



Adverse childhood experiences among children of incarcerated parents[☆]

Kristin Turney^{*}

University of California, Irvine, United States



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ABSTRACT

There is good reason to expect that children of incarcerated parents are disproportionately exposed to other adverse childhood experiences (ACEs), defined as potentially stressful or traumatic events such as abuse or neglect, yet little research systematically considers this possibility. In this article, I used newly released data from the 2016 National Survey of Children's Health (NSCH), a recent and nationally representative sample of non-institutionalized children ages 0 to 17, to examine the relationship between parental incarceration and exposure to six additional ACEs: parental divorce or separation, parental death, household member abuse, violence exposure, household member mental illness, and household member substance problems. Results suggest three main conclusions. First, ACEs are relatively common, with nearly one-third (32.5%) of children having exposure to at least one ACE (including parental incarceration). Second, children of incarcerated parents are exposed to nearly five times as many other ACEs as their counterparts without incarcerated parents (2.06 compared to 0.41, on average), and these statistically significant differences persist after adjusting for demographic and socioeconomic characteristics. Third, there is some evidence that the association between parental incarceration and ACEs is stronger among younger children (ages 0 to 6) than among older children. Taken together, these findings highlight the vulnerabilities experienced by children of incarcerated parents.

1. Introduction

The increase in U.S. incarceration rates means that a sizable number of children experience parental incarceration. Between 5 million and 8 million children have had a resident parent (most often a father) incarcerated in jail, state prison, or federal prison, and this number excludes children with parents under other forms of correctional supervision such as probation or parole (Murphey & Cooper, 2015). A growing research literature conceptualizes parental incarceration as an adverse childhood experience (ACE) with considerable deleterious consequences for children's wellbeing (U.S. Department of Health and Human Services, 2015). Children exposed to parental incarceration, compared to their counterparts not exposed to parental incarceration, experience disadvantages across behavioral, educational, and health outcomes (for reviews, see Foster & Hagan, 2015; Johnson & Easterling, 2012; Murray, Farrington, & Sekol, 2012).

Importantly, given social inequalities in exposure to criminal justice contact, many children of incarcerated parents are a demographically and socioeconomically disadvantaged group even prior to the experience of parental incarceration. For example, parental incarceration is more common among children of disadvantaged race/ethnic groups;

about one-fourth (24%) of Black children and one-tenth (11%) of Hispanic children experience parental incarceration by age 17, compared to 4% of White children (Sykes & Pettit, 2014). Parental incarceration is also concentrated among children living in households with incomes below the poverty line, children of unmarried parents, and children residing in disadvantaged neighborhoods (Foster & Hagan, 2015; Wakefield & Wildeman, 2013).

Given the disadvantages preceding parental incarceration, in conjunction with the disadvantages resulting from parental incarceration, it is quite conceivable that children of incarcerated parents are disproportionately more likely than other children to have additional ACEs (Balistreri & Alvira-Hammond, 2016; Bethell, Davis, Gombojav, Stumbo, & Powers, 2017; Foster & Hagan, 2015). ACEs are defined as potentially stressful or traumatic events such as abuse, neglect, or substance abuse of a household member (Felitti, 2009). For example, household member substance abuse may precede parental incarceration, as substance abuse can spur criminal activity and, in turn, interactions with the criminal justice system. Household member substance abuse may also follow parental incarceration, as formerly incarcerated individuals often return to substance abuse and the stress associated with parental incarceration may trigger substance abuse among the

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^{*} Corresponding author at: University of California, 3151 Social Science Plaza, Irvine, CA 92697-5100, United States.
E-mail address: kristin.turney@uci.edu.

non-incarcerated parent (Turney & Wildeman, 2015). However, despite good reason to expect that ACE exposure is more common among children exposed to parental incarceration than their counterparts, relatively little research systematically considers the relationship between parental incarceration and other ACEs (Murphey & Cooper, 2015). Furthermore, research has not yet considered how the relationship between parental incarceration and other ACEs varies by demographic characteristics such as children's age or race/ethnicity.

Inattention to the relationship between parental incarceration and other ACEs is an important oversight for three reasons. First, it is critical to understand how parental incarceration is associated with other ACEs because these potentially stressful and traumatic experiences, such as household member abuse or household member substance use, have deleterious consequences for health and wellbeing throughout the life course (Anda et al., 1999; Barboza, 2018; Corso, Edwards, Fang, & Mercy, 2008; Felitti, 2009; Felitti et al., 1998; Gilbert et al., 2015; Klassen, Chirico, O'Leary, Cairney, & Wade, 2016; Wade et al., 2016). Second, it is critical to understand how exposure to one ACE, such as parental incarceration, is associated with one's exposure to other ACEs because the *accumulation* of stressors is especially consequential for health and wellbeing throughout the life course (Pearlin, 1989; Pearlin, Aneshensel, & LeBlanc, 1997). Third, and relatedly, understanding the degree to which children exposed to parental incarceration are exposed to other ACEs may provide critical information about how to target social services for this group of vulnerable children.

