Olivia Revels-Strother [ID]
E,F
Michaela Quaschnick [ID]
E,F
Tristan Miller [ID]
E,F
Alan King [ID]
A,B,C,D,E,F

Childhood illnesses as risk indicators of adult mental health symptomatology

BACKGROUND

Links between childhood illnesses such as acne and migraines and co-occurring or subsequent mental health symptomatology are not well understood. Early medical histories have seldom been examined as adversity risk indicators.

PARTICIPANTS AND PROCEDURE

This survey analysis of college students (N = 2,636) examined links between four forms of childhood illness (migraine headaches, acne, asthma, and enuresis) and adult mental health symptomatology.

RESULTS

Four medical conditions often diagnosed in childhood or adolescence were prevalent enough in the college sample to test as risk indicators for lifetime mental health concerns. All four medical illnesses significantly raised the odds (ORM = 2.04) of lifetime depressive and anxiety disorder diagnoses. Current symptomatology was also raised for all but one (enuresis) medical condition. These effects were found after controlling for respondent age and various forms of childhood maltreatment (sexual, physical, and/or emotional abuse).

CONCLUSIONS

Heightened awareness of medical histories during clinical intake assessments seems warranted. Adversity researchers might also consider the inclusion of childhood medical conditions as future maladjustment risk indicators. Study limitations included the cross-sectional design and unclearly specified timing of the self-reported psychological and health recollections. The role of modulating variables such as gender, ethnicity, socioeconomic status, and family climate in physical-mental health relationships warrants continued focus.

KEY WORDS

asthma; enuresis; acne; childhood adversity; migraine headaches

Olivia
Revels-Strother,
Michaela
Quaschnick,
Tristan Miller,
Alan King

BACKGROUND

Childhood adversities such as maltreatment, emotional/physical neglect, and household dysfunctions such as intimate partner violence, substance abuse, and family member mental illness or incarceration have been the primary subject of a broad ACE (adverse childhood experiences) empirical literature. ACE counts have been associated with many mental health conditions (Dube et al., 2001; van der Feltz-Cornelis et al., 2019), with one meta-analysis (Petruccelli et al., 2019) suggesting graded relationships with maladaptive outcomes that tend to plateau after four or more adversity exposures (Dong et al., 2004; Hillis et al., 2000; van der Feltz-Cornelis et al., 2019). ACE counts as low as two have been associated (odds ratios [ORs] of 2.0 to 5.0) with depression and anxiety symptomatology (King, 2021). Even unitary exposures (Negriff, 2020) can portend later forms of psychosocial maladjustment (Bright et al., 2016; Mersky et al., 2013; Negriff, 2020).

ACE research has been expanded more recently to include analyses of predictor variables such as exposure to family suicidality, death, physical disability, and/or single, teen, foster, or homeless parenting (King, 2020a). The concept of childhood adversity can be extended logically to any number of developmental challenges, including physical health history. Physical health conditions have not been examined traditionally as risk indicators of later psychosocial maladjustment in the adversity literature. This study aimed to establish these connections while controlling for variations related to three major ACEs: childhood sexual, physical, and emotional abuse, which are strongly associated with adult maladjustment. While the timings of the medical adversities in this sample were unclearly specified, the combination of medical and psychological factors in this analysis of adult emotional well-being would appear to be original in the ACE literature. A summary of evidence implicating four forms of childhood illness in the genesis of adult mental health symptomatology will now follow.

MIGRAINE HEADACHES

Migraine headaches represent a primary medical illness unattributable to other medical conditions (National Institute of Neurological Disorders and Stroke, 2023). Migraine and tension headaches vary in pain intensity, duration, and frequency as the most common medical complaints in children (Ozge et al., 2011). Migraines can last from thirty minutes to several hours, with the effects sometimes lasting days (Cleveland Clinic, 2023). Common migraine symptoms include sensitivity to light and odors, which disrupt the lives of up to 60% of child sufferers (Genizi et al., 2021; Ozge et al., 2011). Chronic migraine symptomatology often disrupts social activity including romantic attachments, educational attainment, and even adult socioeconomic status (Cleveland Clinic, 2023; Murray et al., 2020). Children with migraines were even found to have similarly low perceived quality of life as that among children diagnosed with medical conditions as burdensome as arthritis and cancer (Powers et al., 2003).

