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Contamination in the Prospective Study of Child Maltreatment and Female Adolescent Health

Chad E. Shenk,[1,2] PhD, Jennie G. Noll,[1] PhD, James L. Peugh,[3,4] PhD, Amanda M. Griffin,[1] MS, and Heather E. Bensman,[3] PsyD

[1]Department of Human Development and Family Studies, The Pennsylvania State University, [2]Division of Child Abuse Pediatrics, The Pennsylvania State University Hershey Medical Center, [3]Division of Behavioral Medicine and Clinical Psychology, and [4]Division of Biostatistics and Epidemiology, Cincinnati Children's Hospital Medical Center

All correspondence concerning this article should be addressed to Chad E. Shenk, PhD, Department of Human Development and Family Studies, The Pennsylvania State University, 310E Biobehavioral Health Building, University Park, PA 16802, USA. E-mail: ces140@psu.edu

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Abstract

Objective To evaluate the impact of contamination, or the presence of child maltreatment in a comparison condition, when estimating the broad, longitudinal effects of child maltreatment on female health at the transition to adulthood. **Methods** The Female Adolescent Development Study ($N = 514$; age range: 14–19 years) used a prospective cohort design to examine the effects of substantiated child maltreatment on teenage births, obesity, major depression, and past-month cigarette use. Contamination was controlled via a multimethod strategy that used both adolescent self-report and Child Protective Services records to remove cases of child maltreatment from the comparison condition. **Results** Substantiated child maltreatment significantly predicted each outcome, relative risks = 1.47–2.95, 95% confidence intervals: 1.03–7.06, with increases in corresponding effect size magnitudes, only when contamination was controlled using the multimethod strategy. **Conclusions** Contamination truncates risk estimates of child maltreatment and controlling it can strengthen overall conclusions about the effects of child maltreatment on female health.

Key words: child maltreatment; cigarette use; contamination; depression; obesity; teenage births.

There are 1.2 million cases of child maltreatment each year in the United States (Sedlak et al., 2010), making it more common than diabetes (Centers for Disease Control and Prevention, 2014), epilepsy (Russ, Larson, & Halfon, 2012), and autism spectrum disorder (ADDM Network, 2014) in the pediatric population with a life-long public health impact of $124 billion (Fang, Brown, Florence, & Mercy, 2012). The strongest evidence of the impact of child maltreatment comes from prospective research, which is the ideal methodology for generating causal inferences when random assignment to different levels of an independent variable, such as child maltreatment status, is prohibitive (Widom, Raphael, & DuMont, 2004). However, there are important methodological limitations even within prospective designs that threaten the internal validity of obtained results. One threat is contamination (Cuzick, Edwards, & Segnan, 1997), where participants recruited to a nonmaltreated comparison condition experience child maltreatment either before study entry or during prospective follow-up. Contamination can be common in longitudinal research with up to 45% of those in a comparison condition experiencing some form of child maltreatment (Widom & Morris, 1997). Such high rates of contamination within a study can have a profound impact by weakening the magnitude of effect size estimates (Scott, Smith, & Ellis, 2010) and increasing the

probability of Type II errors (Widom, Weiler, & Cottler, 1999). Depending on its prevalence, contamination can also lead to variation in the significance and magnitude of effect size estimates reported across studies, thereby weakening overall conclusions about the longitudinal effect of child maltreatment on multiple health outcomes (Gilbert et al., 2009). This presents a serious challenge to researchers, policy makers, and providers who must decide whether to address child maltreatment as part of the examination, advocacy, and care for those with a maltreatment history.