In this article, I use data from the newly released 2016 National Survey of Children's Health (NSCH), a large and nationally representative sample of non-institutionalized children, to provide a descriptive portrait of ACE exposure among children of incarcerated parents. First, I examine the relationship between parental incarceration and the following six additional ACEs: parental divorce or separation, parental death, household member abuse, violence exposure, household member mental illness, and household member substance problems. I examine these six additional ACEs individually and also examine two summary indicators of ACE exposure: number of ACEs and exposure to any ACE. Second, because older children have had more opportunity for ACE exposure than younger children, I examine variation in these relationships by children's age. Third, as ACE exposure is disproportionately concentrated among minority children, I examine variation in these relationships by children's race/ethnicity. These latter two points investigate which groups of children exposed to parental incarceration are most vulnerable, providing insight into which children might most need and most benefit from interventions. Taken together, this article provides a systematic and nationally representative documentation of the relationship between parental incarceration and exposure to other ACEs and provides evidence that children of incarcerated parents are an especially vulnerable group.

2. Method

2.1. Data

I estimated the relationship between parental incarceration and other ACEs using data from the 2016 National Survey of Children's Health (NSCH), a nationally representative survey of 50,212 U.S. children ages 0 to 17 living in households. This cross-sectional survey, conducted by the Census Bureau, identified households via the Census Master Address File and included two modes of participation, a web-based survey and a mailed paper survey (the latter of which was sent to households that did not respond to the first two web survey invitations). About four-fifths (80.6%) of completed surveys were done via the web. A focal child was identified in each household. The household adult with the most information about the focal child (the child's mother in 63% of households, the child's father in 30% of households, and another adult respondent in 7% of households) completed the survey. Interviews were conducted between June 2016 and February 2017. The

overall weighted response rate was 40.7% (U.S. Census Bureau, 2017).

These data are well positioned to understand the relationship between parental incarceration and other ACEs for three reasons. First, they include a recent and nationally representative sample of non-institutionalized children, facilitating estimates that can be generalized to a large group of children in the United States. Second, they include information about children's exposure to ACEs including parental incarceration. Third, the sample size is large enough to make stable estimates of even relatively infrequently reported ACEs (e.g., parental death).

The analytic sample included all observations with non-missing values on the dependent variables (with 2.6% of the full sample missing information on parental divorce or separation, 2.8% missing parental death, 3.1% missing household member abuse, 3.1% missing violence exposure, 3.2% missing household member mental illness, and 3.0% missing household member substance problems). The analytic sample comprised 47,262 [94%] of the original 50,212 observations. There were only several small observed statistically significant differences between the full and analytic samples. Children in the analytic sample, compared to children in the full sample, were more likely to be White (70.5% compared to 70.9% [unweighted], $p < 0.05$), more likely to have married parents (30.1% compared to 29.5% [unweighted], $p < 0.05$), and less likely to live in households with incomes below the poverty line (10.0% compared to 9.5% [unweighted], $p < 0.01$).

2.2. Measures

2.2.1. Adverse Childhood Experiences (ACEs)

The key independent variable, parental incarceration, was a binary variable indicating the child had a parent or guardian who ever served time in jail. The dependent variables included six binary indicators of individual ACEs and two summary indicators of ACEs. The six binary indicators included the following: (1) parental divorce or separation, indicating the child's parent or guardian divorced or separated; (2) parental death, indicating the child's parent or guardian died; (3) household member abuse, indicating the child saw or heard parents or adults slap, hit, kick, or punch one another in the home; (4) violence exposure, indicating the child was a victim of violence or witnessed violence in his/her neighborhood; (5) household member mental illness, indicating the child lived with anyone who was mentally ill, suicidal, or severely depressed; and (6) household member substance problems, indicating the child lived with anyone who had a problem with alcohol or drugs. Additionally, the summary indicators included (1) a count variable indicating the number of ACEs (excluding parental incarceration, with 67.5% of children being exposed to zero ACEs, 20.2% being exposed to one ACE, 6.8% being exposed to two ACEs, 2.9% being exposed to three ACEs, 1.7% being exposed to four ACEs, 0.8% being exposed to five ACEs, and 0.1% being exposed to six ACEs) and (2) a binary variable indicating any ACE exposure (again, excluding parental incarceration). All ACEs were reported by the parent respondent.