Evidence of migraine mental health sequelae appears to be compelling. Sufferers have higher prevalence rates for depression and anxiety (Orr et al., 2017), with neurobiological links between mood and migraine disturbances (Anxiety & Depression Association of America, 2022; Ozge et al., 2011). Migraine sufferers have been shown to be 5.8 times more likely to develop depression (Petrarca, 2022). These effects often appear to be long-lasting. One survey study suggested that childhood migraines raised the odds (OR = 1.41) of adult psychiatric morbidity (Fearon & Hotopf, 2001). The psychosocial impact of migraine headaches appears to be potentially far-reaching.

ACNE

Childhood and adolescent acne vulgaris can have mild, moderate, or severe manifestations (Dawson & Dellavelle, 2013). Cases of mild acne are localized to the face, include some non-inflammatory papules and pustules, and no more than a few inflammatory lesions. Cases of moderate acne have a higher number of papules and pustules with additional symptoms of truncal disease. Acne is considered severe when new symptoms of nodules, cysts, and lesions emerge (Dawson & Dellavelle, 2013).

Acne vulgaris affects 9.4% of the world's population, with 80 to 85% between the ages of 12 and 25 (Hammill & Vaillancourt, 2023). Half of all adolescents diagnosed with acne experience symptoms into adulthood (Dawson & Dellavelle, 2013). Long-term treatment may be required with permanent scarring on the face and other areas. Acne may be a cause of embarrassment, humiliation, and self-consciousness, with anxiety, depression, and lower self-esteem associated with its features (Schachner et al., 2023; Tan et al., 2022). Acne has been linked to self-consciousness and negative self-imagine in women (Hassan et al., 2009). One large (*N* = 9,567) survey study of high school sophomores (Dalgard et al., 2008) found higher odds of low self-worth among boys (OR = 1.88) and girls (OR = 2.07). Emotional difficulties often follow even milder cases of acne (Bowe et al., 2011; Tan et al., 2022). Depression (Samuels et al., 2020) and suicidal thoughts and acts (Dunn et al., 2011; Purvis et al., 2006) often parallel acne severity. One analysis identified depressive symptomatology in 51% and 20% of adolescent males

and females with acne (Dalgard et al., 2008). These data suggest the persistence of psychological effects secondary to acne into adulthood.

ASTHMA

Asthma is a chronic lung disease that affects the ability to breathe by causing inflammation of the airways (Schwartz et al., 2023). During an asthma attack, the muscles surrounding the airways tighten, restricting them, and lessening the amount of air that can pass through. Asthma attacks are triggered by allergens such as tobacco smoke, exercise, and strong emotions (Schwartz et al., 2023). Some common asthma symptoms in children include chest tightness, dark under-eye bags, and irritability. Diagnosis involves assessment of a child's lungs with a stethoscope and use of a peak flow meter (Schwartz et al., 2023). The peak flow meter is a device that assesses how well a child can blow air out of their lungs. Chest X-rays and lung function tests may also be ordered by a medical doctor to assess a child (Schwartz et al., 2023). Treatment can range from symptom monitoring to pharmaceuticals depending on the severity of the illness.

Asthma is a leading chronic disease in children (Ferrante & La Grutta, 2018). In the United States, there are 4.5 million children under the age of 18 with asthma (National Center for Health Statistics, 2023). There is an estimated 50% of children with asthma for whom the disease is not controlled (Centers for Disease Control and Prevention, 2019). For these children, asthma is the leading cause of school absence and hospital visits (Schwartz et al., 2023). It also impairs levels of physical activity and self-esteem (Clark et al., 1980). School absences, decreased physical activity, and low self-esteem can negatively impact child mental health, with anxiety and depression often the result. There is a strong association between asthma control and perceived quality of life (Correia de Sousa, 2013; Luyster et al., 2012; Siroux et al., 2008; Urrutia et al., 2012).

One study (Richardson et al., 2006) examined relationships between asthma severity and anxiety and depression symptomatology. A telephone survey of 767 adolescents (aged 11 to 17) with asthma was conducted using the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and the modified Child Health Status-Asthma questionnaire. Asthma symptoms over the prior two weeks were significantly more common among adolescents with an anxiety or depressive disorder. A different analysis (Sundbom et al., 2015) examined the relationship of asthma control, insomnia, anxiety, and depression with the quality of life of 10- to 35-year-old asthmatics in Swedish primary and specialist care facilities. The Asthma Control Test (ACT) was used to classify participants' asthma as uncontrolled, well controlled,

or totally controlled. Anxiety and depression symptoms (the Hospital Anxiety and Depression Scale) were significantly higher among the adolescent (ages 12 to 17, $n = 149$) than adult (ages 18 to 34, $n = 220$) asthmatics, and Asthma Quality of Life scores were correlated significantly with ACT, insomnia, anxiety, and depression scores in both cohorts.

