poverty ratio changed at another wave in the study (e.g., when the child was age 1, 3, 5 or 9). We conducted an additional set of analyses that included this control variable for whether family's poverty category differed from baseline (0 = *no mobility*; 1 = *mobility*).

## 5. Results

### 5.1. Consistency in income-to-poverty ratio over time

We examined the consistency of families' income-to-poverty ratio category over time and found that 75% of families' ( $n = 3,127$ ) modal poverty category over time was the same as their poverty category at baseline. Also, 30% ( $n = 1,227$ ) of our sample had the same income-to-poverty ratio category at each wave. For the remainder of the sample with a later poverty category that differed from baseline, 22% ( $n = 897$ ) had one wave that differed, 20% ( $n = 821$ ) had two, 19% ( $n = 771$ ) had three, and 10% ( $n = 423$ ) had all four. These results show the poverty categories were relatively consistent across waves of the study. Thus, we use the baseline income-to-poverty ratio category, measured at the time of the child's birth, as the study moderator variable, to ensure that the moderator was employed in a prospective fashion, that is, as occurring before the timing of the key independent variable.

### 5.2. Child externalizing behavior and maternal spanking by income-to-poverty ratio

The use of spanking varied by child age. About 28% of mothers indicated they spanked their 1-year-old child at least once in the past month. The use of spanking increased to 53% at age 3, then decreased slightly to 47% at age 5. At age 9, slightly more than 48% of mothers indicated they had spanked the child at least once within the past year (Table 1). Rates of spanking across income groups did not differ at age 1, 5, or 9. However, at age 3, there were group differences ( $\chi^2(4) = 19.44, p = < 0.001$ ). The proportion of mothers in the low-frequency spanking (i.e., only once or twice or a few times this past month) category appears to be driving this difference, with low-frequency spanking being more common among high-income mothers (45%) compared to low- (39%) and middle-income mothers (29%). Overall levels of child externalizing behavior were 0.65 at year 3, 0.53 at year 5, and 0.24 at year 9 (on a scale ranging from 0 to 2). As seen in Table 1, child externalizing behavior at all ages was highest in the more impoverished groups.

### 5.3. Structural invariance results

We began by comparing the model fit of 3 sets of constrained and unconstrained models: low-income group 0–99% compared to middle-income group 100–199%; low-income group 0–99% compared to high-income group 200+%; and middle-income group 100–199% compared to high-income group 200+%. Constrained models set the structural paths in each group to be equal, while

the unconstrained models allowed structural paths in each group to be estimated freely. If the unconstrained model fits better than the constrained model, then the associations between spanking and externalizing behavior differ across groups. If the unconstrained model does not fit better than the constrained model, then the associations between spanking and externalizing behavior are statistically indistinguishable.

Across the 3 tests, the unconstrained model only fit the data better when comparing the low- and high-income groups (i.e., 0–99% and 200+%) (Satorra-Bentler  $\chi^2 \Delta(20) = 35.01, p < .05$ ). The unconstrained model did not fit the data better when comparing the low-income and middle-income groups (i.e., 0–99% and 100–199%) (Satorra-Bentler  $\chi^2 \Delta(20) = 19.16, p > .05$ ) or the middle-income and high-income groups (i.e., 100–199% and 200+%) (Satorra-Bentler  $\chi^2 \Delta(20) = 17.96, p > .05$ ). This means that the associations between spanking and child externalizing behavior were statistically indistinguishable in the low- and middle-income groups; however, the associations between spanking and child externalizing behavior were different when comparing low-income and high-income groups. Therefore, we present one figure where the low- and middle-income groups' paths were constrained to be equal, and the high-income group's paths were unconstrained.

#### 5.4. Path model results

Fig. 1 shows the results from the multiple-group autoregressive cross-lagged model. Model fit was acceptable (RMSEA = 0.012; CFI = 0.99). Across the 3 groups, most paths between maternal spanking and externalizing behavior were positive and statistically significant. In the low-income and middle-income groups, there were consistently positive, statistically significant associations linking maternal spanking with child externalizing behavior problems across all ages.

For the high-income group (Fig. 1c), the associations between maternal spanking and child externalizing behavior problems at earlier ages (e.g., from age 1–3, and age 3–5) were positive and showed that, on average, higher levels of maternal spanking was associated with higher levels of child externalizing behavior problems. However, there was a point estimate of 0 between age 5 maternal spanking and age 9 child externalizing behavior problems. In other words, the pathway from maternal spanking at age 5 to child externalizing behavior problems at age 9 was non-significant. This suggests that the long-term associations linking maternal spanking with child externalizing behavior problems may be most reflective of the experience of children who were born into low- and middle-income families. For children in the high-income group only, the effects of maternal spanking on child externalizing behavior problems appear to be attenuated as children age.