2.2.2. Control variables

The multivariate analyses adjusted for demographic and socioeconomic characteristics of the child and the child's family. Child characteristics included age (a continuous variable ranging from 0 to 17 years old), gender (1 = female), low birth weight, race/ethnicity (White [non-Hispanic], Black [non-Hispanic], Hispanic, other race [non-Hispanic, included American Indian or Alaska Native, Asian, Native Hawaiian or other Pacific Islander, and other], multiracial), and immigrant status (1 = first- or second-generation immigrant). Parent characteristics included mother's age (a continuous variable ranging from 18 to 75), parent's relationship status (1 = biological parents not married), parent's educational attainment (less than high school, high school diploma, post-secondary education), and mother's overall health (1 = fair or poor overall health). Household characteristics included

employment (1 = someone in the household was employed 50 of the past 52 weeks), welfare receipt (1 = anyone in the household received cash assistance from a government welfare program in the past 12 months), WIC receipt (1 = anyone in the household received benefits from the Woman, Infants, and Children [WIC] program in the past 12 months), poverty (1 = household income below the federal poverty line), and neighborhood safety (1 = somewhat disagree or definitely disagree that child is safe in neighborhood). All control variables were reported by the parent respondent.

2.3. Analytic strategy

The analyses begin with descriptive statistics. I calculated the means and frequencies of ACE exposure by parental incarceration, using chi-square tests and t-tests (depending on the distribution of the dependent variable) to examine statistically significant differences between children exposed to parental incarceration and children not exposed to parental incarceration.

The multivariate analyses proceeded in three stages. In the first multivariate analytic stage, I used Poisson regression to estimate the relationship between parental incarceration and the first summary measure of ACE exposure, number of ACEs. Poisson regression is appropriate because the dependent variable, number of ACEs, is a count variable (Long & Freese, 2006). I estimated three models: (1) an unadjusted model; (2) an adjusted model that controlled for child characteristics; and (3) an adjusted model that controlled for child, parent, and household characteristics. In the second model, all control variables were exogenous to parental incarceration. In the third model, some control variables (such as household income below the poverty line) were potentially endogenous to parental incarceration. Therefore, the second model presents a liberal (or upper-bound estimate) of the association between parental incarceration and other ACEs and the third model presents a conservative (or lower-bound estimate) of the association between parental incarceration and other ACEs.

In the second multivariate analytic stage, I used logistic regression models to estimate the relationship between parental incarceration and seven dependent variables: any ACE exposure, parental divorce or separation, parental death, household member abuse, violence exposure, household member mental illness, and household member substance problems. The models presented adjusted for all child, parent, and household characteristics.

Finally, in the third multivariate analytic stage, I estimated the relationship between parental incarceration and other ACEs across age subgroups (ages 0 to 6, ages 7 to 12, ages 13 to 17) and race/ethnic subgroups (White, Black, Hispanic, other race, multiracial). The models presented adjusted for all child, parent, and household characteristics. I tested for statistically significant differences across groups (Paternoster, Brame, Mazerolle, & Piquero, 1998).

All analyses were weighted to account for the complex sampling design and (both respondent and item) non-response. The use of survey weights mean that the analyses are nationally representative of non-institutionalized children ages 0 to 17 in the United States. Relatively few observations were missing information on the independent variable (parental incarceration) or the control variables. I preserved these observations with multiple imputation, producing 20 data sets and combining results across them (Allison, 2001; Little & Rubin, 1987). The imputation equation comprises all variables included in the analysis, including the dependent variables, and I drop cases missing dependent variables after imputation (Allison, 2009; Landerman, Land, & Pieper, 1997; Schafer & Graham, 2002; von Hippel, 2007).

2.4. Sample description

Table 1 presents demographic and socioeconomic characteristics of the sample. The majority of children in the sample (52.6%) were White, followed by 24.2% who were Hispanic, 12.3% who were Black, 5.7%

Table 1
Weighted Sample Characteristics (N = 47,262).

	% or M
Adverse Childhood Experiences	
Parental divorce or separation	24.7%
Parental death	3.3%
Household member abuse	5.6%
Violence exposure	3.8%
Household member mental illness	7.8%
Household member substance problems	8.9%
Parental incarceration	8.0%
Number of adverse childhood experiences (range: 0 to 7)	0.5
Any adverse childhood experience	32.5%
Control Variables	
Child age	8.6
Child female	48.9%
Child born low birth weight	8.3%
Child race/ethnicity	
White	52.6%
Black	12.3%
Hispanic	24.2%
Other race	5.7%
Multiracial	5.0%
Child first- or second-generation immigrant	26.3%
Mother age	38.6
Parent not married to child's biological father	37.9%
Parent educational attainment	
Less than high school	8.9%
High school diploma	19.4%
Post-secondary education	71.7%
Household member not employed	5.9%
Household member receives welfare	4.3%
Household member receives WIC	13.4%
Household income below the federal poverty level	20.9%
Mother in fair or poor health	6.2%
Neighborhood is not safe	6.1%

Note: Analyses weighted to adjust for the complex sampling design.

who were another race, and 5.0% who were multiracial. About half (48.9%) were girls. More than one-quarter (26.3%) were first- or second-generation immigrants. The majority of children's parents (71.7%) had post-secondary education. Relatively few children (5.9%) had an unemployed household member and relatively few children were living in households that received public assistance in the form of welfare (4.3%) or WIC (13.4%). About one-fifth (20.9%) of children were living in households with income below the poverty line.

