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Child Physical Abuse and Adult Mental Health: A National Study

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This study characterizes adults who report being physically abused during childhood, and examines associations of reported type and frequency of abuse with adult mental health. Data were derived from the 2000–2001 and 2004–2005 National Epidemiologic Survey on Alcohol and Related Conditions, a large cross-sectional survey of a representative sample ($N = 43,093$) of the U.S. population. Weighted means, frequencies, and odds ratios of sociodemographic correlates and prevalence of psychiatric disorders were computed. Logistic regression models were used to examine the strength of associations between child physical abuse and adult psychiatric disorders adjusted for sociodemographic characteristics, other childhood adversities, and comorbid psychiatric disorders. Child physical abuse was reported by 8% of the sample and was frequently accompanied by other childhood adversities. Child physical abuse was associated with significantly increased adjusted odds ratios (AORs) of a broad range of *DSM-IV* psychiatric disorders (AOR = 1.16–2.28), especially attention-deficit hyperactivity disorder, posttraumatic stress disorder, and bipolar disorder. A dose-response relationship was observed between frequency of abuse and several adult psychiatric disorder groups; higher frequencies of assault were significantly associated with increasing adjusted odds. The long-lasting deleterious effects of child physical abuse underscore the urgency of developing public health policies aimed at early recognition and prevention.

Beyond immediate risks to physical health (DiScala, Sege, Li, & Reece, 2000), child abuse is associated with compromised mental health throughout the life cycle (Dube et al., 2001, 2003). The estimated annual national cost of child abuse exceeds $100 billion (Wang & Holton, 2007). In 2009, U.S. state and local child protective services estimated that 702,000 children were victims of maltreatment (National Child Abuse and Neglect Data System [NCANDS], 2010). The National Survey of Children's Exposure to Violence suggests that this number may be as high as 1 in 10 children (Finkelhor, Turner, Ormrod, & Hamby, 2009).

Child physical abuse (CPA) is the second most common form of child maltreatment (NCANDS, 2010), being reported by 8% of the U.S. adult population (Green et al., 2010). The deleterious effects of CPA on later mental health have been extensively recognized. A history of CPA has been associated with an increased risk of suicide attempts (Dube et al., 2001), emotional and behavioral problems (Flisher et al., 1997; Lansford et al., 2002), and several psychiatric disorders, including major depression, posttraumatic stress disorder (PTSD), conduct disorder, oppositional defiant disorder, agoraphobia, generalized anxiety disorder, and substance use disorders (Flisher et al., 1997; Silverman, Reinherz, & Giaconia, 1996). The interpretation of these findings, however, has been limited by methodological constraints.

The importance of including other types of maltreatment and comorbid psychiatric disorders in analyses of the effect of child maltreatment on mental health to avoid overestimated associations or overly narrow interpretations has been highly underscored (Green et al., 2010). Co-occurring childhood adversities are common and affect 34%–95% of maltreated children (Dong et al., 2004; Edwards, Holden, Felitti, & Anda, 2003). Therefore, little is known regarding whether the impact of CPA on the risk of developing specific psychiatric disorders is independent or mediated by other childhood adversities and comorbid psychiatric disorders. Furthermore, whether the frequency or the severity of CPA contributes to increased risk of psychiatric disorders in adulthood is also unknown. A third question that remains unanswered is whether CPA increases the risk of selected psychiatric disorders or has a nonspecific effect on risk across a wide range of disorders.

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We sought to address these and related important gaps in knowledge by assessing CPA in relation to adult psychiatric morbidity drawing on data from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a large, nationally representative sample of U.S. adults. This survey included psychometrically sound measures of a broad range of psychiatric disorders. In the current study, our specific goals were to (a) assess sociodemographic correlates of adults who reported being physically abused during childhood, (b) examine the effects of different types of CPA and frequency of assault on later mental health, (c) determine the co-occurrence of other childhood adversities in adults with a history of CPA, and (d) investigate associations of CPA with psychiatric disorders.

Method

NESARC Sample

The NESARC drew a nationally representative sample of the U.S. adult population. The NESARC target population was noninstitutionalized individuals aged 18 years and older in the civilian population residing in households and group living quarters including residents of the continental United States, District of Columbia, Alaska, and Hawaii. Blacks, Hispanics, and young adults (18–24 years old) were oversampled.