The same methodology for establishing a child maltreatment condition in prospective research can be used to control contamination in a comparison condition. There are two primary methods for detecting child maltreatment in adolescence: (1) self-report, such as the administration of screening items, survey instruments, and questionnaires assessing the presence of child maltreatment, and (2) the examination of substantiated case records, such as those obtained from investigations conducted by Child Protective Services (CPS). Self-report methods have the advantage of detecting cases of child maltreatment that go unreported to government agencies or law enforcement. Nationally representative surveys indicate that child maltreatment affects 206 per 1,000 children 14–17 years of age in the United States (Finkelhor, Turner, Shattuck, & Hamby, 2013), an estimate considerably higher than the 6 per 1,000 rate obtained from substantiated records for this same age range (U.S. Department of Health and Human Services, 2012). Substantiated records, however, have the advantage of detecting cases of child maltreatment that go unreported during a self-report assessment. Approximately 40% of those with a documented history of child maltreatment fail to disclose this history during the course of longitudinal research (Hardt & Rutter, 2004; Widom & Shepard, 1996). Thus, both methods have unique advantages for detecting child maltreatment in a comparison condition, leading researchers to advocate a multimethod approach that uses both self-report and substantiated methods throughout a study (Brown, Cohen, Johnson, & Salzinger, 1998; Shaffer, Huston, & Egeland, 2008; Swahn et al., 2006). However, it remains unclear whether the added burden of using such a multimethod approach in prospective research results in increased prediction of clinically relevant outcomes in adolescence (Smith, Ireland, Thornberry, & Elwyn, 2008).

The primary aim of the current study was to evaluate the effects of child maltreatment across several broad indices of female adolescent health at the transition to young adulthood, once contamination was controlled throughout prospective follow-up. Child maltreatment occurring in adolescence was examined because it exerts strong effects on a variety of health outcomes observed in later adolescence (Flaherty et al., 2013; Thornberry, Ireland, & Smith, 2001). Female adolescents were selected as they are at risk for experiencing multiple forms of child maltreatment (U.S. Department of Health and Human Services, 2012), particularly sexual abuse (Sedlak et al., 2010), and the extent to which contamination obscures a risk for developing multiple, adverse health outcomes in this population is of high public health relevance. The current study used a multimethod approach that identified and removed participants from the comparison condition who had a substantiated case of child maltreatment or who self-reported experiencing an instance of child maltreatment either before or during study participation. Once removed, effect size estimates of substantiated child maltreatment were obtained on key outcomes relevant to female health: teenage births, obesity, major depression, and past-month cigarette use. These outcomes were selected because: (1) they reflect health-related behaviors that are established in adolescence and persist into adulthood (Mulye et al., 2009), (2) exert a considerable toll on public health through increased health-care utilization and costs among adolescent and young adult populations (National Research Council and Institute of Medicine, 2009), (3) they represent distinct domains of adolescent health related to child maltreatment (Hussey, Chang, & Kotch, 2006), allowing for a determination of the impact of contamination across a variety of independent outcomes, and (4) there is variation in the reported significance and magnitude of corresponding effect sizes for each of these outcomes across longitudinal studies of child maltreatment (Fergusson, Boden, & Horwood, 2008; Noll & Shenk, 2013; Widom, DuMont, & Czaja, 2007; Widom & Kuhns, 1996). It was expected that substantiated child maltreatment would significantly predict the health status for each outcome only once contamination was controlled. Moreover, it was expected that controlling contamination would strengthen the magnitude of effect size estimates for each outcome.

Methods

Sample

Adolescent females 14–17 years of age were recruited into either a maltreated or comparison condition at study entry based on referral source. Maltreated females ($n = 275$) receiving a primary designation of substantiated physical abuse (37%), sexual abuse (43%), or physical neglect (20%) within the previous 12 months were recruited from local CPS agencies using a continual referral process. Substantiated maltreatment could not be confirmed for two participants referred by CPS and were therefore excluded from analyses. Comparison females were recruited from an outpatient adolescent health center located within a

Table I. Demographic and Outcome Data at Study Entry

	Maltreatment ($n = 266$)	Original comparison ($n = 232$)	Cleaned comparison ($n = 128$)
Age	15.67 (1.15)	15.85 (1.07)	15.78 (1.09)
Minority status	54%	57%	49%
Single-parent household	58%	54%	45%
Median household income	$20,000–$29,000	$20,000–$29,000	$20,000–$29,000
Median number of SLEs	11	7	5
Outcomes at study entry			
Teenage births	0	0	0
BMI	25.93 (6.03)	25.51 (6.66)	25.00 (6.28)
BDI–II	12.33 (10.98)	10.31 (8.46)	9.04 (7.62)
Past-month cigarette use	0.83 (1.42)	0.38 (0.94)	0.29 (0.88)