Table 1 also presents the frequency of ACE exposure. ACE exposure was relatively common among children in the United States. Nearly one-third (32.5%) had been exposed to any ACE (including parental incarceration). On average, children were exposed to 0.5 ACEs (again, including parental incarceration). Parental divorce was the most common ACE, experienced by one-fourth (24.7%) of children in the United States, followed by household member substance problems (8.9%), parental incarceration (8.0%), household member mental illness (7.8%), household member abuse (5.6%), violence exposure (3.8%), and parental death (3.3%).

3. Results

3.1. Frequency of exposure to adverse childhood experiences by parental incarceration

Fig. 1 shows the weighted frequency of ACE exposure by parental incarceration. Here and in subsequent analyses, the measure of ACE exposure excludes parental incarceration. Children exposed to parental incarceration were more likely to have other ACEs than children not exposed to parental incarceration. For example, only 14.3% of children exposed to parental incarceration had no other ACEs, compared to 72.2% of children not exposed to parental incarceration. Further, among children exposed to parental incarceration, about 28.9%

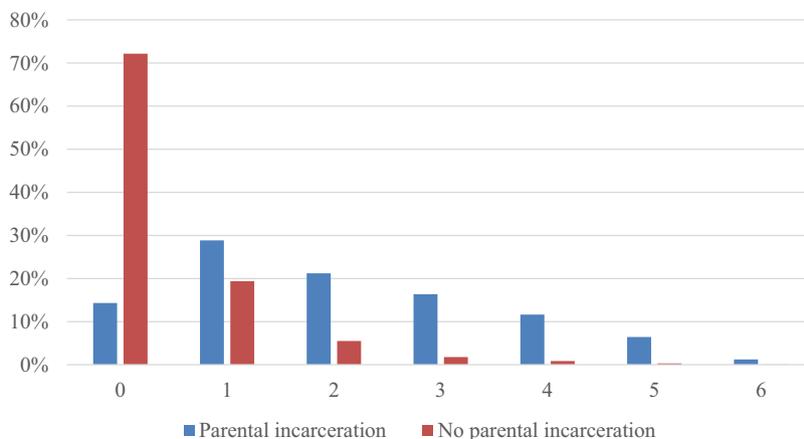


Fig. 1. Histogram of Number of Adverse Childhood Experiences (ACEs), by Parental Incarceration.
Notes: Analyses weighted to adjust for the complex sampling design.

experienced one other ACE (compared to 19.4% of children not exposed to parental incarceration), 21.2% experienced two other ACEs (compared to 5.5%), 16.4% experienced three other ACEs (compared to 1.8%), and 19.3% experienced four or more other ACEs (compared to 1.2%).

Table 2 presents descriptive statistics of ACEs for two groups of children: those who experienced parental incarceration and those who did not experience parental incarceration. Children exposed to parental incarceration had more ACEs than those not exposed to parental incarceration (2.06 compared to 0.41, $p < 0.001$). Children exposed to parental incarceration were also more likely to report any ACE (85.7% compared to 27.8%, $p < 0.001$). Children exposed to parental incarceration were nine times more likely to experience household member abuse (31.9% compared to 3.4%, $p < 0.001$) and violence exposure (20.3% compared to 2.3%, $p < 0.001$). They were eight times more likely to experience household member substance problems (45.5% compared to 5.8%, $p < 0.001$); five times more likely to experience parental death (11.8% compared to 2.5%, $p < 0.001$); and four times more likely to experience household member mental illness (24.1% compared to 6.4%, $p < 0.001$) and parental divorce or separation (72.7% compared to 20.5%, $p < 0.001$).

Table 2
Weighted Means and Frequencies of Adverse Childhood Experiences (ACEs), by Parental Incarceration (N = 47,262).

	Parental incarceration	No parental incarceration	
	n = 2714	n = 44,548	
<i>Summary Measures</i>			
Number of ACEs	2.06	0.41	***
Any ACE	85.7%	27.8%	***
<i>Individual ACEs</i>			
Parental divorce or separation	72.7%	20.5%	***
Parental death	11.8%	2.5%	***
Household member abuse	31.9%	3.4%	***
Violence exposure	20.3%	2.3%	***
Household member mental illness	24.1%	6.4%	***
Household member substance problems	45.5%	5.8%	***

Note: Summary measures (number of ACEs and any ACE) do not include parental incarceration. Asterisks compare children who did and did not experience parental incarceration. Analyses weighted to adjust for the complex sampling design.