The survey was conducted in two waves: 2001–2002 and 2004–2005. Wave 1 included 43,093 face-to-face interviews, yielding an overall response rate of 81% (Grant, Dawson, & Hasin, 2001; Grant, Moore, Shepard, & Kaplan, 2003). Wave 2 used similar methods and sought reinterviews with all Wave 1 subjects. Excluding individuals who were ineligible (e.g., deceased), the response rate in Wave 2 was 87% ($n = 34,653$; Grant, Kaplan, Moore, & Kimball, 2007).

Measures

Sociodemographic measures. Sociodemographic measures included age, sex, race-ethnicity, nativity, marital status, education, place of residence (urban or rural area), region of the country, and type of health insurance.

Psychiatric diagnoses. All psychiatric diagnoses were made according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994) using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version (AUDADIS-IV), a reliable and valid diagnostic interview designed to be used by lay professional interviewers (Grant et al., 2001).

Three groups comprised the Axis I diagnoses: (a) substance use disorders (including alcohol abuse and dependence, drug abuse and dependence, and nicotine dependence), (b) mood disorders (including major depressive disorder, dysthymia, and bipolar disorder), and (c) anxiety disorders (including panic disorder, social anxiety disorder, specific phobia, generalized anxiety disorder, and PTSD).

Histories of attention-deficit hyperactivity disorder (ADHD) and conduct disorder were assessed on a lifetime basis. Suicide attempts were assessed only among individuals who screened into the major depressive episode module by reporting having been sad, blue, depressed, or having a period that they did not care about things that they usually enjoyed for at least 2 weeks. In those cases, suicide attempt was computed for those who reported having attempted suicide during that period.

The test-retest reliability of AUDADIS-IV diagnoses range from good to excellent and are comparable to the ones observed in treated samples using the Diagnostic Interview Schedule (DIS), World Health Organization's Composite International Diagnostic Interview (WHO-CIDI) and University of Michigan-Composite International Diagnostic Interview (UM-CIDI; Grant et al., 2003; Ruan et al., 2008).

Child abuse and trauma. In Wave 2 of the NESARC, all respondents were asked about childhood adversities that occurred in their first 17 years of life. All the questions were adapted from the Adverse Childhood Experiences study (ACE study; Dube et al., 2001, 2003) and were originally part of an extensive battery of questions from the Conflict Tactics Scale (Straus, 1979) and the Childhood Trauma Questionnaire (Bernstein et al., 1994). For each question, the response categories assessed were *never, almost never, sometimes, fairly often,* and *very often.*

In accord with the ACE study, CPA was considered present when the respondent reported being pushed, grabbed, shoved, slapped, or hit fairly often or very often; or having been hit so hard that they had marks, bruises or were injured sometimes, fairly often, or very often, by parents or adults living in their homes.

In our analyses, we also incorporated variables for other childhood adversities that have been consistently associated with CPA and psychological distress later in life (Dong et al., 2004; Edwards et al., 2003; Green et al., 2010; Hildyard & Wolfe, 2002). These included (a) history of child sexual abuse and neglect, (b) parental psychopathology (including parental alcohol and drug use, parental mental illness that required hospitalization, parental incarceration, parental suicide, and witnessed domestic violence), and (c) perceived parental support, described elsewhere as emotional neglect when reverse coded (Dube et al., 2003). The questions used to construct each variable are detailed elsewhere (Ruan et al., 2008).

Data Analysis

The NESARC data were weighted to reflect design characteristics of the NESARC and account for oversampling. Adjustment for nonresponse across sociodemographic characteristics and the presence of any lifetime Wave 1 NESARC substance use disorder or other psychiatric disorder was performed at the household and person levels for Wave 2. Weighted data were then adjusted on socioeconomic variables based on the 2000

Table 1

Sociodemographic Characteristics for Those With and Without Physical Abuse as a Child