It is important to interpret these findings in light of the structural invariance results, which showed that the low-income group was only statistically distinguishable from the high-income group. In other words, model paths between the low-income and middle-income groups are not statistically different. Overall, the relation between maternal spanking and children's externalizing behaviors appears to be modestly different at the extremes of the income-to-poverty ratio (i.e., 0–99% vs 200+%), with the high-income group showing no relation between age 5 maternal spanking and age 9 child externalizing behavior problems.

##### 5.4.1. Robustness checks

The robustness check of the model that added a control variable for neighborhood poverty indicated almost no differences in the model overall. Specifically, the moderation coefficients and conclusions were the same for the constrained and unconstrained models. There was one pathway coefficient, from child externalizing behavior at age 5 to child externalizing behavior at age 9 that changed very slightly. Similarly, the robustness check for mobility of family poverty status yielded the same moderation conclusions and exhibited no differences in model coefficients, except one pathway coefficient, from child externalizing behavior at age 5 to child externalizing behavior at age 9 that changed very slightly. These results suggest our model is robust to the addition of neighborhood poverty and family poverty status mobility.

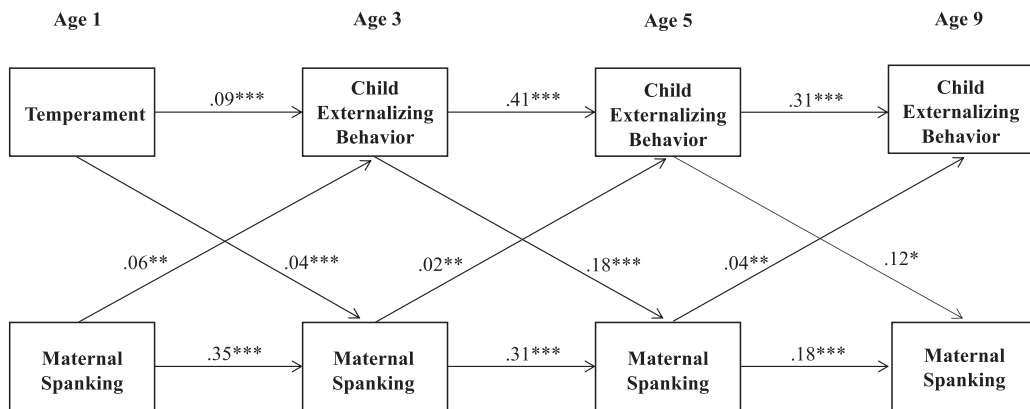
## 6. Discussion

In the current study, we examined whether the associations of maternal spanking with child externalizing behavior problems varied by economic hardship. Research shows that maternal spanking is associated with deleterious outcomes for children, including increased risk for childhood behavioral problems (Gershoff & Grogan-Kaylor, 2016b; Gershoff, Sattler, & Ansari, 2018). Furthermore, theory and research suggest that economic hardship is associated with harsh parenting practices (Berger, 2004; Berlin et al., 2009; Giles-Sims et al., 1995; Linver et al., 2002; Ryan et al., 2016; Straus & Stewart, 1999; Wissow, 2001). This study examined whether the longitudinal associations linking mothers' use of spanking with child externalizing behavior problems were moderated by economic context.

The study results were consistent with prior research showing that maternal spanking is associated with elevated levels of subsequent child externalizing behavior problems (e.g., Maguire-Jack et al., 2012). Overall, the study results indicated that for children in the low- and middle-income groups (0–99% and 100–199% of the poverty threshold), maternal spanking was associated with child externalizing behavior through age 9. However, these longitudinal pathways were attenuated for children in the high-income group (200+% of the poverty threshold). Maternal spanking was associated with child externalizing behavior problems through age 5; maternal spanking at age 5 was not associated with externalizing behavior problems at age 9 for the high income group only. This suggests that the effects of maternal spanking in low- and middle-income families may be longer-lasting (i.e., through age 9) than the effects in high-income families. Low- and middle-income parents and children may have fewer resources to act as potential moderators to maternal harsh parenting practices over time.