*** $p < 0.001$ (two-tailed tests).

3.2. Estimating adverse childhood experiences as a function of parental incarceration

3.2.1. Number of ACEs

Table 3 presents results from Poisson regression models that estimated the number of ACEs as a function of parental incarceration. Model 1, the unadjusted model, documents a positive association between parental incarceration and number of ACEs ($b = 1.62$, $p < 0.001$). This association persists in Model 2, which adjusted for child characteristics ($b = 1.38$, $p < 0.001$). It also persists (though diminishes in magnitude) in Model 3, which adjusted for both child and parent characteristics ($b = 0.79$, $p < 0.001$). Therefore, though more than half (51.2%) of the association between parental incarceration and number of ACEs can be explained by child and parent characteristics, children exposed to parental incarceration experience a greater number of other ACEs than their counterparts.

The final model documents a positive relationship between children's age and number of ACEs ($b = 0.05$, $p < 0.001$). First- and second-generation immigrant children were exposed to fewer ACEs than their third-generation counterparts ($b = -0.27$, $p < 0.001$). Children with unmarried biological parents were exposed to fewer ACEs than their counterparts ($b = 1.88$, $p < 0.001$). Mothers' fair or poor health was positively associated with number of ACEs ($b = 0.27$, $p < 0.001$).

3.2.2. Additional dependent variables

Table 4 presents results from logistic regression models that estimated the additional dependent variables as a function of parental incarceration. Children exposed to parental incarceration, net of child and parent characteristics, were nearly seven times as likely to experience any ACE than their counterparts not exposed to parental incarceration ($b = 1.90$, OR = 6.69, $p < 0.001$). They were also eight times more likely to experience household member substance problems ($b = 2.11$, OR = 8.25, $p < 0.001$), six times more likely to experience household member abuse ($b = 1.82$, OR = 6.17, $p < 0.001$), five times more likely to experience violence exposure ($b = 1.69$, OR = 5.42, $p < 0.001$), and four times more likely to experience parental divorce or separation ($b = 1.31$, OR = 3.71, $p < 0.001$). Children exposed to parental incarceration were twice as likely to experience household member mental illness ($b = 0.89$, OR = 2.44, $p < 0.001$) and parental death ($b = 0.64$, OR = 1.90, $p < 0.001$). Therefore, the inequalities in ACEs between children who do and do not experience parental incarceration persist across all individual measures of ACEs.

Table 3
Poisson regression models estimating number of adverse childhood experiences (ACEs) as a function of parental incarceration (N = 47,262).

	Model 1			Model 2			Model 3		
	b		(S.E.)	b		(S.E.)	b		(S.E.)
Parental incarceration	1.62	***	(0.04)	1.38	***	(0.04)	0.79	***	(0.04)
Child age				0.07	***	(0.01)	0.05	***	(0.01)
Child female				0.01		(0.03)	0.01		(0.03)
Child born low birth weight				0.10		(0.07)	0.04		(0.06)
Child race/ethnicity (reference = White)									
Black				0.11		(0.06)	−0.35	***	(0.05)
Hispanic				0.25	***	(0.05)	−0.07		(0.05)
Other race				−0.21	*	(0.09)	−0.32	**	(0.10)
Multiracial				0.28	***	(0.06)	0.03		(0.05)
Child first- or second-generation immigrant				−0.56	***	(0.06)	−0.23	***	(0.06)
Mother age							0.01		(0.01)
Parent not married to child's biological father							1.88	***	(0.05)
Parent educational attainment (reference = less than high school)									
High school diploma							0.07		(0.07)
Post-secondary education							0.16	*	(0.07)
Household member not employed							0.06		(0.07)
Household member receives welfare							0.12		(0.08)
Household member receives WIC							0.02		(0.07)
Household income below the federal poverty level							−0.01		(0.04)
Mother in fair or poor health							0.27	***	(0.07)
Neighborhood is not safe							0.27	***	(0.06)
F	2035			245			218		
Constant	−0.89			−1.49			−2.61		

Notes: Analyses weighted to adjust for the complex sampling design.

- * $p < 0.05$,
- ** $p < 0.01$,
- *** $p < 0.001$.

Table 4
Logistic regression models estimating adverse childhood experiences (ACEs) as a function of parental incarceration (N = 47,262).

	b	SE	OR	F	Constant	
Any ACE	1.90	***	(0.18)	6.69	106	−3.51
Parental divorce or separation	1.31	***	(0.15)	3.71	88	−4.63
Parental death	0.64	***	(0.15)	1.90	23	−7.31
Household member abuse	1.82	***	(0.13)	6.17	50	−4.84
Violence exposure	1.69	***	(0.14)	5.42	37	−5.03
Household member mental illness	0.89	***	(0.11)	2.44	35	−4.41
Household member substance problems	2.11	***	(0.11)	8.25	50	−4.77

Notes: All models adjust for covariates in Model 3 of Table 3. Analyses weighted to adjust for the complex sampling design

- *** $p < 0.001$.