Variable	CPA ($n = 3,097$)		No CPA ($n = 31,287$)		OR	95% CI
	%	95% CI	%	95% CI		
Sex						
Men	45.77	[43.63, 47.94]	48.13	[47.45, 48.81]	0.91	[0.83, 0.99]
Women[a]	54.23	[52.06, 56.37]	51.87	[51.19, 52.55]	1.00	[1.00, 1.00]
Race/ethnicity						
White[a]	65.94	[62.66, 69.07]	71.45	[68.24, 74.45]	1.00	[1.00, 1.00]
Black	14.69	[12.77, 16.84]	10.70	[9.45, 12.10]	1.49	[1.31, 1.68]
Asian	2.73	[1.91, 3.89]	4.36	[3.43, 5.53]	0.68	[0.52, 0.89]
Native American	4.24	[3.37, 5.31]	2.00	[1.69, 2.37]	2.30	[1.84, 2.86]
Hispanic	12.40	[9.97, 15.32]	11.49	[9.31, 14.11]	1.17	[1.01, 1.35]
Nativity						
US-born[a]	88.08	[85.16, 90.48]	86.06	[83.06, 88.59]	1.00	[1.00, 1.00]
Foreign-born	11.92	[9.52, 14.84]	13.94	[11.41, 16.94]	0.84	[0.71, 0.98]
Marital status						
Married /cohabiting[a]	63.35	[61.32, 65.33]	63.88	[62.86, 64.88]	1.00	[1.00, 1.00]
Widowed / separated / divorced	23.90	[22.24, 25.64]	18.36	[17.81, 18.92]	0.31	[1.18, 1.46]
Never married	12.76	[11.37, 14.29]	17.76	[16.83, 18.73]	0.72	[0.62, 0.84]
Education						
< HS	17.92	[16.09, 19.91]	13.60	[12.73, 14.52]	1.38	[1.21, 1.58]
HS graduate	22.55	[20.58, 24.66]	23.91	[23.00, 24.84]	0.99	[0.88, 1.11]
Some post HS[a]	59.53	[57.13, 61.88]	62.49	[61.31, 63.66]	1.00	[1.00, 1.00]
Urbanicity						
Rural	15.90	[14.03, 17.96]	16.34	[15.27, 17.46]	0.97	[0.85, 1.10]
Urban[a]	84.10	[82.04, 85.97]	83.66	[82.54, 84.73]	1.00	[1.00, 1.00]
Region						
Northwest	18.23	[15.47, 21.36]	17.76	[15.54, 20.22]	1.00	[0.86, 1.17]
Midwest	19.39	[16.45, 22.70]	18.44	[16.36, 20.72]	1.03	[0.88, 1.19]
South	36.49	[32.48, 40.70]	38.54	[35.50, 41.67]	0.92	[0.81, 1.05]
West[a]	25.89	[23.27, 28.68]	25.26	[23.43, 27.19]	1.00	[1.00, 1.00]
Insurance						
Private[a]	70.95	[68.91, 72.90]	78.19	[76.97, 79.36]	1.00	[1.00, 1.00]
Public	15.04	[13.45, 16.79]	10.45	[9.78, 11.16]	1.59	[1.38, 1.83]
None	14.01	[12.53, 15.63]	11.36	[10.57, 12.20]	1.36	[1.17, 1.57]

Note. CPA = Child physical abuse; CI = confidence interval; *OR* = odds ratio; HS = high school.

[a]Reference group.

decennial census to be representative of the United States civilian population (Grant et al., 2007).

Weighted means, frequencies, and odds ratios (ORs) of sociodemographic correlates, and prevalence of lifetime and current psychiatric disorders were computed. Adjusted odds ratios (AORs) derived from multiple logistic regressions with CPA as the predictor variable and each psychiatric disorder as the outcome were calculated using two different models. The first included sociodemographic characteristics and other adverse childhood experiences. The second additionally included number of lifetime psychiatric comorbidities. In addition, dose-response relationships between frequency of different types of CPA and risk of psychiatric disorders were computed. For

these analyses, the response categories *fairly often* and *very often* were collapsed into a single category (*often*) to reduce the number of sparse cells, improve statistical power, and increase stability of the estimates. For all analyses, ORs were considered significant if their 95% CIs did not include 1.0.

Results

Prevalence of CPA and Other Abuse

A history of CPA was reported by 8% of the sample. Child physical abuse was significantly more likely to occur among females than males, U.S.-born individuals than respondents

born elsewhere, and among Native American, Black, and Hispanic individuals relative to non-Hispanic White persons. Respondents with a history of CPA were also more likely to be widowed, separated, or divorced than currently married, to have attained lower rather than higher educational achievement, and to have public rather than private insurance. There were no significant differences regarding the occurrence of CPA among urban or rural populations and between different regions of the United States (see Table 1).

