California's Most Vulnerable Parents
Adolescent Mothers and Intergenerational Child Protective Service Involvement

Vol 1-3. Adolescent Mothers and Intergenerational Child Protective Service Involvement

This analysis generated the first population-based estimates of the transmission of abuse and neglect across generations using linked birth and child protection records. A maternal history of alleged or substantiated maltreatment emerged as the strongest predictor of offspring maltreatment by age 5, after adjusting for other risks. These data highlight the potential for targeting prevention and early intervention services to adolescent mothers with histories of abuse or neglect.

INTRODUCTION

The abuse and neglect of children is a pervasive and consequential public health issue associated with both short- and longer-term adversities. Maltreatment during childhood and adolescence has been linked to future mental health disorders,[1,2] alcohol and drug abuse,[3-5] poor physical health,[6-9] delinquency and adult criminality,[10,11] low educational and economic attainment,[10,12,13] and early pregnancy.[14] Research also suggests that a paren-

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tal history of maltreatment has consequences for children, with heightened rates of abuse and neglect often observed among the offspring of maltreated parents.[15-21] Although it seems reasonable to conclude that parental experiences of abuse and neglect during childhood and adolescence directly and indirectly contribute to a heightened risk of maltreatment in the next generation, the evidentiary basis for this claim is quite weak.

As concluded in a recent systematic examination of the intergenerational maltreatment literature[22] and consistent with findings from an earlier Lancet review[23]: "there is insufficient scientific evidence to draw a definitive conclusion about the cycle of maltreatment hypothesis."[22(p45)] Although several rigorous, prospective studies have been conducted,[21,24] most research has suffered from a number of methodological limitations, including retrospective designs, short follow-up periods, and unrepresentative community samples.[22,23] No study to date has featured a population-level, epidemiological examination of the intergenerational transmission of maltreatment.
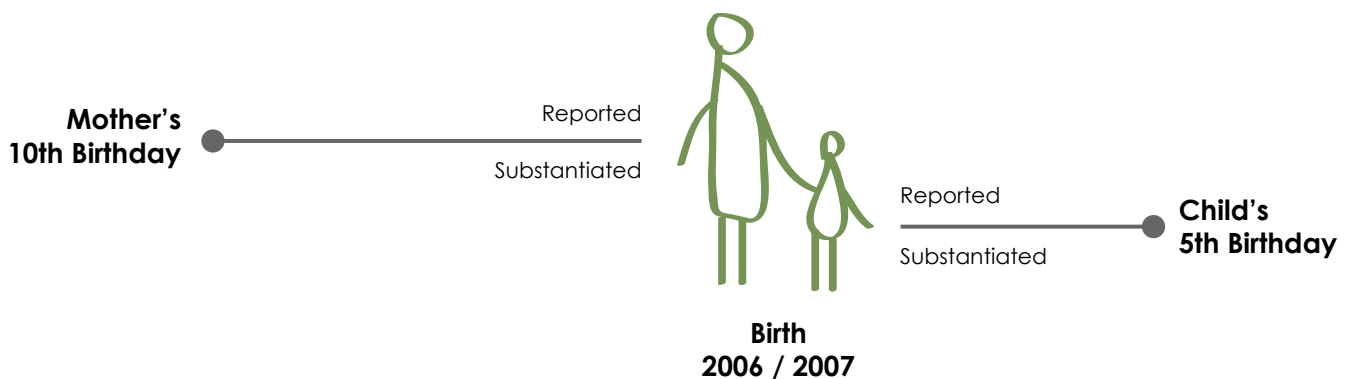
METHODS
DATA SOURCES

This study utilized a population-based longitudinal dataset constructed by linking vital birth records from Los Angeles County to statewide CPS records for both adolescent mothers and their children. Vital birth records from 2006 and 2007 were used to identify all primiparous (first-time) mothers who were 15–19 years of age. Personally identifiable maternal data from the birth record were used to match these adolescent mothers to historical CPS records from the state's administrative data system. In a separate data linkage, personally identifiable data for all infants born to these adolescent mothers were extracted and used to prospectively match infants to CPS records through each child's fifth birthday. Information concerning a maternal history of both reported and substantiated maltreatment victimization was then integrated with birth record and infant maltreatment data (see Figure 1).