A meta-analysis (Lu et al., 2012) examined depressive and anxiety symptomatology in large samples of asthmatic ($N = 3546$) and healthy ($N = 24884$) adolescents. Asthmatic adolescents were at higher risk of developing both depression (pooled OR = 2.09, 95% CI [1.65; 2.64], $p < .001$) and anxiety (pooled OR = 1.83, 95% CI [1.63; 2.07], $p < .001$) symptomatology. Asthma studies continue to explore the developmental impact of asthma on mental health symptomatology over the course of the illness.

ENURESIS

Enuresis is the repeated (at least twice a week for three consecutive months) voiding of urine in inappropriate places (DSM-5; American Psychiatric Association, 2013). It is a common medical condition that cannot be diagnosed before age 5 when most other children (80 to 90%) gain urinary control. Enuresis can be differentiated into nocturnal (night incontinence), diurnal (day incontinence), primary (not yet mastered), and secondary (relapsed) forms. The DSM-5 described risk factors for the etiology of the condition. Some of these included developmental delays, lax toilet training, reduced functional bladder capacity, psychosocial stress, and heritability (paternal OR = 10.1; maternal OR = 3.6). Mental health symptomatology is believed to arise within a subset of children who remain incontinent for extended periods of later childhood and early adolescence. While empirical data have been limited, emotional distress appears to serve as both a cause and effect of chronic urinary incontinence.

Enuresis has been shown to correlate negatively with perceived quality of life among 100 child patients and healthy controls (Üçer & Gümüş, 2013). Significant differences were found in Pediatric Quality of Life Inventory ($p = .001$), Depression Scale for Children ($p < .001$), and Pittsburgh Sleep Quality Index ($p < .001$) scores. Relationships between mood and sleep duration/quality warrant special attention since chronic disruptions have been shown (Greene et al., 2014) to elevate the risk (OR = 1.9) of depression later in life. Korean survey data (Baek et al., 2013) showed associations between chronic nocturnal enuresis and depression symptoms ($p = .003$). The emotional sequelae of enuresis appear to involve chronic uncontrolled incontinence extending into adolescence or even adulthood. Shame and embarrassment often accompany expression of the condition.

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ANALYTIC STRATEGY

Retrospective self-reports of childhood sexual, physical, and emotional abuse will be surveyed along with medical histories. Lifetime psychiatric diagnoses and current emotional symptomatology will be recorded as criterion measures. Links will be examined between lifetime medical and psychiatric histories with control of variance associated with self-report childhood maltreatment. Prevalence rate differences in these self-reported medical diagnoses will be compared to diagnostic estimates reported in the United States general population. These comparisons were designed to show rough similarities in self-reported (college) and actual (general public) diagnostic prevalence for the four target conditions.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

Archival data from a psychology department participant pool (N = 2,635) of undergraduate respondents compensated through course extra credit were examined. The survey was accessed through the SONA Systems over a five-year period from 2013 to 2018. The project was IRB-approved with informed consent required for all respondents. Subsets of this respondent pool were examined in prior studies (Kidder & King, 2022; King & Russell, 2017, 2019; King et al., 2017a, b, 2018, 2019a, b; Krumm et al., 2015; Norton-Baker et al., 2019) of variable relationships that extended beyond the medical sequelae of present focus. The sample varied in sex (75.7%, women; 24.3%, men), age (M = 20.04, SD = 3.90, range = 18-55), and ethnicity (White 89.2%, African American 2.5%, Hispanic 1.5%, Asian 2.0%, American Indian 1.7%, Multi-Racial 1.7%, and Other 1.4%). This Midwest college sample may have included students of international origin.

MEASURES

Psychiatric diagnostic count (PsycDiag). A psychiatric diagnostic panel was used to determine lifetime diagnoses for five major mood and anxiety disorders. Respondents were asked separate dichotomized questions about their history of psychotherapy, psychiatric hospitalization, and/or suicide attempt(s).