Table 5
Regression models estimating adverse childhood experiences (ACEs) as a function of parental incarceration, by child age (N = 47,262).

	0 to 6 years old			7 to 12 years old			13 to 17 years old		
	n = 15,820			n = 14,743			n = 16,699		
	b	SE	OR	b	SE	OR	b	SE	OR
Number of ACEs	1.16	***	(0.10)	0.83	***	(0.06)	0.64	***	(0.05)
Any ACE	2.11	***	(0.26)	1.99	***	(0.26)	1.57	***	(0.38)
Parental divorce or separation	1.82	***	(0.26)	1.34	***	(0.22)	0.98	***	(0.24)
Parental death	1.21	**	(0.39)	0.61	*	(0.24)	0.52	*	(0.21)
Household member abuse	2.12	***	(0.31)	1.85	***	(0.20)	1.74	***	(0.16)
Violence exposure	2.00	***	(0.34)	1.79	***	(0.22)	1.64	***	(0.18)
Household member mental illness	1.14	***	(0.21)	1.15	***	(0.17)	0.60	***	(0.15)
Household member substance problems	2.46	***	(0.20)	2.31	***	(0.18)	1.83	***	(0.15)

Notes: Poisson regression models estimate number of ACEs. Logistic regression models estimate other outcomes. All models adjust for covariates in Model 3 of Table 3. Analyses weighted to adjust for the complex sampling design.

- * $p < 0.05$.
- ** $p < 0.01$.
- *** $p < 0.001$.

exposed to any ACE, followed by 38.1% of multiracial children, 34.6% of Hispanic children, 29.9% of White children, and 16.3% of children from other race/ethnic groups. The patterns were similar across the individual ACEs. For example, 15.9% of Black children experienced parental incarceration (compared to 12.0% of multiracial children, 8.3% of Hispanic children, 6.2% of White children, and 6.8% of children from other race/ethnic groups).

Table 5 considers variation in the relationship between parental incarceration and ACEs across child age, documenting that this relationship existed among children of all age groups but was largest in magnitude among young children (those ages 0 to 6). For example, the estimates of number of ACEs show that the magnitude of the coefficient was largest among children ages 0 to 6 ($b = 1.16, p < 0.001$) and smallest among children ages 13 to 17 ($b = 0.64, p < 0.001$), with the differences across these groups being statistically significant ($z = 4.80$). These patterns persisted across all dependent variables (and the differences between the youngest and oldest age groups were also statistically significant for estimates of parental divorce or separation [$z = 2.37$], household member mental illness [$z = 2.09$], and household member substance problems [$z = 2.52$]).

Table 6 considers variation in the relationship between parental incarceration and ACEs across child race/ethnicity, documenting that this relationship was generally similar across race/ethnic groups. For example, parental incarceration was similarly associated with a greater number of ACEs for White children ($b = 0.73, p < 0.001$), Black children ($b = 0.72, p < 0.001$), Hispanic children ($b = 0.85, p < 0.001$), and multiracial children ($b = 0.77, p < 0.001$); differences in the coefficients across groups were not statistically significant. There is some evidence that the association between parental incarceration and number of ACEs was stronger among children from other race/ethnic groups than Black children ($z = 2.46$) and Hispanic children ($z = 2.13$). Additionally, there is some evidence that the association between parental incarceration and any ACE ($z = 3.81$), as well as the association between parental incarceration and parental divorce ($z = 2.76$), was stronger among Whites than Blacks. However, by and large, these analyses suggest that parental incarceration is similarly associated with ACEs for children across all race/ethnic groups.

4. Discussion

It is well known that children of incarcerated parents experience a number of disadvantages prior to their exposure to parental incarceration, during their exposure to parental incarceration, and after their exposure to parental incarceration (Foster & Hagan, 2015; Johnson & Easterling, 2012; Wakefield & Wildeman, 2013). But despite good reason to expect that children of incarcerated parents are more likely than their counterparts to have other adverse childhood experiences such as household member abuse or household member mental illness, little research systematically considers this possibility. This is an

important oversight because both parental incarceration and other ACEs are associated with aspects of children's wellbeing such as flourishing, emotional difficulties, and school engagement (Murphey & Cooper, 2015). In this article, I used newly released data from the 2016 National Survey of Children's Health (NSCH), a nationally representative sample of non-institutionalized children ages 0 to 17, to examine the association between parental incarceration and exposure to other ACEs.