There was a dose-response relationship between frequency of CPA and risk of psychiatric disorder across all examined categories of CPA and groups of disorders. The strongest association was with suicide attempt. The pattern and magnitudes of ORs were similar across less and more severe CPA (see Table 2).

Adults who reported a history of CPA were frequently exposed to child sexual abuse and neglect (79%), and parental psychopathology (76%) before age 18 years. They were significantly more likely to have experienced both adverse events, and reported significantly lower rates of perceived parental support when compared with their non-CPA counterparts (see Table 3).

Lifetime Prevalence of Psychiatric Disorders

A majority of victims of CPA had a lifetime history of at least one psychiatric disorder (84%; $SE = 0.88$). Individuals with CPA had higher overall prevalence of psychiatric disorders and higher rates of suicide attempts than individuals without CPA. With the exception of alcohol abuse and conduct disorder, the results remained significant after including sociodemographic characteristics and other childhood adversities in the model. After additionally including lifetime psychiatric comorbidities, several disorders remained significantly associated with CPA, including in descending order of strength of association: ADHD, PTSD, bipolar disorder, panic disorder, drug abuse, nicotine dependence, generalized anxiety disorder, and major depressive disorder (Table 4).

Discussion

In a large nationally representative sample of adults, we found that 8% of respondents had a history of CPA. It was frequently accompanied by other types of abuse, and independently increased the odds of several psychiatric disorders in adulthood. Our data are consistent with previous studies that have documented high rates of CPA and co-occurrence with other types of abuse (Green et al., 2010). A novel finding of our study, of particular clinical relevance and potential importance for secondary prevention initiatives, was the clear dose-response relationship between frequency of CPA and risk of several psychiatric disorders in adulthood.

This dose-response relationship occurred across a range of types of abuse and adult psychiatric disorder groups. Frequency of abuse may be an important marker of severity (Manly,

Table 2
Associations Between Type and Frequency of Child Physical Abuse and Lifetime Prevalence of Psychiatric Disorders

Type of physical abuse	N	Any mood disorder OR	95% CI	Any anxiety disorder OR	95% CI	Any substance use disorder OR	95% CI	Any suicide attempt OR	95% CI
Push, grab, shove, slap, or hit									
Never	22,572	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]
Almost never	5,793	1.42	[1.26, 1.60]	1.56	[1.42, 1.71]	1.56	[1.42, 1.72]	1.59	[1.26, 2.00]
Sometimes	4,363	2.17	[1.94, 2.42]	2.19	[1.99, 2.41]	1.92	[1.75, 2.12]	2.33	[1.86, 2.92]
Often[a]	1,674	4.45	[3.85, 5.16]	4.68	[4.11, 5.32]	2.73	[2.41, 3.10]	8.60	[6.94, 10.66]
Hit hard enough to have marks or injured									
Never	28,872	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]	1.00	[1.00, 1.00]
Almost never	2,819	2.03	[1.76, 2.34]	1.96	[1.76, 2.19]	1.78	[1.57, 2.01]	2.53	[2.00, 3.20]
Sometimes	1,760	2.85	[2.43, 3.35]	2.79	[2.41, 3.23]	2.13	[1.86, 2.43]	4.58	[3.52, 5.97]
Often[a]	948	4.84	[4.06, 5.77]	5.28	[4.51, 6.18]	2.87	[2.44, 3.38]	9.42	[7.43, 11.95]

Note. CI = Confidence interval; OR = odds ratio.
[a]Categories *fairly often* and *very often* collapsed into the single category.

Table 3

Other Childhood Adversities Among Individuals With and Without History of Child Physical Abuse

Variable	CPA ($n = 3,097$)		Non-CPA ($n = 31,287$)			
	%	95% CI	%	95% CI	*OR*	95% CI
History of child sexual abuse and neglect	79.41	[77.51, 81.20]	31.27	[30.41, 32.15]	8.48	[7.55, 9.51]
Parental psychopathology[a]	76.25	[74.30, 78.10]	28.98	[28.13, 29.83]	7.87	[7.05, 8.78]
Perceived family support	89.55	[88.17, 90.78]	98.59	[98.32, 98.82]	0.12	[0.10, 0.15]

Note. CPA = child physical abuse; CI = confidence interval; *OR* = odds ratio.

