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Associations between exposure to childhood bullying and abuse and adulthood outcomes in a  
nationally representative U.S. sample

THESIS

submitted in partial satisfaction of the requirements

for the degree of

MASTER OF ARTS

in Social Ecology

by

Josiah Anthony Sweeting

Thesis Committee:

Professor Roxane Cohen Silver, Chair

Associate Professor E. Alison Holman

Professor Raymond W. Novaco

2018



## **DEDICATION**

To

my parents, Elaine, and Joseph, my sisters, Ameena and Rhasheema, my extended family, and  
my close friends who inspire me daily

and, to my committee, whose guidance and patience has been invaluable

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## **ABSTRACT OF THE THESIS**

Associations between exposure to childhood bullying and abuse and adulthood outcomes in a nationally representative U.S. sample

By

Josiah Anthony Sweeting

Master of Arts in Social Ecology

University of California, Irvine, 2018

Professor Roxane Cohen Silver, Chair

Negative childhood experiences are associated with poor health and psychosocial outcomes throughout one's lifespan. We examine associations between specific adverse childhood events, recent negative life events, and several adulthood outcomes: psychological distress, functional impairment, general worries about the future, and physician-diagnosed mental and physical health ailments. Data were gathered from multiple waves of an online survey initially administered to a nationally representative sample of U.S. adults between 4/29/13-5/13/13. Over the next two years, respondents (n = 2908) completed detailed measures of exposure to multiple negative childhood experiences as well as physician-diagnosed mental and physical health ailments; over time, respondents also completed measures assessing exposure to negative life events occurring in the past year. All analyses were weighted to adjust for attrition and sampling design. Overall, 24.86% (n = 723) of the sample reported bullying during childhood, 14.65% (n = 426) reported physical abuse, 14.43% (n = 420) reported witnessing parental violence, 10.24% (n = 298) reported sexual abuse, and 7.94% (n = 231) indicated parental neglect. Respondents who reported experiencing childhood bullying, physical abuse, and sexual abuse reported greater distress, functional impairment, and worry about future negative events as mediated through

recent negative life events compared to those who did not. Those who experienced bullying, neglect, and sexual abuse reported more mental health ailments compared to those who did not while those reporting bullying and sexual abuse reported more physical health ailments. Negative childhood experiences are linked to ongoing exposure to stressful events, which are associated with poorer outcomes in adulthood.

Keywords: Negative childhood experiences, negative life events, psychological distress, functional impairment, health outcomes, mental health, physical health

## **Introduction**

Negative childhood experiences such as bullying and other forms of maltreatment have been linked to a range of negative physical health and psychological outcomes throughout one's lifespan (Read & Bentall, 2012). Maltreatment refers to various forms of repeated or sustained exposure to occurrences that involve a betrayal of trust and can include emotional, physical, and sexual abuse as well as emotional and physical neglect (Teicher & Samson, 2013). For example, Teicher and Samson (2016) conducted a review explaining that parental verbal abuse, sexual abuse, and witnessing domestic violence negatively impacted specific brain regions including the auditory, visual, and somatosensory cortex (Teicher & Samson, 2016). These findings provided evidence that certain types of abuse specifically target sensory systems as well as neural pathways involved in the aversive experience. Consequently, a key conclusion from Teicher and Samson's review highlights the unique impact that each of these negative life experiences can have on an individual at the neurobiological level. However, much lesser is known about the associations between specific childhood experiences and adulthood outcomes when compared to each other.

### **Childhood bullying, adulthood health, and psychosocial outcomes**

Bullying is an aggressive behavior intending to harm, behavior that occurs chronically, and behavior reflecting the existence of a power imbalance in which a more powerful person or group attacks a less powerful one (Nansel et al., 2001). Childhood bullying is a significant threat to healthy youth development as it has been linked to multiple adverse mental health outcomes in adulthood including greater distress (Duncan, 1999), risks for psychotic disorder, schizophrenia, and schizoaffective disorder (Varese et al., 2012), as well as greater risks for agoraphobia, depression, generalized anxiety, panic disorder, and substance use disorders (Copeland, Wolke,

Angold, & Costello, 2013; Sourander et al., 2015). Bullying has also been linked to physical health including increased risk for serious illness and regular cigarette smoking as well as self-reported illness contagion risk, perceived poor health, and slow illness recovery (Wolke, Copeland, Angold, & Costello, 2013).