Note. SLEs = serious life events; BMI = body mass index; BDI-II = Beck Depression Inventory-II. SLEs represent the median number of total serious life events reported at study entry and throughout prospective follow-up. There were no teenage births at study entry because all participants were nulliparous. Means and standard deviations are presented for age and outcomes at study entry. Past-month cigarette use reports the total number of cigarettes smoked in the past month.

pediatric hospital and excluded from the study if they reported any previous CPS involvement during an initial telephone eligibility screen. Comparison females who denied previous CPS involvement ($n = 239$) were then matched to one maltreated female on age, race, family income, and single-parent household. The average age of the sample at study entry was 15.75 years with a racial demography of 46% Black, 45% White, 7% Bi-racial, 1% Hispanic, and 1% Other, as determined by parental report. Median family income was $20,000–$29,000, with 56% of the sample coming from single-parent homes. The retention rate over follow-up was 97%, leaving a final, available sample size of 498 (maltreated condition = 266; comparison condition = 232). See Table I for demographic and outcome data for each condition at study entry.

Procedure

A 5-year, multiwave, prospective cohort design examined the effects of recently substantiated child maltreatment on several measures of female adolescent health. Inclusion/exclusion criteria were: (1) nulliparous adolescent females 14–17 years of age at study entry, (2) a substantiated record of childhood maltreatment occurring within the previous 12 months for those in the maltreatment group, (3) the ability to read and understand English, (4) residence with a nonperpetrating caregiver for a minimum of 12 months, and (5) a legal guardian or caregiver who was not the perpetrator of maltreatment and who could provide written informed consent. Caregivers accompanied adolescents to provide written informed consent. Child assent/consent was obtained from each participant. Participants completed annual study visits measuring broad aspects of female health for up to 4 years or until the age of 19 years. The total number of visits completed ranged from two to four owing to age at study entry (i.e., younger participants completed more visits) and completion of annual study visits (i.e., participants who missed a visit completed fewer visits overall). Families received approximately $20/per hour as monetary compensation for their time, travel, and participation. All procedures were approved by the local institutional review board where the study was conducted.

Measures

Self-Reported Child Maltreatment

The Comprehensive Trauma Interview (CTI; Barnes, Noll, Putnam, & Trickett, 2009) is a validated, semi-structured interview assessing lifetime histories of child maltreatment and has good reliability with CPS investigations ($\kappa = .70$ –.87). The CTI contains a 22-item self-report screen, the CTI Screen, that was administered at each visit to track prior and ongoing exposure to multiple forms of trauma, including physical abuse, sexual abuse, and neglect. The CTI Screen, a reliable ($\alpha = .74$) instrument predictive of subsequent symptoms of posttraumatic stress disorder ($r = .29$), was used to assess child maltreatment in the comparison condition occurring before study entry and in the year between annual study visits (yes/no). The CTI Screen also assessed prior and ongoing exposure to other forms of serious life events (SLEs), such as exposure to domestic violence, natural disasters, and loss of a loved one. Thus, participants had an opportunity to report exposure to multiple SLEs other than child maltreatment at multiple study assessments. The multiple reports on SLEs were then aggregated and consistent with previous research (Dube et al., 2003; Flaherty et al., 2009), exposure to five or more lifetime SLEs (yes/no) was used as a covariate in statistical models.

Substantiated Child Maltreatment

Substantiated child maltreatment, where CPS investigators concluded that an alleged instance of child maltreatment had occurred, was determined through an electronic review of the primary outcome designations made following an investigation of alleged child

maltreatment. Permission to search CPS records was obtained from participants during the informed consent procedures, and a search for each participant was performed after the final assessment to capture instances of substantiated child maltreatment in the comparison condition that may have occurred before or during the study. Study staff recorded the presence of any lifetime instance of substantiated child maltreatment (yes/no).