[a]Parental psychopathology included parental alcohol and drug use, parental mental illness that required hospitalization, parental incarceration, parental suicide and witnessed domestic violence.

Cicchetti, & Barnett, 1994). It may also indicate a more disrupted or disturbed environment that includes an increased risk of other forms of abuse (Bolger & Patterson, 2001). In terms of enduring consequences, the experience of physical abuse per se may be more important than the specific type of physical abuse (McGee, Wolfe, & Wilson, 1997), leading different types of assault to generate similar stress reactions. Even types of physical abuse that seem to be less severe from a physical perspective may, if they occur repeatedly, have substantial adverse consequences on later mental health.

In accord with the literature (Dong et al., 2004; Edwards et al., 2003), a majority of CPA victims also reported childhood sexual abuse, neglect, or parental psychopathology; and comparatively few received parental support. Although the literature has suggested a subadditive effect for childhood adversities (Green et al., 2010), even after adjusting for other childhood adversities, CPA was significantly associated with several psychiatric disorders, suggesting an independent effect of CPA on mental health. Chronic stress associated with CPA may disturb key developmental stages and put the child in a vicious cycle of social incompetence, lack of support, risky health behaviors, revictimization, and cognitive impairment (Cicchetti & Toth, 2005).

Consistent with previous studies (Green et al., 2010), the loss of some significant results after adjusting for psychiatric comorbidity suggests that part of the effect of CPA on mental health is nonspecific and mediated through other disorders. These findings are in accord with the hypothesis that the association between maltreatment and psychiatric disorders may be mediated through latent internalizing and externalizing dimensions rather than through specific disorders (Keyes et al., 2011). Furthermore, the stronger associations, in both adjusted models, of CPA with ADHD, PTSD, bipolar disorder, panic disorder, nicotine dependence, generalized anxiety disorder, drug abuse, and major depressive disorder, might mean a primary relationship and raises the possibility that these disorders may in some respects share common etiological pathways. Candidate common pathological pathways could include impaired development of the hippocampus, which is crucial for learning and memory consolidation; disrupted functioning of prefrontal cortex inhibitory activity, which is essential for behavioral regula-

tion; and increased activity of amygdala-related circuitry, which is involved in rapid emotional response (Arnsten, 2009; Lupien et al., 1998; Lupien, McEwen, Gunnar, & Heim, 2009). Animal and human studies have demonstrated the deleterious effects of stress on these structures during sensitive developmental periods, such as prenatal period, early childhood, and adolescence (Andersen & Teicher, 2008). These long-term adverse effects of CPA could be mediated by glucocorticoid activity on steroid receptors expressed throughout the brain. Glucocorticoids exert an important role on brain maturation by initiating terminal maturation, contributing to remodeling of axons and dendrites and influencing cell survival (Meyer, 1983). Thus, the deleterious effect of chronic stress may be at least in part a consequence of the effect of physiological mechanisms of stress response that may influence other biological, psychological, and social-contextual aspects of normal and abnormal development.

If these alterations in the central nervous system actually occur, they could lead to deficits in attention regulation, impulsive behavior, abnormal fear response, and memory consolidation, which could increase individual vulnerability to psychiatric disorders (Arnsten, 2009). The susceptibility to a specific psychiatric disorder may be then influenced by the interaction of several variables, including timing of abuse, sex and gender, parenting quality, and social support (Lupien et al., 2009). Genetic features may also modulate children's exposure to environmental insults or their sensitivity to the insults once they are experienced. Gene–environment interaction studies have linked genetic characteristics and childhood adversities with ADHD (Laucht et al., 2007), PTSD (Nelson et al., 2009), externalizing disorders (Hicks, South, Dirago, Iacono, & McGue, 2009), and major depression (Caspi et al., 2003). Some of these results, however, are still controversial as suggested by a recent meta-analysis that found no significant association between the serotonin transporter gene 5-HTTLPR, stressful life events, and risk for depression (Risch et al., 2009). Future studies are still necessary to replicate these findings.