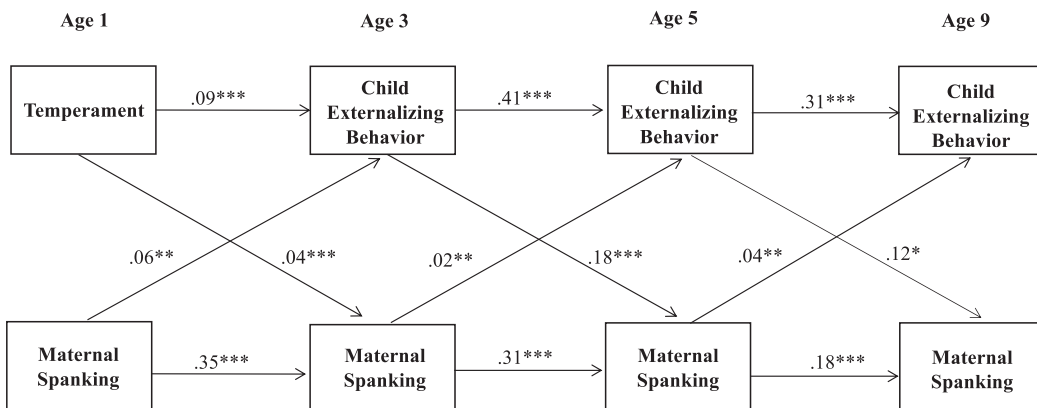
a

0-99% Poverty



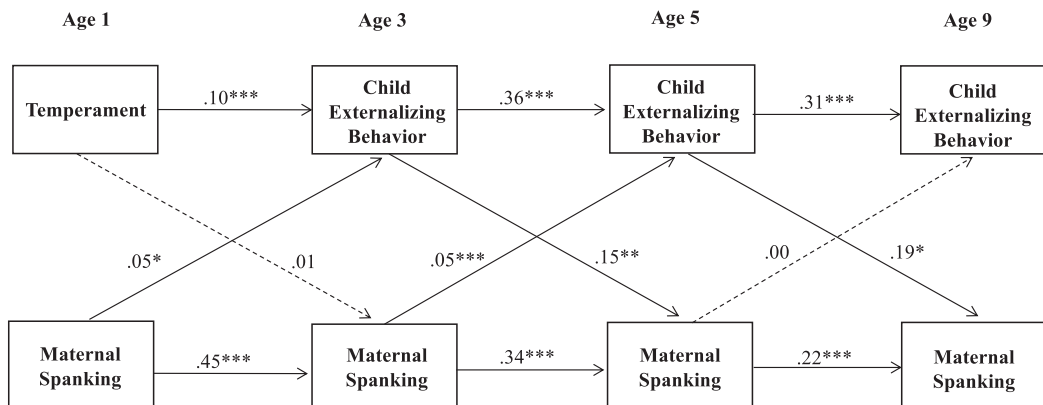
b

100-199% Poverty



c

200+% Poverty



(caption on next page)



**Fig. 1.** Multiple-group autoregressive cross-lagged models depicting the relation between maternal spanking and child externalizing behavior across three income-to-poverty groups. Fig. 1a depicts results from the 0–99% poverty group, Fig. 1b depicts results from the 100–199% poverty group, and Fig. 1c depicts results from the 200+% poverty group. Figs. 1a and b were constrained to be equal, while Fig. 1c is unconstrained. Unstandardized coefficients are shown. All models controlled for child sex, maternal age, maternal education, maternal race/ethnicity, maternal relationship status with child's father, and maternal depression. Dashed paths have a p-value > .05.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

### 6.1. Conditional corporal punishment argument

The conditional corporal punishment position states that, "... the effects of spanking are not necessarily negative or positive, but may be either or both depending on many other conditions" (Benjet & Kazdin, 2003). Most frequently, this position has been applied to a number of factors related to the context or conditions in which the child is raised. Specifically, neighborhood context, mother-child warmth, mother-child attachment, and race and ethnicity have all been cited as factors that may moderate the effects of spanking on child wellbeing.

For example, as applied to race and ethnicity, researchers argued that because the use of physical punishment is more normative among certain racial or ethnic groups in the U.S., such as African Americans, the negative effects of spanking would be weaker for African American children because the practice is more normative and thus less harmful (Deater-Deckard & Dodge, 1997). However, even though spanking is on average more commonly used by African American parents compared to White parents in the U.S., the associations of spanking to negative child outcomes were the same or similar for White and African American children (Gershoff & Grogan-Kaylor, 2016a) and White, African American, and American Indian children (Ward, Lee, Limb, & Grogan-Kaylor, 2019).

In a review of the trends in endorsement and use of spanking since 1988, Ryan et al. (2016) found that spanking is more commonly endorsed as an effective parenting strategy and more commonly used by lower-income parents. Thus, it could be argued that spanking is more normative in low-income contexts. Even so, the current study found that the association of spanking to elevated risk for child behavioral problems between ages 1–9 is still present in economically disadvantaged contexts. Also, compared to their counterparts in high-income families, maternal spanking may exert a longer-lasting influence on externalizing behavior among children living in low- and middle-income families. Therefore, instead of low-income children being impervious to the effects of spanking, this study suggests that low-income children may be more vulnerable to long lasting effects of spanking. These findings could be interpreted to contradict the conditional corporal punishment argument.