Reliability subsample. A subset of respondents (N = 131) completed the psychiatric diagnosis panel on two separate occasions for the purposes of generating test-retest reliability estimates. Retest intervals varied for the 73.6% of the sample who completed the testing both times (Table 1). This retest sample was represented primarily by young adult (M_{age} = 20.94, SD = 5.33, range = 18-57) women (87.4%) of non-minority ethnicity (White 85.9%, African American 1.0%, Asian American 1.5%, Hispanic 5.1%, Native American 2.1%, Biracial 2.3%, Other 2.1%).

Medical diagnostic count (MedDiags). The selected diagnosis clusters were designed to form a representative list of common conditions. The medical diagnostic panel asked respondents about past "health concerns": "Have you been diagnosed with any of the following medical conditions (leave item blank if answer is no or item is not applicable)?". A total of 18 health conditions were selected for inclusion, and 11 were represented (Rowley, 2011) in the 25 most common non-psychiatric International Classification of Diseases (ICD-10) diagnoses. Several additions were made to cover relatively common medical conditions among children and adolescents (enuresis, acne, asthma, and migraine headaches) associated with potential social stigma. MedDiags was a variable calculated as the total number of medical diagnoses identified by the respondent. The exact wording for these medical items in the health concerns panel was as follows: *cancer or tumor (malignant); heart disease, hypertension; concussions (multiple); migraine headaches; seizures; chronic back pain; fibromyalgia, HIV/*

Table 1

Descriptive statistics for maltreatment indicators

Measures	Label	α	M	SD	Range
Childhood sexual abuse	CSA	.95	0.76	2.23	0-24
Childhood physical abuse	CPA	.87	1.66	9.85	0-104
Childhood emotional abuse	CEA	.78	6.92	13.31	0-104
Psychiatric diagnostic count	PsycDiag	.57	0.33	0.74	0-3
Active depression symptoms	DEPR	.92	6.91	8.49	0-48
Active anxiety symptoms	ANX	.94	6.26	9.11	0-52
Buss-Perry Trait anger	ANG	.84	13.71	4.97	7-34

Note. N = 2,635.

AIDS; diabetes; asthma; arthritis; ulcer; irritable bowel syndrome; acne; liver damage or disease; kidney stones; and/or bed wetting in childhood.

This analysis relied on self-reported medical diagnoses for up to 18 different health maladies. The initial distribution of self-reported diagnoses in this college sample ($M = 0.98$, $SD = 1.26$, range = 0-18, skewness = 3.0) established that a subset of students represented a disproportionate number of diagnoses. Best-practice recommendations (Aguinis et al., 2013) were followed to exclude outliers who scored plus or minus 2.24 standard deviations from the distribution mean (> 3.8 diagnoses, $n = 105$). The descriptive statistics presented above were calculated after these outlier exclusions. This final sample reported a total of 0 (46.6%), 1 (31.5%), 2 (15.3%), or 3 (6.6%) medical diagnoses. Table 2 shows differences between sample and United States lifetime illness prevalence estimates using observer-expected single sample proportion tests (Fleiss et al., 2003). Sample prevalence rates were significantly lower than population estimates for most medical diagnoses.

Childhood sexual abuse (CSA). This study relied on the CSA inventory (Barnett et al., 1993) made available by the Consortium of Longitudinal Studies on Child Abuse and Neglect (LONGSCAN) project coordinated at the University of North Carolina. CSA was operationalized as unwelcome attempted or completed acts of sexual victimization prior to age 16 from any perpetration source (Barnett et al., 1993). The CSA survey items were originally used in longitudinal interviews of child sexual abuse victims. The wording of some items in this study were modified to sound more natural to adult survey respondents (i.e., "genitalia" instead of "sexual parts"; "rape" in place of "put a part of his body inside your private parts". One sample item was worded as follows: "Has anyone ever put their mouth on your genitalia or made you put your mouth on their genitalia?"). Separate scores were generated for childhood (prior to age 13) and adolescent (between ages 13 and 16) victimization using the 11-item indices and a four-point frequency index (0 – *never*, 1 – *once*, 2 – *twice*, 3 – *multiple*). A total CSA score was calculated from

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Table 2

College and national medical condition prevalence rates and mental health correlates