Teenage Births

Teenage births were initially determined via adolescent self-report at each subsequent study visit. Consent to acquire hospital labor and delivery records was then obtained from each participant who indicated giving birth. A medical chart review of these birth records confirmed delivery (yes/no).

Obesity

Height and weight were obtained at each study visit using an eye-level, mechanical weigh beam scale. Participants' height and weight were measured in street clothing without shoes at each assessment. These data were used to calculate each participant's body mass index (BMI = kg/m^2). Obesity status was determined as a BMI score ≥ 30 (yes/no).

Major Depression

The Beck Depression Inventory-II (Beck, Steer, & Brown, 1996) was administered at each study visit and is a well-established measure of depressive symptomatology in adolescents and adults. Consistent with prior research with adolescents (Kumar, Steer, Teitelman, & Villacis, 2002), a cutoff score of 21 was used in this study to detect clinical levels of major depressive symptoms (yes/no).

Cigarette Use

A single-item indicator from the Monitoring the Future (Johnston, O'Malley, Bachman, & Schulenberg, 2005) national survey was used to measure cigarette use in the past 30 days (yes/no) at each annual study visit.

Data Analytic Strategy

To evaluate the effects of child maltreatment on multiple female adolescent health outcomes once contamination was controlled, PROC GENMOD in SAS v9.3 (SAS Institute; Cary, NC) was used to obtain the relative risk (RR) and corresponding 95% confidence intervals for each health outcome assessed at each subject's final study visit ($M_{Age} = 18.19$, $SD = 1.00$, range = 15–19). The RR is an effect size measure commonly used in prospective cohort studies, as it provides a close approximation of the true risk under such conditions and when compared with other effect size estimates (McNutt, Wu, Xue, & Hafner, 2003). All RRs were adjusted for age, minority status, family income, single-parent household, and exposure to SLEs other than child maltreatment. To predict health status owing to substantiated child maltreatment, RRs for obesity, major depression, and past-month cigarette use were further adjusted by including the raw values of each respective outcome obtained at the initial study visit. The RR for teenage births was not adjusted for initial birth status, as all females were nulliparous at study entry. Missing data were addressed using the all available pairs method under the assumption that missing data were missing completely at random (MCAR). Missing data across all outcomes were tested under the MCAR assumption using Little's test (Little, 1988), with results indicating that this assumption is appropriate for the current study, $\chi^2(3) = 1.14$, $p = .767$.

Results

To illustrate the impact of contamination, a preliminary baseline model was conducted where the effect of substantiated child maltreatment on each outcome was estimated without controlling contamination. Thus, the baseline model obtained RR's for all outcomes using the final, available sample comparing the maltreated ($n = 266$) and original comparison ($n = 232$) conditions. Results of the baseline model indicated that substantiated child maltreatment significantly predicted teenage births, RR = 1.66, $p = .028$, and past-month cigarette use, RR = 1.36, $p = .017$, but failed to predict obesity status and major depression.

The original comparison condition was then screened for the presence of child maltreatment using the multimethod strategy of controlling contamination. The multimethod strategy identified and removed 104 participants from the original comparison condition (44.8%) who experienced an instance of child maltreatment, as indicated by either self-report or through substantiated records. Table II demonstrates the types of child maltreatment experienced by those participants in the comparison condition, as well as how the multimethod strategy identified a greater number of comparison participants who experienced child maltreatment when compared with either CPS or self-report methods alone. It is also important to note that the information presented in Table II reflects cases of child maltreatment in the comparison condition, including 42 cases of substantiated child maltreatment, not identified by the initial telephone eligibility screen. Once contamination was controlled by removing these 104 participants, effect size differences between the maltreated ($n = 266$) and cleaned comparison ($n = 232 - 104 = 128$) conditions

Table II. Child Maltreatment in the Original Comparison Condition ($n = 232$)

Method	Physical abuse	Sexual abuse	Physical neglect	Unique cases[a]
CPS	21	7	26	42
Self-report				
Initial visit	23	35	16	44
Follow-up	16	30	26	18
Total				104