Finally, bullying has been linked to poor functioning or difficulty in a range of interpersonal and personal functions such as control, sociability, and utility. In a longitudinal sample of about 230 high school students experiencing frequent bullying behavior, students reported significantly greater impairment in four areas of functioning including general behavior/mood, interpersonal relationships, school/work, and use of leisure time such as engaging in hobbies (Klomek et al., 2011).

### **Childhood sexual abuse, adulthood health, and psychosocial outcomes**

Sexual abuse is broadly defined as an unwanted sexual experience that can include exposure to sexual media, overt verbal advances, penetration, or unwanted touching (Noll, Shenk, & Putnam, 2009). This abuse is especially detrimental for mental health as it has been linked to higher risks for anxiety and depression diagnoses (Walrath et al., 2003), as well as borderline personality disorder, bulimia nervosa, dissociative identity disorder, posttraumatic stress disorder (PTSD) and somatization disorder (Putnam, 2003). Physical health problems are also common among women exposed to sexual abuse in childhood, as they have been shown to experience cardiopulmonary symptoms, gastrointestinal problems, gynecologic issues, obesity, and pain disorders at greater rates compared to those without histories of sexual abuse (Irish, Kobayashi, & Delahanty, 2010). Sexual abuse may also be associated with psychosocial outcomes as it has been to linked to greater psychological distress and greater functional

impairment in adulthood when compared to those without such experiences (Duncan, 1999; Cloitre, Miranda, Stovall-McClough, & Han, 2005).

### **Childhood physical abuse, adulthood health, and psychosocial outcomes**

The National Center on Child Abuse and Neglect (NCCAN, 1988) classifies physical abuse as acts of commission involving demonstrable harm or endangerment. A study of over 7,000 adolescent and adult respondents found that reports of childhood abuse were significantly associated with lifetime major depressive disorder (MDD) and substance abuse for women, as well as alcohol abuse and anxiety disorders for men (MacMillan et al., 2001). Childhood physical abuse has also been linked to adulthood physical health as participants in the Wisconsin Longitudinal Study (WLS) reported a 15% increase in medical diagnoses such as cancer or diabetes, a 16% increase in 27 physical medical symptoms, and elevated risk for extreme ill health (Springer, Sheridan, Kuo, & Carnes, 2007). Links have also been made to elevated levels of psychological distress in a sample of adolescents (Meyerson, Long, Miranda, & Marx, 2002) and greater functional impairment (Cloitre et al., 2005).

### **Parental neglect, adulthood health, and psychosocial outcomes**

Parental neglect describes a caregiver's failure to provide for the development of a child in domains including education, emotional, health, and safe living conditions (Stoltenborgh, Bakermans-Kranenburg, Alink, & IJzendoorn, 2014). Individuals neglected in childhood are significantly more likely to develop anxiety, conduct, depressive, and eating disorders compared to non-neglected counterparts (Norman et al., 2012). Furthermore, they are more likely to display suicidal behavior, have higher chances for risky sexual behavior, as well as sexually transmitted infections (STIs), and oral health and vision problems (Norman et al., 2012; Widom, Czaja, Bentley, & Johnson, 2012). Among a sample of college students, reports of emotional neglect

accounted for a significant portion of variance in anxiety and depressive symptoms (Wright, Crawford, & Del Castillo, 2009). A sample of adult participants who were neglected in childhood reported poorer social functioning across multiple categories including level of daily activity, occupational performance, self-care, and social withdrawal compared to non-neglected controls (Gil et al., 2009).

### **Witnessing parental violence, adulthood health, and psychosocial outcomes**

Intimate partner violence (IPV) can involve verbal and/or physical violence towards one's romantic partner (Cui et al., 2013). Past research has shown associations between witnessing violence between one's parents and mental health ailments such as anxiety, mood disorders, and PTSD (Madruga et al., 2017). Additionally, witnessing parental violence has been linked to increased risks of underimmunization, engaging in health-compromising behaviors in adolescence as well as adulthood, and problematic alcohol use (Bair-Merritt et al., 2006; Caetano et al., 2003). In a community sample of more than 600 adult women, those who had been exposed to parental violence in childhood reported significantly higher levels of current psychological distress than those who were not (Henning, Leitenberg, Coffey, Turner, & Bennett, 1996). These women also reported greater social impairment compared to non-exposed controls even after accounting for the influence of childhood physical abuse, perceived parental caring, and witnessing parental verbal conflict.