OBJECTIVE

Adolescent mothers comprise a fairly homogenous, high-risk subset of new parents, thereby allowing a more direct exploration of the relationship between maternal and offspring maltreatment[25] while also providing an estimate of the transmission rate for a readily identifiable population to which prevention services can be targeted. In addition, infants and young children have the highest rates of maltreatment and are acutely vulnerable to its effects.[26-29] As such, examining the relationship between maternal exposure to abuse or neglect and children's risk during the critical period of infancy to 5 years of age may be particularly useful in the development of impactful prevention programs.

FIGURE 1

CPS Records Available for Teen Mother/Child Pairs from Births Occurring in Los Angeles County, 2006 or 2007

Notes: Records were organized longitudinally. For each child born to a teen mother in 2006 or 2007, we examined CPS records for the mother/child pair. Records of a maternal history of CPS involvement were examined back to each mother's 10th birthday. Records of children's involvement with CPS were available through each child's 5th birthday.

All record linkages were completed using probabilistic matching software.[30,31] A manual review of record pairs was conducted to establish lower- and upper-bound score thresholds for determining a pair of records to be a true match (i.e., all pairs falling above the upper-bound threshold) or false match (i.e., all pairs falling below the lower-bound threshold).[32] For record pairs falling between the lower-bound and upper-bound scores, a clerical review and manual assignment of match status was completed. This study received approval from both university and state committees for the protection of human subjects.

The records of 532 adolescents who were placed in out-of-home foster care on or after the estimated date of conception (2.1% of all adolescent first births in 2006 and 2007) were excluded to avoid the potential surveillance bias that may exist for mothers in foster care. The date of conception was estimated from medical information in birth records. The final dataset consisted of the full population of children born to primiparous adolescents 15–19 years in Los Angeles in 2006 and 2007 who were not in foster care after becoming pregnant (N = 24,767).

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DEPENDENT VARIABLES

Two dependent variables were separately coded and modeled. The first coded outcome was whether the child was reported for maltreatment between birth and age 5 (reported for maltreatment, not reported). Examining all reports is consistent with other recent examinations of intergenerational maltreatment[3,19] and informed by literature documenting high rates of re-reporting of initially unsubstantiated allegations[33] and comparably poor outcomes among children reported to CPS, regardless of whether the report was investigated or substantiated.[28,34] A narrower definition of maltreatment was also adopted

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by examining whether a child was substantiated as a victim of maltreatment before age 5 (substantiated for maltreatment, not substantiated). The reference group for the dichotomous measure of substantiation was not restricted to reported children; substantiated children were compared to all children who were not substantiated. In California, substantiation refers to an allegation of maltreatment determined by a CPS investigator to constitute child abuse or neglect based upon evidence that makes it more likely than not that child abuse or neglect occurred (Penal Code sections 11165.12, 11165.6).

INDEPENDENT VARIABLE

Adolescent mothers were categorized into one of three mutually exclusive groups: (1) no report; (2) reported as a possible victim of maltreatment but not substantiated; and (3) reported and substantiated for maltreatment. A maternal history of maltreatment was coded based on CPS reports received after the mother's 10th birthday and before the estimated date of conception. The analysis was restricted in this manner because California (and Los Angeles) transitioned to a new CPS data collection system in 1998 and complete maltreatment records were not available prior to this date. Maternal reports received after conception were excluded in an effort to establish a clear temporal association between maternal and child maltreatment.

COVARIATES

In an attempt to isolate the relationship between maternal maltreatment (both reported and substantiated) and a child's risk of abuse or neglect, adjustments were made for several potentially confounding covariates available in birth records. Maternal sociodemographic variables included maternal age at child's birth (15–16 years, 17–18 years, 19 years), maternal race/ethnicity (White, Black, Latina, Asian/Pacific Islander, Native American), and birth payment method (private, public). Adjustments were also made for pregnancy and birth-related information, including the trimester prenatal care was initiated (first, second, third, no care/missing), history of pregnancy terminations (none, prior terminations), and infant birth weight (< 2500g, ≥ 2500g).