Note. [a]Unique, additional cases not identified by a preceding method or time of assessment. The unique cases value for CPS reports the total number of substantiated cases of child maltreatment occurring in the comparison condition. The self-report—initial visit value indicates the number of participants in the comparison condition who self-reported child maltreatment before participating in the study but who did not have a substantiated case of child maltreatment. The self-report—follow-up value indicates the number of participants who self-reported child maltreatment during the study's longitudinal follow-up but who did not have a substantiated case of child maltreatment or self-report of child maltreatment at the initial study visit. The number of unique cases is smaller than the row total because the same participant could have experienced multiple types of child maltreatment at any one point in time or over her lifetime.

were estimated to determine the risk of substantiated child maltreatment on each outcome. As expected, substantiated child maltreatment significantly increased the risk for all four outcomes after contamination was controlled: teenage births, RR = 2.21, $p = .035$; obesity, RR = 1.47, $p = .034$; major depression, RR = 2.95, $p = .017$; and past-month cigarette use, RR = 1.68, $p = .002$. As shown in Table III, the results obtained after controlling contamination yielded stronger effect size estimates for all outcomes.

Chi-squared tests then assessed whether those 104 participants who were removed from the comparison condition differed significantly from either the maltreatment ($n = 266$) or cleaned comparison ($n = 128$) groups with respect to the prevalence of each outcome. Results indicated that participants removed from the comparison condition differed significantly from the maltreated group, but only on the prevalence of past-month cigarette use, $\chi^2(1) = 7.41$, $p = .007$. However, those removed from the comparison condition differed significantly from the cleaned comparison condition on all outcomes: teenage births (16.5% vs. 7.0%), $\chi^2(1) = 5.13$, $p = .024$; obesity (35.6% vs. 21.1%), $\chi^2(1) = 6.03$, $p = .014$; major depression (17.3% vs. 3.9%), $\chi^2(1) = 11.54$, $p < .001$; and past-month cigarette use (27.9% vs. 16.4%), $\chi^2(1) = 4.47$, $p = .035$.

Finally, the impact of using a multimethod strategy to control contamination was evaluated by comparing the resulting changes in prevalence rates for each outcome to those obtained from nationally representative surveys. Figure 1 reports the prevalence rates for each outcome across the maltreatment ($n = 266$), the original comparison ($n = 232$), and the cleaned comparison ($n = 128$) conditions. As shown, controlling

Table III. The Relative Risk of Child Maltreatment on Female Adolescent Health

	No control of contamination-baseline model ($N = 498$)		Contamination controlled-multimethod strategy ($N = 394$)	
Outcome	RR	95% CI	RR	95% CI
Teenage births				
Unadjusted	1.80**	1.17–2.78	2.89**	1.47–5.66
Adjusted[a]	1.66*	1.06–2.61	2.21*	1.06–4.63
Obesity				
Unadjusted	1.16	0.88–1.52	1.51*	1.04–2.21
Adjusted[b]	1.16	0.90–1.50	1.47*	1.03–2.08
Major depression				
Unadjusted	1.59	0.99–2.57	4.04**	1.64–9.97
Adjusted[b]	1.28	0.79–2.08	2.95*	1.22–7.16
Past-month cigarette use				
Unadjusted	2.01***	1.51–2.66	2.64***	1.74–3.99
Adjusted[b]	1.36*	1.06–1.74	1.68**	1.21–2.35

Note. RR = relative risk; 95% CI = 95% confidence intervals.
[a]Adjusted for age, minority status, family income, single-parent household, and serious life events. Prior birth status was not controlled as all participants were nulliparous at the initial assessment.
[b]Adjusted for age, minority status, family income, single-parent household, serious life events, and initial outcome severity.
***$p < .001$; **$p < .01$; *$p < .05$.

contamination using the multimethod strategy resulted in a revised comparison condition that more closely reflects U.S. population estimates for female adolescents across teenage births (Hamilton, Mathews, & Ventura, 2013), obesity (Ogden, Carroll, Kit, & Flegal, 2012), major depression (Lewinsohn, Rohde, & Seeley, 1998), and past-month cigarette use (Johnston, O'Malley, Bachman, & Schulenberg, 2013).