The stronger association of CPA with ADHD than with other Axis I psychiatric disorders could be related to the early onset of symptoms and highlights the impact of CPA during childhood. It could also be due to a bidirectional relationship, in which ADHD may contribute to stressful home environments that in

Table 4
Associations Between Child Physical Abuse and Lifetime Prevalence of Psychiatric Disorders

Variable	CPA (n = 3,097)		No CPA (n = 31,287)		Unadjusted odds ratio		Adjusted for sociodemographic characteristics		Adjusted for sociodemographic characteristics and psychiatric comorbidities	
	%	SE	%	SE	OR	95% CI	AOR[a]	95%CI	AOR[b]	95% CI
Any Axis I disorder	83.85	0.88	61.44	0.71	3.26	[2.85, 3.73]	2.06	[1.78, 2.38]	2.06	[0.78, 2.38]
Any substance disorders	62.50	1.29	43.69	0.78	2.15	[1.95, 2.37]	1.61	[1.44, 1.80]	1.33	[1.19, 1.49]
Nicotine dependence	38.42	1.19	21.80	0.51	2.24	[2.04, 2.46]	1.65	[1.49, 1.84]	1.22	[1.09, 1.37]
Any alcohol use disorder	47.04	1.19	33.50	0.76	1.76	[1.60, 1.94]	1.40	[1.26, 1.56]	1.02	[0.91, 1.14]
Alcohol abuse	21.40	0.96	19.14	0.52	1.15	[1.03, 1.29]	1.02	[0.91, 1.15]	1.08	[0.96, 1.22]
Alcohol dependence	25.65	0.99	14.36	0.38	2.06	[1.85, 2.28]	1.54	[1.37, 1.73]	1.13	[0.99, 1.29]
Any drug use disorder	24.27	1.08	10.92	0.33	2.61	[2.33, 2.93]	1.79	[1.57, 2.05]	1.24	[1.07, 1.44]
Drug abuse	19.97	0.98	9.28	0.29	2.44	[2.16, 2.76]	1.74	[1.51, 2.01]	1.24	[1.07, 1.45]
Drug dependence	8.66	0.68	2.90	0.16	3.17	[2.64, 3.81]	1.79	[1.46, 2.18]	1.02	[0.81, 1.28]
Any mood disorder	46.84	1.12	22.04	0.39	3.12	[2.83, 3.43]	1.96	[1.76, 2.19]	1.41	[1.25, 1.60]
MDD	27.53	1.11	15.46	0.30	2.08	[1.85, 2.33]	1.46	[1.27, 1.66]	1.16	[1.00, 1.34]
Dysthymia	7.03	0.54	3.11	0.12	2.36	[1.95, 2.85]	1.47	[1.16, 1.85]	0.99	[0.77, 1.28]
Bipolar disorder	18.30	0.87	5.89	0.19	3.58	[3.14, 4.07]	2.07	[1.79, 2.39]	1.48	[1.26, 1.74]
Any anxiety disorder	52.90	1.11	27.40	0.51	2.98	[2.70, 3.28]	1.99	[1.78, 2.22]	1.56	[1.38, 1.77]
Panic disorder	17.33	0.85	6.52	0.20	3.01	[2.65, 3.42]	1.98	[1.71, 2.29]	1.30	[1.08, 1.56]
Social anxiety disorder	13.81	0.78	6.41	0.22	2.34	[2.02, 2.70]	1.46	[1.25, 1.71]	0.90	[0.75, 1.07]
Specific phobia	25.18	1.01	14.27	0.37	2.02	[1.81, 2.26]	1.49	[1.31, 1.69]	1.04	[0.91, 1.20]
GAD	18.24	0.92	6.72	0.22	3.10	[2.71, 3.54]	1.96	[1.66, 2.30]	1.25	[1.03, 1.53]
PTSD	25.98	0.99	8.05	0.23	4.01	[3.54, 4.54]	2.08	[1.80, 2.41]	1.55	[1.32, 1.84]
Pathological gambling	1.10	0.22	0.36	0.04	3.11	[1.97, 4.92]	2.22	[1.31, 3.76]	1.47	[0.83, 2.61]
Psychotic disorder	6.34	0.54	2.91	0.18	2.26	[1.83, 2.79]	1.69	[1.35, 2.13]	1.27	[1.00, 1.61]
ADHD	9.35	0.73	1.90	0.10	5.32	[4.36, 6.50]	3.09	[2.40, 3.96]	2.28	[1.75, 2.97]
Conduct disorder	1.89	0.35	0.96	0.08	1.99	[1.34, 2.94]	1.37	[0.91, 2.07]	1.19	[0.77, 1.83]
Suicide attempt	9.95	0.67	2.08	0.10	5.21	[4.35, 6.23]	2.48	[2.03, 3.02]	1.57	[1.26, 1.96]

Note. CPA = Child physical abuse; CI = confidence interval; OR = odds ratio; AOR = adjusted odds ratio; MDD = major depressive disorder; GAD = generalized anxiety disorder; PTSD = posttraumatic stress disorder; ADHD = attention-deficit hyperactivity disorder.