### **Negative childhood experiences and worry over future negative events**

Early life trauma may change the way individuals perceive the world and render them more prone to anticipating negative experiences in the future (Janoff-Bulman & Frieze, 1983). One theory attempting to explain this change is the Cognitive Activation Theory of Stress (CATS), which states that healthy coping occurs when one experiences a brief stress response

that allows the person to be more efficient in dealing with future stressors (Ursin & Eriksen, 2004). However, unhealthy coping in response to stress is associated with added strain on the individual and Brosschot and colleagues characterize this as perseverative cognition, or “the repeated or chronic activation of the cognitive representation of stress-related content (p. 1045)” (Brosschot, Pieper, & Thayer, 2005). Thus, certain stressful experiences can transform a single stressor into a more long-term physiological and psychological stress response that can influence one’s perception of potential stressful events occurring in the future. Similarly, McLaughlin and her colleagues reported that participants exposed to childhood adversity showed increased reactivity to stress as well as risk for anxiety disorders later in life (McLaughlin, Conron, Koenen, & Gilman, 2010). This is significant because these disorders are hallmarked by feelings of intense fear as well as worry. Consequently, bullying and other forms of maltreatment may drastically influence one’s views of the world as well as perception of fear and worry about future negative events over time.

### **Recent negative life events as a potential mediator to adulthood outcomes**

Negative early life experiences may contribute to an individual being more prone or sensitive to experiencing future negative events in several ways. First, early life stress has been associated with impaired executive functioning that diminishes the ability to regulate emotion with considerable deficiencies in the ability to downregulate negative affectivity or emotions. (Goodyer, 2002). This impaired executive functioning can interfere with multiple cognitive strategies used to regulate negative emotion like distraction and reappraisal. Both of these strategies have been linked to significant reductions in negative affect and greater well-being. However, when unable to successfully engage in these downregulation strategies in response to negative stimuli, an individual may be in a negative mood state more frequently than those who

do not experience early life stress. As a result, this mood may make an individual more likely to perceive an event as negative and subsequently report more negative life events throughout the lifespan.

In addition to changes in perceptions that may simply lead an individual to appraise more life events as negative, research has also confirmed the cumulative nature of early life stress that can lead to both similar and diverse types of negative events later in life. Research has demonstrated that women experiencing childhood sexual abuse are significantly more likely to experience sexual assault as adults (Follette, Polusny, Bechtle, & Naugle, 1996) while other work has shown that between 15% and 79% of women with histories of CSA were raped as adults (Roodman & Clum, 2001). Similarly, literature has demonstrated that children who witness intimate partner violence are significantly more likely to be victims of intimate partner violence in adulthood (Madruga, 2017).

While links between specific adverse childhood experiences and similar, recurring events later in life have been identified, early life stress is also associated with a range of other negative life events. For example, childhood sexual abuse has been associated with multiple childhood and family outcomes including impaired parent child relationships, parental adjustment difficulties, and early onset sexual activity (Fergusson, Horwood, & Lynskey, 1997). Other research has linked childhood bullying with increased risks for being impoverished, having difficulty keeping employment, less overall optimism, and lower socioeconomic resources in adulthood (Matthews et al., 2017). Consequently, it may be helpful to investigate how negative early life experiences might be linked to psychosocial outcomes as mediated through the experience of other proximal negative life events stemming from the same early life experiences.

## **The Present Study**

While many studies have demonstrated how negative childhood experiences can be associated with various outcomes in adulthood, a void persists in the literature. In the well-known Adverse Childhood Experiences (ACE) study, investigators explored the relationship between childhood abuse, particularly in the context of the household, and identified ten risk factors that contribute to the leading causes of morbidity and mortality in the United States (Felitti et al., 1998). However, the study only included a cumulative count of experiences by category, did not examine different outcomes as a result of specific types of childhood experiences, and failed to include childhood bullying as a possible contributing factor to these risks despite its high prevalence. More recently, other studies have explored negative child experiences and the links between several psychosocial outcomes in adulthood (Gil et al., 2009; Klomek et al., 2011; Meyerson et al., 2002), but none have attempted to explore multiple psychosocial outcomes within the same study or identify potential mediators that might be contributing to these outcomes. Furthermore, the current body of literature tends to focus on either bullying alone, or various forms of maltreatment together, but none have juxtaposed the specific types of negative childhood experiences and their association with a wide range of health and psychosocial outcomes in adulthood. Similarly, none have attempted to simultaneously control for the other types of experiences as well as for exposure to recent negative life events experienced close to the time that the adulthood measures were collected. Lastly, some studies have examined these problems among a relatively small sample, but most researchers have not utilized representative national samples or examined these associations using a longitudinal survey design.