Medical condition	National prevalence	College sample	Psychiatric diagnosis or treatment odds ratios				
			DEPg	ANXg	SUICg	HOSPg	TXg
Migraine	15.5%[a]	376 (14.3%)	**2.85***	**2.33***	**1.56**	1.58	1.43
Acne	**17.0%[e]**	692 (26.3%)	**2.00***	**1.29***	1.18	1.30	**1.56**
Asthma	**8.3%[a]**	372 (14.1%)	**2.07***	**1.55**	1.22	1.09	1.02
Enuresis	**5.0%[f]**	63 (2.4%)	**2.49***	**1.76***	**2.34**	1.95	**2.84**
Cancer	**9.4%[a]**	34 (1.3%)					
Hypertension	**33.2%[a]**	40 (1.5%)					
Diabetes	**8.8%[a]**	20 (0.8%)					
Ulcer	**5.9%[a]**	44 (1.7%)					
Kidney stones	**8.8%[b]**	37 (1.4%)					
Liver disease	**1.7%[a]**	3 (0.1%)					
Concussions	**5.5%[c]**	202 (7.7%)					
Heart disease	**5.6%[a]**	21 (0.8%)					
Seizure disorder	1.2%[a]	27 (1.0%)					
Back pain	**13.1%[d]**	105 (4.0%)					
Fibromyalgia	**2.0%[a]**	5 (0.2%)					
Arthritis	**21.9%[a]**	43 (1.6%)					
HIV/AIDS	0.3%[a]	6 (0.2%)					

Note. United States epidemiology estimates were derived from the following sources: [a]Centers for Disease Control and Prevention, 2019; [b]Scales et al., 2012; [c]Veliz et al., 2017; [d]Shmagel et al., 2016; [e]Bickers et al., 2006; [f]American Psychiatric Association, 2013. Bolded prevalence rates differed significantly from the college sample estimates. Criterion correlates were derived from binary self-reports for lifetime mental health history (DEPg – major depression; ANXg – generalized anxiety; SUICg – prior suicide attempt; HOSPg – prior psychiatric hospitalization; TXg – prior psychotherapy). $N = 2{,}635$. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

the two recording periods. The CSA index has been linked to different maladjustment indicators (King, 2020a, b; King et al., 2018, 2019b; King & Russell, 2017; Mangold & King, 2021; Norton-Baker et al., 2019; Pocknell & King, 2019, 2020) with internal consistency established in each analysis.

Childhood physical abuse (CPA). The Violent Experiences Questionnaire-Revised (VEQ-R; King & Russell, 2017) provided retrospective, self-report screening indices for 12 different possible forms of child and adolescent maltreatment (including parental physical abuse, sibling physical abuse, domestic violence exposure, peer bullying, corporal punishment, and four factor "hostility" scores). VEQ-R scores indicate the number of days per year an act in the index group occurred during a 12-year (ages 5 to 16) recording period. The score for each index should be interpreted as the number of days per year a specified type of act occurred during the respective four-year period. Scores on each VEQ-R index can range from 0 to 104. Childhood physical abuse is a core index with a well-defined index window (physical acts with or without physical injury: pushing, shoving, shaking, striking, kicking, punching, beating, burning, or use of a weapon to inflict pain or injury) directly inflicted by a parent or stepparent.

Childhood emotional abuse (CEA). The VEQ-R (King & Russell, 2017) provided a measure of family emotional abuse in the form of exposure to acts of parental or sibling yelling, cursing, and/or threats of physical violence directed toward the respondent or between parents prior to age 16. CEA scores do not include acts of actual physical violence.

Active depression and anxiety symptoms. The depression symptom identification relied on a customized survey of the 12 primary DSM-5 criteria for major depression (DEPR). The question was asked: "Have you experienced any of these depression symp-

toms within the past two weeks?". Anxiety symptom (ANX) identification relied on a customized survey of the 13 primary DSM-5 criteria used to define panic attacks. The following question was asked: "Have you experienced any of these panic symptoms within the past year (rate symptom only if it emerged quickly and peaked within ten minutes)?". Both indices relied on a five-point metric with ratings ranging from 0 (*symptom not present*) to 5 (*present daily with significant distress or impairment*). Scores ranged from 0 to 60 (depression) or 75 (anxiety).