The characteristics of all children born were described and then stratified into children reported to CPS as possible victims of maltreatment by age 5 (versus all children who were not reported) and those substantiated for maltreatment by age 5 (versus all children who were not substantiated). Variations in the rates of children reported and substantiated (per 100 children born) were assessed using X^2 tests. Multivariable Cox proportional hazard regression models were used to model the relationship between adolescent maternal maltreatment exposure and the rates at which their children were reported (Model 1) and substantiated (Model 2) as victims of maltreatment, after adjusting for other risk factors. In both models, time was measured as days from birth through the outcome of interest (i.e., first report or first substantiated report of maltreatment); observations were censored on the child's fifth birthday. Adjusted model estimates are reported as hazard ratios (HRs) with corresponding 95% confidence intervals (95% CI). HRs measure how often a particular event occurs over time in one group compared with a reference group. An HR of 1 indicates no difference in the incidence of the event between two groups over time, whereas an HR of 2, for example, means that the incidence of the event in one group is twice that of another group. Kaplan-Meier cumulative failure rates were also calculated by maternal maltreatment status. All analyses were conducted using StataSE version 12.[35]

RESULTS

DESCRIPTIVE FINDINGS

Table 1 reports the sociodemographic and pregnancy/birth-related characteristics of infants born to primiparous adolescent mothers in Los Angeles in 2006 and 2007. Among the 24,767 infants in our population, 25.6% were born to a mother who had been reported for maltreatment between age 10 and becoming pregnant (14.3% of mothers had an unsubstantiated report; 11.3% were substantiated). A relatively small percentage of infants (17.4%) were born to the youngest adolescent mothers (ages 15–16 years). More than 4 in 5 infants (82.5%) were born to a Latina mother, 10.1% to a Black mother, and 5.3% to a White mother. Public health insurance covered more than three quarters (78.9%) of births and 78.2% of mothers initiated prenatal care during the first trimester.

Overall, 20.6% children born (n = 5,113) were reported to CPS for abuse or neglect and 7.7% (n = 1,909) were substantiated as victims before age 5. Relative to children who had no contact with CPS by age 5, significant variations (p < .001) were observed in the distribution of reported and substantiated children across all sociodemographic and pregnancy/birth-related variables, except history of pregnancy terminations and birth payment method. The most pronounced variations in children's risk, however, emerged based on maternal maltreatment history. Among teen mothers who had not been reported as possible victims of maltreatment, 15.8% of their children were reported for maltreatment by age 5. In contrast, the corresponding rates of children reported among those born to a mother with an unsubstantiated or substantiated report were 30.7% and 39.8%, respectively (p < .001).

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When the more conservative substantiation definition of offspring maltreatment was examined, similarly large and graded disparities by maternal maltreatment were observed. The substantiation rate was 5.4% among children born to mothers with no alleged or substantiated maltreatment history, less than half the substantiation rate of children born to mothers with an unsubstantiated report of victimization (11.8%) and one third the rate of children born to mothers who had been substantiated as victims (18.0%). Figure 1 depicts the cumulative rate of children reported and substantiated for maltreatment between birth and age 5.
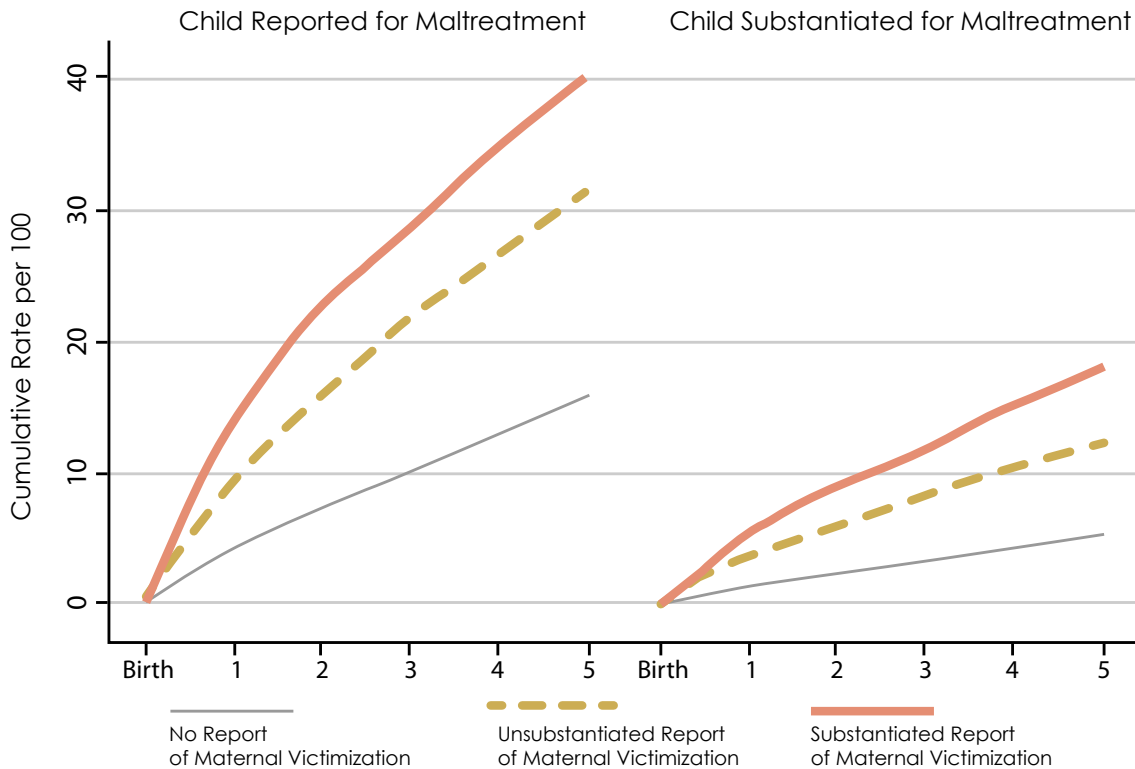
TABLE 1