The goal of the present study is to address these shortcomings. This project aims to examine the association between specific types of negative childhood experiences and several outcomes in adulthood including distress, functional impairment, and worries about future negative events, while also exploring the potential role of recent life events in mediating these outcomes. Moreover, we sought to investigate the potential links between specific types of negative childhood experiences and the prevalence of several doctor-diagnosed mental and physical health ailments. Previous research has also demonstrated how multiple demographic characteristics such as gender and socioeconomic status are linked to adult health and psychological outcomes (Danese et al., 2009; Dube et al., 2003; McLaughlin et al., 2016). As a result, a number of demographic covariates will be included to account for the possible influence of these variables on the outcomes assessed in this study.

These associations will be investigated in a large U.S. national sample of adults that was initially studied in the aftermath of the Boston Marathon bombings that occurred in April, 2013. This sample was followed for several years, providing multiple waves of survey data regarding a number of psychosocial outcomes and overall health. Stressful life events experienced throughout the lifespan were also assessed including childhood adversity as well as recent life events. This design allows for an investigation of the role of both childhood and adulthood stressors and adult outcomes.

## **Methods**

### **Design, sample, and data collection**

Between April 29 and May 13, 2013, an anonymous Internet-based survey was conducted with representative samples of residents from metropolitan Boston (n = 846), New York City (n = 941), and the remainder of the United States (n = 2,888), all drawn from the GfK

KnowledgePanel. The GfK KnowledgePanel uses address-based random sampling to recruit individuals within households into an online panel where they complete several surveys a month in exchange for free Internet access or compensation for households that are already web-enabled. Upon joining the GfK panel, respondents provided demographic information, including age, education, ethnicity, gender, and income. The sample used for the present analysis was followed for two years, completing additional waves of data collection between May, 2013 and May, 2015. Data from Wave 2 (October 18- November 18, 2013), Wave 3 (December 30, 2014- February 12, 2015), and Wave 4 (April 29- June 24, 2015) of the longitudinal survey were used in the present report. Panelists completed one additional wave of data collection between Waves 2 and 3; data collected during this wave is not relevant to the questions in this manuscript and is not discussed further.

Panelists were sent an e-mail with a brief introduction inviting them to complete the survey and an embedded "start" button that took them to a Web-based survey designed by the research team. Those participants who were withdrawn from the GfK panel at time of data collection, but agreed to be contacted for longitudinal assessments were surveyed either online or by returning a hard copy of the survey by mail. Email reminders, postcards, and phone calls were used to encourage participation among those who did not initially respond to the survey invitation. All procedures were approved by the Institutional Review Board at University of California, Irvine.

## **Measures**

### **Assessment of Negative Childhood Experiences**

At Wave 2, respondents were asked about their lifetime exposure to 37 potentially negative life events and the timing at which these events occurred (Seery, Holman, & Silver,

2010). For the present study, five events assessing exposure to negative childhood experiences prior to age 18 were counted, including being bullied, being physically abused, being neglected by parent(s), witnessing violence between one's parents, and being sexually abused (Blum, Silver, & Poulin, 2014). Exposure to each of these five childhood experiences was coded dichotomously: 0 = experience did not occur, 1 = experience did occur.

### **Exposure to Recent Negative Life Events**

In addition to negative experiences prior to age 18, respondents were also asked about their recent exposure to 33 potentially negative life events in the prior year at Wave 4 (Seery et al., 2010). This list of events included seven categories: bereavement (e.g., parent's death); disaster (e.g., major fire, flood, earthquake, or other community disaster); loved one's illness or injury; one's own illness or injury; relationship stress (e.g., own divorce, parents' divorce); social or environmental stress (e.g., serious financial difficulties, lived in dangerous housing); and violence (e.g., physical assault, forced sexual relations) (Blum et al., 2014). Exposure to each of the events was coded dichotomously: 0 = experience did not occur, 1 = experience did occur. Responses ranged from 0 to 19 ( $M = 2.03$ ,  $SD = 1.70$ ), with higher scores indicating greater exposure to recent negative life events.