The analyses yielded three main conclusions. First, ACEs are relatively common among children. Nearly one-third (32.5%) of children experience at least one ACE in childhood, with some ACEs being more commonly experienced than others. Parental divorce and separation, experienced by about one-quarter of children, is the most commonly experienced ACE. Other commonly experienced ACEs include household member substance problems, parental incarceration, and household member mental illness. Given the relatively large number of children exposed to ACEs, as well as the well-documented health consequences of ACE exposure throughout the life course, it is important to understand how one ACE, such as parental incarceration, is correlated with others (Anda et al., 1999; Barboza, 2018; Corso et al., 2008; Felitti, 2009; Felitti et al., 1998; Gilbert et al., 2015; Klassen et al., 2016; Murphey & Cooper, 2015; Wade et al., 2016).

Second, children exposed to parental incarceration experience a greater number of other ACEs than children not exposed to parental incarceration. They are also more likely than their counterparts to experience any ACE and to experience all six individual types of ACEs. These differences between children exposed to and not exposed to parental incarceration persist in multivariate analyses that adjust for an array of child and parent characteristics. Importantly, the models that adjust for all child and parent characteristics likely provide a conservative estimate of the association between parental incarceration and other ACEs, as all control variables were measured contemporaneously to the independent and dependent variables.

Third, there is some evidence that the association between parental incarceration and exposure to other ACEs varies across children's age. The association between parental incarceration and other ACEs exists across all three age groups considered (ages 0 to 6, ages 7 to 12, and ages 13 to 17) but is generally larger in magnitude among younger children than among older children. Relatedly, by and large, the results provide no evidence that the association between parental incarceration and other ACEs varies across race/ethnicity; that is, parental incarceration is similarly associated with other ACEs for White children, Black children, Hispanic children, and multiracial children. There is some evidence that children from other race/ethnic groups are especially likely to experience parental incarceration in conjunction with other ACEs. This finding is difficult to interpret, though, given the heterogeneous nature of this group (which includes American Indian or Alaska Native children, Asian children, Native Hawaiian or other Pacific Islander children).

Table 6
Regression models estimating adverse childhood experiences (ACEs) as a function of parental incarceration, by child race/ethnicity (N = 47,262).

	White			Black			Hispanic			Other race			Multiracial							
	n = 33,527			n = 2601			n = 5125			n = 3152			n = 2857							
	b	SE	OR	b	SE	OR	b	SE	OR	b	SE	OR	b	SE	OR					
Number of ACEs	0.73	***	(0.04)	–	0.72	***	(0.10)	–	0.85	***	(0.09)	–	1.64	***	(0.36)	–	0.77	***	(0.10)	–
Any ACE	2.60	***	(0.27)	13.46	1.25	***	(0.23)	3.49	1.60	***	(0.41)	4.95	5.11	**	(1.53)	165.67	2.10	***	(0.36)	8.17
Parental divorce or separation	1.75	***	(0.24)	5.75	0.85	***	(0.22)	2.34	1.43	***	(0.37)	4.18	4.28	**	(1.35)	72.24	0.76	***	(0.42)	2.14
Parental death	0.34		(0.18)	1.40	0.62	*	(0.28)	1.86	0.68		(0.37)	1.97	1.61		(1.07)	5.00	1.31	**	(0.43)	3.71
Household member abuse	1.85	***	(0.15)	6.36	1.64	***	(0.29)	5.16	2.02	***	(0.30)	7.54	2.21	***	(0.55)	9.12	1.61	***	(0.33)	5.00
Violence exposure	1.68	***	(0.17)	5.37	1.11	***	(0.29)	3.03	2.05	***	(0.28)	7.77	3.19	***	(0.83)		2.01	***	(0.33)	7.46
Household member mental illness	0.75	***	(0.12)	2.12	1.06	***	(0.29)	2.89	0.83	**	(0.25)	2.29	2.75	***	(0.67)	15.64	1.21	***	(0.34)	3.35
Household member substance problems	2.21	***	(0.13)	9.12	1.68	***	(0.32)	5.37	2.10	***	(0.23)	8.17	3.37	***	(0.68)	29.08	2.11	***	(0.29)	8.25

4.1. Limitations

The 2016 NSCH are the best available data source to examine the relationship between parental incarceration and other ACEs, as they include a recent and nationally representative sample of children and because they include multiple indicators of ACEs. However, several limitations to these data exist. First, the cross-sectional design, coupled with no retrospective information about the timing of ACEs, means that it is not possible to know whether parental incarceration comes before, contemporaneously, or after the other ACEs. Second, and relatedly, the cross-sectional design includes contemporaneously measured dependent, independent, and control variables; therefore, some control variables (e.g., household income) are likely endogenous to parental incarceration, which may mean that these estimates of the association between parental incarceration and other ACEs are conservative. Third, the measurement of key variables include some limitations. For example, details of parental incarceration—including when in the life course it occurred, whether the child experienced maternal or paternal incarceration, and the chronicity or duration of the incarceration—remain unobserved. Relatedly, there is no direct information about emotional or sexual abuse, both of which are consequential ACEs (Dube et al., 2003).