Characteristics of Children born to Adolescents in Los Angeles County in 2006 and 2007 by Child Maltreatment Status at Age 5

	All Births N=24,767 (2006-2007)		Child Reported N=5,113 (vs. no report by age 5)			Child Substantiated N=1,909 (vs. no substantiation by age 5)		
	N	%	N	%	χ^2	N	%	χ^2
Maternal Maltreatment								
No report	18,424	74.4	2,910	15.8		990	5.4	
Unsubstantiated report	3,549	14.3	1,090	30.7	$p < .001$	417	11.8	$p < .001$
Substantiated report	2,794	11.3	1,113	39.8		502	18.0	
Maternal Age at Birth								
15–16 years	4,298	17.4	1,195	27.8		440	10.2	
17–18 years	11,824	47.7	2,444	20.7	$p < .001$	906	7.7	$p < .001$
19 years	8,645	34.9	1,474	17.1		563	6.5	
Race/Ethnicity								
White	1,306	5.3	378	28.9		142	10.9	
Black	2,490	10.1	851	34.2		333	13.4	
Latina	20,377	82.5	3,778	18.5	$p < .001$	1,387	6.8	$p < .001$
Asian/Pacific Islander	502	2.0	81	16.1		33	6.6	
Native American	38	0.2	13	34.2		7	18.4	
Birth Payment Method								
Private	5,200	21.1	1,072	20.6	$p = .962$	386	7.4	$p = .375$
Public	19,428	78.9	4,011	20.7		1,514	7.8	
Initiation of Prenatal Care								
First trimester	19,358	78.2	3,868	20.0		1,430	7.4	
Second trimester	4,282	17.3	966	22.6	$p < .001$	359	8.4	$p < .001$
Third trimester	763	3.1	174	22.8		68	8.9	
No care/missing	364	1.5	105	28.9		52	14.3	
Pregnancy Terminations								
None	23,801	96.1	4,897	20.6	$p = .179$	1,822	7.7	$p = .123$
Prior termination	966	3.9	216	22.4		87	9.0	
Infant Birth Weight								
Normal (≥ 2500g)	22,875	92.4	4,638	20.3	$p < .001$	1,706	7.5	$p < .001$
Low (< 2500g)	1,892	7.6	475	25.1		203	10.7	

Notes: "Births" column may not equal 100% due to rounding. χ^2 tests were used to compare the characteristics of children reported for maltreatment vs. children not reported and to compare the characteristics of children substantiated for maltreatment vs. children not substantiated.