Buss-Perry Aggression Questionnaire (BPAQ). The BPAQ (Buss & Perry, 1992) is a 29-item Likert measure segregated into four subscales (Physical aggression, Verbal aggression, Trait anger, Trait hostility). BPAQ subscale reliabilities (ranging from .72 to .89) have been established previously (Buss & Perry, 1992; Buss & Warren, 2000), with BPAQ scores linked extensively in the literature to angry and aggressive behavior (Archer & Webb, 2006; Gerevich et al., 2007).

RESULTS

Criterion and covariate measure descriptive statistics are presented in Table 1. Test-retest reliability data for the self-reported psychiatric diagnoses are presented in Table 3. Four medical conditions often diagnosed in childhood or adolescence were prevalent enough in the college sample to test as risk indicators for lifetime mental health concerns (Table 2). The MedDiags count was associated with odds ratios for lifetime mental health conditions and treatments. The odds of a lifetime major depression (> 0, OR = 3.35, $p < .001$; > 1, OR = 3.71, $p < .001$; > 2, OR = 5.37, $p < .001$) or anxiety disorder (> 0, OR = 1.88, $p < .001$; > 1, OR = 2.49, $p < .001$; > 2, OR = 2.95, $p < .001$) diagnosis

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Table 3

Psychiatric diagnostic history test-retest reliabilities in a sample subset

Diagnoses	Two-week retest (7-14 days) n = 80		Extended retest (15 to 78 days) n = 34		Total retest (2 to 78 days) N = 131	
	κ (SE)	Prev	κ (SE)	Prev	κ (SE)	Prev
Major depression	.90 (.06)	26.3%	1.00 (0)	14.7%	.91 (.04)	22.3%
Bipolar disorder	1.00 (0)	5.1%	nc	2.9%	.89 (.11)	3.1%
Generalized anxiety	.92 (.05)	34.6%	.84 (.11)	23.5%	.91 (.04)	30.8%
Post-traumatic stress disorder	.93 (.07)	8.8%	nc	0%	.83 (.10)	6.1%
Panic disorder	.39 (.27)	5.0%	.79 (.21)	5.9%	.60 (.16)	6.1%

Note. Retest intervals in days were as follows for the three cohorts: total (*M* = 12.6, *SD* = 9.0, range = 2-78; *N* = 131); two-week (*M* = 10.9, *SD* = 2.5, range = 7-14; *n* = 80); extended (*M* = 21.1, *SD* = 13.3, range = 15-78; *n* = 34). Prev – prevalence in respective cell; nc – not calculable.

Table 4

Linear regression models predicting recent depression, anxiety, and trait anger symptoms

Prediction models	Depression symptoms		Panic symptoms		Trait anger	
	β	*p*	β	*p*	β	*p*
Migraine	.12	< .001	.14	< .001	.01	.682
Age	−.06	.003	−.06	.005	−.01	.620
CSAz	.13	< .001	.16	< .001	.09	< .001
CPAz	.01	.869	.01	.720	.01	.778
CEAz	.17	< .001	.11	< .001	.16	< .001
Acne	.07	.001	.06	.004	−.01	.709
Age	−.05	.010	−.05	.015	−.01	.614
CSAz	.14	< .001	.17	< .001	.09	< .001
CPAz	.00	.963	.01	.851	.01	.802
CEAz	.18	< .001	.12	< .001	.16	< .001
Asthma	.05	.012	.05	.014	.02	.307
Age	−.05	.009	−.05	.013	−.01	.661
CSAz	.14	< .001	.17	< .001	.09	< .001
CPAz	−.01	.893	.00	.982	.01	.810
CEAz	.18	< .001	.12	< .001	.16	< .001
Enuresis	.01	.776	.01	.507	.04	.063
Age	−.06	.006	−.05	.009	−.01	.604
CSAz	.14	< .001	.17	< .001	.09	< .001
CPAz	.00	.947	.00	.921	.01	.752
CEAz	.18	< .001	.12	< .001	.15	< .001

Note. DSM-5 major depression symptoms estimated over past two weeks. Panic attack symptoms aggregated over the past year. Trait anger is a subscale of the Buss-Perry Aggression Questionnaire. Presented above are the results of four independent linear regression models. All models were significant (*p* < .001). CSA – childhood sexual abuse; CPA – childhood physical abuse; CEA – childhood emotional abuse. *N* = 2,635.

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were elevated in a graded function with higher Med-Diags counts.