4.2. Implications for practice and policy and for future research

These findings have implications for practice and policy. To begin with, the findings suggest that it is common for children of incarcerated parents to also be exposed to other ACEs such as household member substance problems, household member mental illness, or parental divorce or separation. Therefore, for those individuals who regularly interact with children of incarcerated parents—such as teachers, social workers, or other service providers—trainings that highlight the accumulation of stressors experienced by these children may be particularly useful. Similarly, individuals who regularly interact with children exposed to other ACEs should be aware of the fact that these children may also experience parental incarceration and, accordingly, be aware of the unique challenges associated with parental incarceration (including the trauma that may accompany witnessing an arrest, barriers to communication, and economic hardship). Relatedly, interventions geared toward children of incarcerated parents may want to have services in place to help children cope with these other adversities. Finally, the findings suggest that children of all ages and race/ethnic groups may benefit from services or interventions. However, given that children from race/ethnic minority groups are more likely to be exposed to all types of ACEs (including parental incarceration) than their White counterparts, these findings suggest that the concentration of ACEs among race/ethnic minority groups may be especially consequential.

Appendix A. Appendix

Table A
Weighted means and frequencies of adverse childhood experiences (ACEs), by child age and race/ethnicity (N = 47,262)

	Child Age			Child Race/Ethnicity				
	0 to 6 years old	7 to 12 years old	13 to 17 years old	White	Black	Hispanic	Other race	Multiracial
Summary measures								
Number of ACEs	0.30	0.60	0.79	0.51	0.72	0.56	0.26	0.70
Any ACE	19.7%	36.2%	45.4%	29.9%	44.9%	34.6%	16.3%	38.1%
Individual ACEs								
Parental divorce or separation	13.8%	28.1%	35.2%	22.3%	34.8%	27.3%	11.1%	27.2%
Parental death	1.2%	3.3%	6.1%	2.6%	6.8%	3.1%	2.4%	3.9%

(continued on next page)

These findings also have a number of implications for future research. First, future research should consider whether parental incarceration is a cause or consequence of other ACEs. If parental incarceration precedes other ACEs, such as parental divorce or violence exposure, then interventions to reduce incarceration rates and target services toward children of incarcerated parents may be important. If parental incarceration stems from other ACEs, such as household member substance problems, then interventions to reduce parental substance use and target services toward children affected by parental substance problems may be important. Second, these findings, in conjunction with other research showing ACEs have deleterious consequences for children's wellbeing (Jimenez, Wade, Lin, Morrow, & Reichman, 2016; Suglia, Duarte, Chambers, & Boynton-Jarrett, 2012), suggest that research on the consequences of parental incarceration for children's health and wellbeing should account for these other ACEs (Murphey & Cooper, 2015). This will allow researchers to disentangle the causal consequences of parental incarceration (examining the extent to which parental incarceration, net of other ACEs, is linked to children's wellbeing). Third, future research should consider how the association between parental incarceration and children's wellbeing varies by exposure to other ACEs (either the number of ACEs experienced or the specific type of ACEs). Finally, incorporating additional indicators of ACEs (such as emotional abuse and sexual abuse), as well as more fine-grained measures of parental incarceration, remains an important direction for future research (Mersky, Janczewski, & Topitzes, 2017).

5. Conclusions

A substantial number of children are exposed to parental incarceration during childhood or adolescence. The concentration of parental incarceration among historically marginalized race/ethnic minority children, poor children, and children living in neighborhoods of concentrated disadvantage mean that children exposed to parental incarceration are an especially vulnerable population. Children exposed to parental incarceration are more likely than their peers to be exposed to many other adverse experiences in childhood, including household member abuse, household member substance problems, and household member mental illness. Given the deleterious consequences of parental incarceration (e.g., Foster & Hagan, 2015), as well as the deleterious and lasting consequences of ACEs more generally (e.g., Jimenez et al., 2016), these findings suggest that children of incarcerated parents are a more vulnerable group than previously considered.

Declarations of interest

None.

Table A (continued)

	Child Age			Child Race/Ethnicity				
	0 to 6 years old	7 to 12 years old	13 to 17 years old	White	Black	Hispanic	Other race	Multiracial
Household member abuse	3.5%	6.0%	8.1%	5.0%	8.9%	5.6%	3.9%	6.9%
Violence exposure	1.4%	3.9%	6.7%	2.6%	6.9%	4.5%	2.5%	6.1%
Household member mental illness	4.8%	9.0%	10.4%	8.8%	6.6%	6.3%	3.1%	12.9%
Household member substance problems	5.2%	9.8%	13.0%	9.5%	7.8%	8.9%	3.1%	12.8%
Parental incarceration	4.9%	9.0%	10.9%	6.2%	15.9%	8.3%	2.6%	12.0%
N	15,820	14,743	16,699	33,527	2,601	5,125	3,152	2,857

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