Poverty and economic hardship are associated with other problematic factors, such as increased levels of parental depression (Reising et al., 2013), parenting stress (Cooper, McLanahan, Meadows, & Brooks-Gunn, 2009), family violence (Rennison & Planty, 2003), neighborhood crime, and alcohol and illicit drug use (Hipp, 2007). Furthermore, financial strain compromises positive parental engagement (Carlson & Berger, 2013). In a review of the research on poverty, the American Academy of Pediatrics notes that "poverty is an independent determinant of health through its adverse effects on family relationships" and that strong family relationships, including secure attachment and engaged, responsive caregivers, are an "essential protective factor" to help children overcome adversity associated with poverty (Pascoe, Wood, Duffee, Kuo, the AAP Committee on Psychosocial Aspects of Child and Family Health, & Council on Community Pediatrics, 2016). Thus, the finding of this study that low- and middle- income children appear to be the most vulnerable to the long-term effects of spanking suggests that spanking is a part of a constellation of risk factors that lead to suboptimal outcomes for children. Children from high-income families, on the other hand, may have more promotive factors present in their families and communities, which may explain why the effects of spanking did not persist through age 9 in this group. However, it's important to recognize that spanking was still harmful prior to age 9 in this high-income group.

### 6.2. Implications for practice and additional considerations

One implication of this study is that parents across the income distribution are likely to benefit from parent education related to non-physical discipline of young children. Results suggested that spanking is associated with increased risk of externalizing behavior for children across income groups. Thus, an overarching practice implication is that focusing on parenting behaviors within the parent-child relationship are a critical target for prevention of physical punishment (Gershoff, Lee, & Durrant, 2017).

Indeed, the American Academy of Pediatrics (AAP) recommends that parents avoid use of physical punishment and replace those behaviors with nonphysical discipline (Sege & Siegel, 2018). One practice implication of the current research is that parenting resources on safe alternatives to spanking should be made available routinely by reliable sources such as pediatricians and social workers that provide services to families of all incomes. For example, there are technology-delivered parent education programs that can be delivered to parents in pediatric waiting rooms (Scholar, 2019) and other widely available intensive services that focus on the needs of low-income and at-risk parents of young children (Dubowitz, 2019).

### 6.3. Study limitations

It is important to note the study limitations. First, our analyses are not causal in nature. The interpretations presented herein are inherently associational. Our analyses do not model within-person change (e.g., Berry & Wiloughby, 2017), and can only be interpreted to apply to between-group differences. We note that the FFCWS oversampled nonmarital births and families were recruited from urban areas; thus, study findings are not generalizable to all families with young children or other populations. Although we

controlled for a comprehensive set of covariates that included numerous confounds in the relationship between spanking and child outcomes (Gershoff & Grogan-Kaylor, 2016b), including neighborhood poverty, poverty category mobility, and parental race and ethnicity, it is still possible that unmeasured covariates could explain the associations. For example, one potential unmeasured covariate may be child developmental problems. Our study did not exclude children with developmental limitations that may be associated with higher rates of maternal spanking, child externalizing behavior problems, and poverty or economic hardship. Additionally, our key variables of interest were measured via self-report, which may be subject to social desirability bias or inaccurate reporting. Similarly, the FFCWS measured spanking by asking parents if they had spanked their child due to a child misbehaving or acting up. Thus, it is possible that this definition of spanking led parents to underestimate or inaccurately report the amount of times they had spanked their child, for example, if the parent had used spanking for reasons other than the child misbehaving or acting up. Finally, it is important to note the limitations of the federal poverty guidelines which do not vary geographically (U.S. Department of Health and Human Services). The federal poverty guidelines are also very low, and arguably do not fully capture most households' needs. Finally, we utilize a US-based sample for our analyses. Because there is variation in the degree to which spanking is normative across geographic region and cultural context (Grogan-Kaylor et al., 2020), future research should examine income moderation of the effects of spanking in other geographical and income contexts.

## 7. Conclusion

Study results are consistent with prior research in showing that spanking is deleterious for children across income groups. In addition, the results of this study may be interpreted to show that children in the lowest-income families may be especially vulnerable to the long-term effects of spanking. For higher income families, the associations of maternal spanking with child externalizing behavior problems appear to be attenuated as children age, possibly due to moderating influences that are not as readily available to children in low- and middle- income households. Because the study findings suggest that spanking is harmful for young children across income-to-needs ratio levels, universal parent education that instructs parents not to spank and that provides parents with nonviolent discipline strategies is likely to be beneficial to all parents and children.

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<http://www.fragilefamilies.princeton.edu> for further information. The authors gratefully acknowledge use of the services and facilities of the Population Studies Center at the University of Michigan, funded by the Eunice Kennedy Shriver National Institute of Child Health & Human Development of the National Institutes of Health under Award Number P2CHD041028. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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