Four medical conditions (migraine headaches, asthma, acne, and enuresis) were selected for re-examination after statistical control of variance associated with respondent age and reported childhood histories of sexual, physical, and/or emotional abuse. These medical disorders were selected given their frequency and relatively younger age of onset (comparable or higher prevalence rates than population estimates). Table 4 presents the results of 12 linear regression models testing links between the four conditions and depression, anxiety, and anger symptoms.

Recent major depressive and panic symptoms were higher among respondents with histories of migraines, asthma, or acne. Trait anger was unrelated to mental health symptomatology after controlling for shared variance with early maltreatment.

DISCUSSION

Childhood medical illness has not been taken into account traditionally in ACE research focused predominantly on maltreatment, emotional/physical neglect, and household dysfunctions such as intimate partner violence, substance abuse, and family mental illness or incarceration (Dube et al., 2001; Petruccelli et al., 2019; van der Feltz-Cornelis et al., 2019). King (2020) made a case for the viability of additional adversity factors (e.g., family suicidality, parent or sibling death, physical disability, homeless/single/teen/foster parenting) as risk indicators that account for unshared variance in meaningful outcomes such as physical aggressiveness. The present findings suggested that childhood illnesses might also warrant attention as adversity risk indicators for lifetime mental health diagnoses and treatments.

In this study, asthma, migraine headaches, acne, and enuresis were associated with higher levels of lifetime mental health symptoms and diagnoses. The onsets of these four medical conditions often occur early in life, and this college sample consisted predominantly of young adults with an average age of only 20. Certain medical conditions may have biological or physiological effects that predispose individuals to mental health issues. For instance, chronic illnesses such as asthma and migraines can lead to changes in brain chemistry or hormonal imbalances that may contribute to the development of anxiety and depression (National Institute of Mental Health, 2024). Additionally, children and young adults with medical conditions often face psychosocial stressors, such as social stigma, isolation, or bullying, which can impact their self-esteem and mental health (Tan et al., 2022). Dealing with a medical condition can also create a chronic stress response in individuals, which may lead to heightened anxiety and vulnerability to mood disorders (Mariotti, 2015). Given the cross-sectional design, the directionality of these relationships between health and mental health status could still not be established. This has been the case for most adversity research, and the purpose of tracing maladjustment correlates has always been to identify risk indicators that warrant attention in medical or psychological assessments. Certain childhood illnesses may meet that standard.

Convergent lines of evidence have linked collective childhood illness to various aspects of adult mental health functioning. Concerns have been raised about the risks that medical illnesses might pose to self-esteem, anxiety symptomatology, and mood maintenance (Dalgard et al., 2008; Lu et al., 2012; Richardson et al., 2006; Samuels et al., 2020; Schachner et al., 2023; Tan et al., 2022). These broader concerns have been extended to obesity (Quek et al., 2017), suicidal and self-harm behavior (Lim et al., 2019), and high-risk sexual and nonsexual behavior (Valencia & Cromer, 2000). Chronic illness may also detract from perceived quality of life (Megari, 2013; Luyster et al., 2012; Siroux et al., 2008; Urrutia et al., 2012). The present findings contribute to this evidence base which frames early illnesses as developmental adversities that warrant attention in the ACE literature.

Findings from this study may support the potential for clinicians to incorporate routine screening for specific medical conditions in children and adolescents as part of mental health assessments. Early identification could lead to proactive mental health interventions that may mitigate the risk of developing depression or anxiety disorders later in life. Additionally, clinicians can develop tailored therapeutic approaches for individuals with a history of specific medical conditions, such as acne and migraines, that focuses on both physical and psychological resil-

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Revels-Strother,
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ience. Given that the study controlled for various forms of childhood maltreatment, clinicians may also consider the interplay between medical conditions and adverse childhood experiences.

LIMITATIONS AND IMPLICATIONS

This study relied on unclearly specified timings of the medical adversities that were examined. These are correlation data with inferences about directionality left unspecified. Future studies might rely on longitudinal designs to trace childhood anxiety and depression symptomatology over the course of medical illness. The role of potential modulating factors such as gender, ethnicity, and family climate in these physical-mental health relationships warrants attention. Clinical implications include the need for heightened awareness of medical histories during mental health intake assessments.

Disclosures

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Olivia
Revels-Strother,
Michaela
Quaschnick,
Tristan Miller,
Alan King