### **Global Distress**

An abbreviated 9-item version of the Brief Symptom Inventory (BSI-18; Derogatis, 2001) was used to measure global distress at Wave 4. Respondents indicated their level of distress over the past 7 days (including the day of completion) along three dimensions including anxiety, depression, and somatization with endpoints 0 (not at all) to 4 (extremely). The BSI-18 has been validated in community-based as well as medical samples (Derogatis, 2001) and

demonstrated very good internal reliability in the present sample ( $\alpha=.88$ ). Responses ranged from 0 to 36 ( $M = 3.43$ ,  $SD = 4.81$ ), with higher scores indicating more global distress.

### **Functional Impairment**

Four items from the SF-36 (Ware & Sherborne, 1992), a reliable and well-validated scale, were used to assess functional impairment at Wave 4. Respondents were asked whether their emotional or physical health had affected their social or work-related functioning in the prior week using a 5-point frequency scale. Reliability for this scale was also very good in this sample ( $\alpha=.87$ ). Responses ranged from 2 to 20 ( $M = 5.80$ ,  $SD = 2.90$ ), with higher scores indicating greater functional impairment.

### **Worry over Future Negative Events**

At Wave 4, respondents reported their fears and worries about the occurrence of several negative life events in the future (Silver et al., 2002). Eight items assessed fear and worry about the possibility of a) another terrorist attack, b) a natural disaster, c) violence (shootings, stabbings, or physical assault), and d) financial stress or strain (i.e., difficulty paying for basic needs). Respondents indicated how often in the past week they had fears or worries that each of these events would personally affect them, a family member, or their community in the future using a 5-point scale. Reliability was very good ( $\alpha = .88$ ). Responses ranged from 4 to 40 ( $M = 15.89$ ,  $SD = 5.71$ ), with higher scores indicating greater worry over future negative events.

### **Physician-Diagnosed Mental and Physical Health Ailments**

When recruited onto the GfK panel, respondents provided health profile data using questions adapted and modified from the Centers for Disease Control's National Center for Health Statistics annual National Health Interview Survey (U.S. Department of Health and Human Services, National Center for Health Statistics, 2000). Respondents were asked to

indicate their lifetime history of physician-diagnosed mental health problems, with prompts for anxiety disorders and depression, and physical health problems such as diabetes and kidney disease (see Holman & Silver, 2011). Respondents were asked: “Has a medical doctor ever diagnosed you as suffering from any of the following ailments?” This measure was completed prior to Wave 1 and updated between January 2013 and December 2014. Responses for the mental health variable ranged from 0 to 2 ( $M = 0.26$ ,  $SD = 0.58$ ), while the number of physical health ailments ranged from 0 to 16 ( $M = 1.79$ ,  $SD = 2.03$ ).

### **Analytic Strategy**

All analyses were conducted in Stata version, 14 (Stata Corp.). In the first set of analyses, structural equation models were constructed to examine associations between negative childhood experiences (i.e., bullying, physical abuse, parental neglect, witnessing parental violence, sexual abuse) and subsequent adulthood outcomes (i.e., psychological distress, functional impairment, and worries about the future), with exposure to recent negative life events as the mediating variable. Each model included all five of the negative childhood experiences and several covariates (i.e., age, education, ethnicity, gender, income).

The association between negative childhood experiences and the number of doctor-diagnosed mental and physical health ailments in adulthood was analyzed using two Poisson regressions. Poisson regressions are used to examine count variable data that deviate from a normal distribution and both health variables meet this description as neither would be expected to produce normally-distributed data. Variables were entered using a hierarchical variable entry strategy in conceptually-meaningful blocks, with demographic indicators entered first and the five types of negative childhood experiences entered second. The exposure to recent negative life

events variable was collected after assessments of health ailments and therefore was not included as a mediator in these analyses.