Discussion

A prospective, multimethod strategy using both self-report and substantiated records of child maltreatment identified 104 participants originally recruited as nonmaltreated comparisons but who experienced child maltreatment at some point before or during the study, resulting in a contamination prevalence estimate of 44.8%. This prevalence estimate is similar to previous longitudinal research (Widom & Morris, 1997) and demonstrates that contamination can be common in prospective research on child maltreatment. This study is the first to demonstrate that contamination truncates effect size estimates across multiple, distinct female adolescent health outcomes. For instance, exerting no control over contamination produced only two significant results, teenage births and cigarette use, with smaller effect size estimates observed across all outcomes. Failure to control contamination could lead to the conclusion that there is no longitudinal effect for child maltreatment on obesity or major depression. In

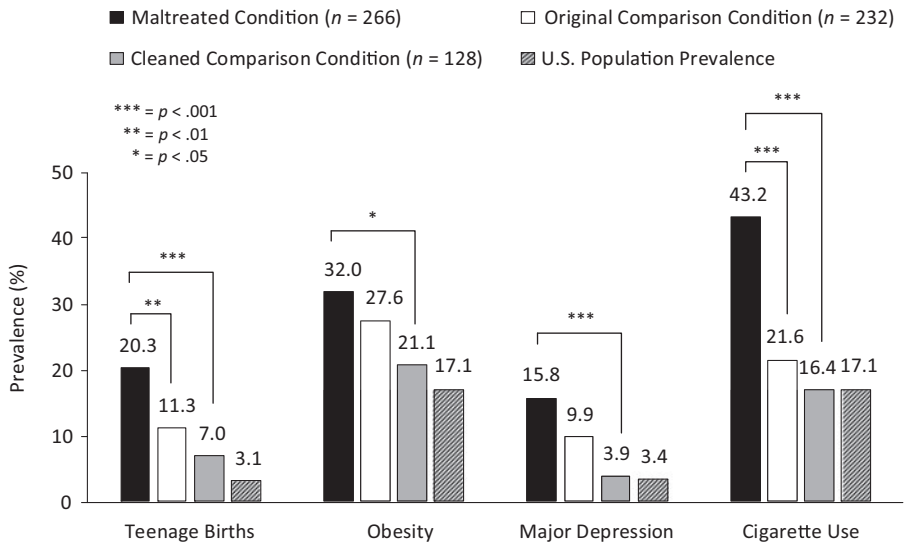

Figure 1. Prevalence of female adolescent health outcomes according to maltreatment and comparison conditions.

contrast, controlling contamination yielded stronger and significant risk estimates for all outcomes examined, providing novel risk estimates for teenage births, obesity, and cigarette use following child maltreatment. This study also replicated prior research that failed to find a significant risk for major depressive disorder until contamination was controlled (Scott et al., 2010), which may help explain prior null findings on the overall effects of child maltreatment on lifetime rates of major depressive disorder (Widom, DuMont, & Czaja, 2007). Thus, controlling contamination can increase the magnitude of effect size estimates, reduce variation in the significance of those estimates across studies and outcomes, and subsequently strengthen conclusions drawn about the longitudinal risk child maltreatment poses for certain female adolescent health outcomes.

These results have important implications for the design and conduct of future, prospective research on child maltreatment. First, using multiple, well-established methods of screening child maltreatment in comparison participants, both at study entry and continuously throughout follow-up, is critical for minimizing the effects of contamination (Shaffer et al., 2008). While self-report and substantiated case records alone offer individual advantages, using both in a prospective, multimethod approach to controlling contamination can provide optimal control of contamination and enhance the estimation of effects due to child maltreatment. Second, larger effect size estimates generally allow for a smaller number of participants needed to adequately power research. This could result in lower sample sizes needed to carry out child maltreatment research when rates of contamination are low. However, investing in the recruitment of a larger pool of potential comparison participants will be needed when rates of contamination are high, as they were in this study, given the likelihood that many have or will experience child maltreatment before or during the study. In either case, controlling contamination throughout prospective research using a multimethod strategy will lend greater confidence about the risk that child maltreatment poses for specific outcomes.