FIGURE 2

Cumulative Rate of Children Born to Adolescent Mothers in Los Angeles County in 2006 or 2007 who were Reported and Substantiated for Maltreatment by Age 5, Stratified by Maternal History of Maltreatment

MULTIVARIABLE FINDINGS

Adjusted HRs and 95% CIs for reported (Model 1) and substantiated (Model 2) child maltreatment are presented in Table 2. After adjusting for other covariates, the rate of reported maltreatment among children born to mothers with an unsubstantiated maltreatment report was nearly twice that of children whose mothers had not been reported (HR: 1.96; 95% CI: 1.82, 2.10); children born to adolescent mothers who were substantiated victims of abuse or neglect had a rate of reported maltreatment that was more than 2.5 times as great (HR: 2.64; 95% CI: 2.46, 2.84).

When children's substantiation status was modeled, modestly stronger and similarly graded relationships emerged between maternal maltreatment exposure and offspring abuse or neglect. The rate of substantiation among children born to mothers with an unsubstantiated report of maltreatment was approximately twice that of children whose mothers had no CPS contact (HR: 2.10; 95% CI: 1.87, 2.35). Among children born to mothers substantiated as victims, the rate of substantiation was more than 3 times as great (HR: 3.19; 95% CI: 2.86, 3.57).

Several significant associations between other covariates and the rate at which children were reported and substantiated for maltreatment emerged in the adjusted models. Younger maternal age at birth was associated with a significantly increased rate of maltreatment. Relative to children born to White mothers, a lower rate of reported and substantiated maltreatment was observed for children born to Latina and Asian/Pacific Islander mothers. Finally, a heightened rate of reported and substantiated maltreatment emerged for children who were low birth weight or whose mothers did not receive prenatal care.

TABLE 2

Adjusted Risk of Reported and Substantiated Maltreatment by Age 5 among Children born in Los Angeles County to Adolescent Mothers in 2006 and 2007

	Model 1 Child Reported *(vs. no report by age 5)*		Model 2 Child Substantiated *(vs. no substantiation by age 5)*	
	Adj. HR	(95% CI)	Adj. HR	(95% CI)
Maternal Maltreatment				
No report	Ref.	--	Ref.	--
Unsubstantiated report	1.96***	(1.82, 2.10)	2.10***	(1.87, 2.35)
Substantiated report	2.64***	(2.46, 2.84)	3.19***	(2.86, 3.57)
Maternal Age at Birth				
15–16 years	1.73***	(1.60, 1.87)	1.53***	(1.34, 1.74)
17–18 years	1.21***	(1.14, 1.29)	1.14*	(1.03, 1.27)
19 years	Ref.	--	Ref.	--
Race/Ethnicity				
White	Ref.	--	Ref.	--
Black	1.07	(0.95, 1.21)	1.06	(0.87, 1.29)
Latina	0.63***	(0.56, 0.70)	0.67***	(0.56, 0.80)
Asian/Pacific Islander	0.57***	(0.45, 0.72)	0.67*	(0.46, 0.98)
Native American	1.02	(0.58, 1.77)	1.53	(0.72, 3.27)
Birth Payment Method				
Private	Ref.	--	Ref.	--
Public	1.09*	(1.02, 1.17)	1.13*	(1.01, 1.27)
Initiation of Prenatal Care				
First trimester	Ref.	--	Ref.	--
Second trimester	1.06	(0.99, 1.14)	1.07	(0.96, 1.21)
Third trimester	1.10	(0.94, 1.28)	1.16	(0.91, 1.49)
No care/missing	1.48***	(1.21, 1.82)	1.81***	(1.35, 2.43)
Pregnancy Terminations				
None	Ref.	--	Ref.	--
Prior termination	1.07	(0.93, 1.22)	1.13	(0.91, 1.40)
Infant Birth Weight				
Normal (≥ 2500g)	Ref.	--	Ref.	--
Low (< 2500g)	1.25***	(1.13, 1.37)	1.41***	(1.22, 1.63)

Notes: *p < .05; **p < .01; ***p < .001;

Ref = reference group; Adj = Adjusted; CPS = child protective services; HR = hazard ratio; CI = confidence interval

DISCUSSION

This population-level study documented a strong and significantly heightened rate of reported and substantiated abuse and neglect among children born to adolescent mothers with a history of CPS involvement. A maternal history of alleged or substantiated maltreatment emerged in these data as the strongest predictors of both reported and substantiated offspring maltreatment by age 5, even after adjusting for other risk factors. Although these findings are largely consistent with earlier research, this study is methodologically unique, overcoming many limitations noted in reviews of the intergenerational literature.[22,23]