[a] Adjusted for age, sex, race-ethnicity, nativity, marital status, education, place of residence, region of the country, health insurance, history of child sexual abuse and neglect, parental psychopathology, and perceived family support. [b] Adjusted for age, sex, race-ethnicity, nativity, marital status, education, place of residence, region of the country, health insurance, history of child sexual abuse and neglect, parental psychopathology, perceived family support, and lifetime psychiatric comorbidities.

turn provoke chronic use of violence and later onset of other psychiatric disorders. Lower self-confidence, less warmth, and use of physical discipline have been described in parents of children with ADHD (Alizadeh, Applequist, & Coolidge, 2007). These findings underscore the importance of providing support not only to the child with ADHD but also to the parents. There is some evidence that parenting quality may affect the course of inattention and hyperactive/impulsivity symptoms of children with ADHD (Linares et al., 2010).

In comparison to previous data, we found a lower prevalence of ADHD in both CPA and non-CPA populations. These results may have occurred due to underrecognition of the symptoms by the respondents during their childhood. Studies based on adolescents' self-report have also observed lower prevalence of ADHD when compared to parent and teacher evaluations (Barkley, Anastopoulos, Guevremont, & Fletcher, 1991).

Although our study cannot provide definite proof of the independent effect of CPA on mental health, it has been suggested that different forms of child maltreatment may affect the central nervous system differently. Some neuroimaging studies have found that different forms of abuse affect different regions of the brain (Choi, Jeong, Rohan, Polcari, & Teicher, 2009; Tomoda et al., 2009). Future studies comparing different types of child maltreatment may help us clarify this issue.

Potential long-term adverse effects of CPA support public health policies aimed at early recognition and prevention. Consistent data regarding the recognition of CPA and existing screening tools, however, are still lacking. According to a recent meta-analysis, improving the clinical screening is likely to be more useful than the use of protocols, except where pediatrics expertise is minimal (Woodman et al., 2008). Additionally, recognizing signs and symptoms of traumatic stress is also essential to identify abused children (Stirling & Amaya-Jackson, 2008). Few CPA victims look for medical care due to injuries directly related to physical aggression. The need to train child health care professionals on child maltreatment (Dubowitz, Feigelman, Lane, & Kim, 2009) and mental health (American Academy of Pediatrics, 2009) is widely acknowledged. Partnership between pediatricians, mental health specialists, social workers, and other professionals that deal directly with children may have positive effects (Dubowitz et al., 2009). Furthermore, recognizing adverse childhood experiences as a complex event may be a key aspect of devising comprehensive interventions to prevent their occurrence and limit their impact.

Several methodological limitations constrain the interpretation of our findings. First, the retrospective assessment of CPA may result in recall bias. Because false-negatives may be more common than false-positives, however, reported associations between CPA and adult psychiatric disorder may be biased towards the null (Hardt & Rutter, 2004), but we cannot establish that for our data. Second, the cross-sectional design limits the validity of causal inferences regarding the effects of CPA on mental health. Third, although we adjusted for several sociodemographic characteristics and other types of child abuse, some findings may be attributed to unmeasured intervening variables such as age of abuse, psychological abuse surrounding CPA, and other forms of violence. Fourth, suicide attempts were assessed only among those who screened into the major depressive episode module. The number of individuals who do not screen into the depression section in the AUDADIS and report a suicide attempt is very low, however, and is therefore unlikely to change the pattern of results (Baca-Garcia et al., 2008).

Despite these limitations, our results suggest that, in addition to a nonspecific adverse effect on mental health, CPA has an independent effect on the risk of several psychiatric disorders, especially ADHD, PTSD, and bipolar disorder. The wide range of psychiatric disorders associated with CPA emphasizes the importance of a comprehensive psychiatric assessment of CPA victims and the need to screen for CPA in individuals with psychiatric disorders. Preventing child physical abuse is an essential step to reduce childhood suffering and improve adult mental health.

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