In addition to these findings, there are several important limitations to this study. First, the sample consisted entirely of females. While the outcomes have direct relevance to the health of adolescent and young adult females, results may not generalize to adolescent male outcomes. Second, the advantage of a demographically matched sample provides additional methodological control of extraneous variability in prospective designs. However, demographic matching can yield a comparison sample that has higher rates of adverse health outcomes when compared with national estimates. This phenomenon occurred in the present study. Third, the primary outcome designations of CPS investigations were used to establish each child maltreatment subtype examined in this study. CPS methods of establishing child maltreatment subtypes differ from research-based methods in terms of how the information included in the report of child maltreatment is defined and classified, particularly for the neglect subtype (Runyan et al., 2005). Therefore, it is not appropriate to generalize findings from this study across other methods of establishing child maltreatment. Fourth, this study excluded children who had a recent substantiation of alleged child maltreatment but who were not living in a stable caregiving environment for at least 12 months. As such, these findings may not generalize to adolescent females who were recently maltreated but have not lived in a stable caregiving environment for 12 months. Fifth, results

from prior studies reporting population-based estimates on the prevalence of each outcome under examination in this study were included to provide a context for comparing the impact of controlling contamination. While informative, this was done for illustrative purposes only, and strong comparisons between the findings of this study and each of the prior, population-based studies referenced should not be made owing to considerable differences in study-specific hypotheses and sociodemographic representation. Sixth, controlling contamination by removing cases of child maltreatment resulted in a comparison condition with fewer SLEs, minorities, and single-parent households than the original comparison condition, suggesting the possibility that the results of this study are owing to differences in demographic variables and not child maltreatment. To minimize this possibility, all effect size estimates obtained in this study were adjusted for a host of demographic and study-related variables, including those variables specified above, which lends greater confidence that the resulting estimates are owing to child maltreatment, beyond other confounding variables. Another limitation is the possibility of priming effects, whereby repeated assessments of self-reported child maltreatment increased the likelihood of a participant endorsing such child maltreatment. Our aim was to capture new cases of self-reported child maltreatment throughout the course of longitudinal follow-up. While it is likely that new cases were captured, we cannot verify or rule-out the effects of priming in this study. Finally, while much information has been gained about the predictive validity of substantiated child maltreatment after contamination is controlled, this study cannot offer any insights into the mechanisms driving the risk for the varied outcomes examined in this study. Research in this area is promising (Shenk, Putnam, Rausch, Peugh, & Noll, 2014) and future research targeting central risk and resilience processes is likely to have a direct impact on reducing the health-care costs associated with child maltreatment.

These limitations notwithstanding, results of this study provide the first evidence supporting the use of a multimethod strategy for controlling contamination in prospective research that: (1) predicted group differences in broad areas of female health over time, and (2) strengthened effect sizes estimates associated with child maltreatment. Thus, using a multimethod strategy to screen for and control contamination in prospective research on child maltreatment is essential for obtaining estimates on the longitudinal risk for several, key female health outcomes. Doing so has important implications for practitioners and public policy advocates. Determining whether female adolescents have a history of child maltreatment will inform practitioners as to which set of health outcomes this population is at risk for developing. This information can be used to guide treatment planning with respect to preventing several, clinically relevant health outcomes affecting females as they enter adulthood. Similarly, advocating public policy that targets the prevention of child maltreatment, or targeted prevention following an instance of child maltreatment, can have significant public health ramifications through the reduction of health-care utilization that rises in the presence of multiple health outcomes (Chaffin, Hecht, Bard, Silovsky, & Beasley, 2012). Understanding and demonstrating the longitudinal impact of child maltreatment can strengthen conclusions about its role as a significant public health concern, especially for adolescent females.

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