First, this is the only study to examine the transmission of maltreatment across two generations using an entire population of births. No studies to date have provided a population-level, epidemiological estimate of maltreatment across generations.[22,23] Our findings document that roughly 1 in 4 adolescents who gave birth for the first time in 2006 or 2007 in Los Angeles had been reported to CPS as an alleged victim of abuse or neglect after age 10 and prior to becoming pregnant. Among children born to mothers with an unsubstantiated report, 30.7% were reported for maltreatment and 11.8% were substantiated as victims. The corresponding rates among children of

mothers with a substantiated report were even higher at 39.8 and 18.0%, respectively.

Second, this is the only study to examine intergenerational maltreatment dynamics among first-time adolescent mothers. Prior research suggests adolescence is an important contributor to offspring maltreatment risk,[16,36] and at least one intergenerational study found that maternal maltreatment starting or continuing into adolescence was a significant risk factor for next-generation maltreatment (whereas maltreatment in early childhood was not).[21] Further, a large body of research indicates that the onset of parenthood during adolescence is accompanied by a host of near- and longer-term adversities for both mothers and children.[37,38] Although our findings cannot be extended to nonadolescent populations, among children born to adolescent mothers, a recent history of maternal CPS involvement is a strong predictor of contact with CPS during the first 5 years of life.

Third, this is one of just a handful of studies[14,24] to use official CPS records to operationalize maltreatment for both mothers and children.[22] Data from the present study indicate that even among a high-risk population of new adolescent mothers, there are significant differences in children's maltreatment rates based on a mother's own history of maltreatment. This is notable because it highlights that existing administrative CPS records, although an imperfect measure of maternal maltreatment exposure, are useful for differentiating among high-risk births and may provide a means of more strategically targeting prevention services (e.g., prioritizing maltreated adolescents for home visitation services).

Finally, this research extends prior intergenerational work that similarly operationalized child maltreatment using all reports to CPS.[3,19] A significantly heightened rate of offspring maltreatment (both reported and substantiated) was documented not only for mothers with a substantiated report of maltreatment but also for those whose reports were unsubstantiated. These findings provide yet more empirical support for concluding that a report of maltreatment, even if not substantiated, is a meaningful signal of risk.[40]

LIMITATIONS

Although this large-scale, prospective, and longitudinal study overcomes many methodological shortcomings common to the larger body of intergenerational literature,[22] several limitations pertaining to the generalizability of findings and the nature of administrative data must be considered. Foremost, this analysis was restricted to an examination of the transmission of abuse or neglect among adolescent mothers with a recent report of maltreatment (after age 10). A large body of research documents that young women who enter into parenthood during adolescence have a unique profile.[41,42] The relationship between maternal maltreatment and offspring abuse or neglect may manifest very differently among women with a delayed first birth, or less proximate maltreatment exposure (i.e., occurring before the age of 10).

Relatedly, these data only capture the relationship between maternal maltreatment and children's risk of abuse or neglect between birth and age 5. At the time data were linked, administrative CPS records for children born in 2006 and 2007 were only available through 2012. Although this allowed an examination of child maltreatment during the period in which risk of abuse and neglect is highest,[26] findings reported in this study cannot be generalized to maltreatment during the entirety of childhood. Additionally, these data are from a single state and do not account for mothers reported as victims in other states before giving birth in Los Angeles or children born in Los Angeles and reported or substantiated for maltreatment outside of California.

CONCLUSIONS

With total lifetime costs associated with one year of confirmed cases of child maltreatment recently estimated at $124 billion,[43] investments in the prevention of childhood and adolescent maltreatment are increasingly recognized as critical to promoting health and well-being throughout the life course. The current study is the first to use population-level data to document that a history of CPS involvement for an adolescent mother is related

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to a significantly heightened risk of offspring maltreatment. These data highlight the potential for administrative data sources to be used to risk-stratify adolescent parent populations for targeted maltreatment prevention services. Findings also point to the salience of maternal maltreatment exposure to next-generation outcomes. Future research should explore intergenerational dynamics that may operate via maternal exposure to different types of maltreatment (e.g., neglect, physical abuse, sexual abuse)[18] and examine mediating pathways between maternal maltreatment and abuse or neglect in the next generation (e.g., substance use).[3,19]

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