All analyses were weighted to adjust for sampling design and attrition over time. The panel-selection methods provide statistical control of the representativeness of GfK panel samples and ensure samples' comparability to the general population. Panel design weights are calculated to reflect unequal selection probabilities (according to demographic categories) for different sampled members of the KnowledgePanel. Subsequently, design weights are poststratified to the benchmarks from the most recent U.S. government statistics to compensate for any differential nonresponse to the survey. Oversampling from Boston and New York (a component of the Wave 1 design and focus on the 2013 Boston Marathon bombing) was corrected so the final sample in these analyses matched national benchmarks. Consequently, the weighted composition of the sample closely matched that of the target population as defined by the benchmarks from the American Community Survey of the U.S. Department of Commerce (2012), thus allowing for stronger population-based inferences in a nationally representative sample.

The final weights were computed using the method of iterative proportional fitting (commonly referred to as raking) along the following dimensions: age (18–29, 30–44, 45–59, 60+), gender, race-ethnicity (Hispanic, non-Hispanic White, non-Hispanic Black, non-Hispanic other, non-Hispanic multiracial), education (less than high school, some college, bachelor's degree or higher), annual income (\$0–\$24,999, \$25,000–\$49,999, \$50,000–\$74,999, \$75,000+), and Internet access (yes, no). When sample sizes permitted, variables were crossed (e.g., age and gender) so that joint distributions could be used to adjust weights. As needed, categories of

weighting variables were collapsed to increase samples of available respondents and avoid the creation of extreme weights.

## Results

**Participants.** The final weighted sample was 51.92% female, ranged in age from 18 to 95 ( $M = 51.38$ ,  $SD = 16.93$ ), and was 74.69% white (non-Hispanic), 8.49% Black/African American, 10.14% Hispanic, and 6.68% other ethnicities (non-Hispanic). Almost 71% had at least some college education and 59.62% had an annual income of \$50,000 or more. The number of recent negative life events reported by respondents ranged from 0 to 19 ( $M = 2.02$ ,  $SD = 1.70$ ).

**Exposure to negative childhood experiences.** As shown in Table 1, approximately 25% of the sample reported being bullied as a child (weighted  $n = 723$ ), 14.65% reported physical abuse (weighted  $n = 426$ ), and 14.43% reported witnessing parental violence (weighted  $n = 420$ ). Furthermore, 10.24% reported sexual abuse (weighted  $n = 298$ ) and 7.24% reported parental neglect (weighted  $n = 231$ ) (see Table 1).

### Global Distress

Respondents who were older in age ( $\beta = -.09$ ,  $SE = .03$ , 95%  $CI = -.15, -.03$ ) and who reported a higher annual income ( $\beta = -.10$ ,  $SE = .03$ , 95%  $CI = -.16, -.04$ ) reported, on average, less distress. Compared to whites, those who identified as other, non-Hispanic ethnicity reported greater distress ( $\beta = .34$ ,  $SE = .15$ , 95%  $CI = .04, .64$ ). Respondents who experienced a greater number of recent negative life events reported, on average, higher levels of distress ( $\beta = .17$ ,  $SE = .03$ , 95%  $CI = .12, .22$ ).

Table 2 displays the direct and indirect effects of negative childhood exposure variables on global distress. In the covariate-adjusted SEM models, bullying was the only negative childhood experience to have a significant direct effect on global distress. Experiencing bullying,

physical abuse, and sexual abuse all exhibited significant indirect effects on global distress through recent negative life events, indicating that exposure to recent negative life events was a statistically significant mediator.

### **Worry over Future Negative Events**

Respondents with a Bachelor's degree or higher reported fewer worries compared to those with less than a high school diploma ( $\beta = -.41$ ,  $SE = .13$ ,  $95\% CI = -.65, -.16$ ). Respondents who were Hispanic ( $\beta = .35$ ,  $SE = .10$ ,  $95\% CI = .15, .54$ ) or other, non-Hispanic ethnicity ( $\beta = .21$ ,  $SE = .11$ ,  $95\% CI = .00, .42$ ) reported more worries compared to whites on average, and women reported more worries compared to men ( $\beta = .17$ ,  $SE = .06$ ,  $95\% CI = .06, .28$ ). Lastly, respondents who reported a higher income reported less worry about future negative events ( $\beta = -.08$ ,  $SE = .03$ ,  $95\% CI = -.14, -.02$ ), while experiencing a greater number of recent negative life events was associated with greater worry over future negative events ( $\beta = .20$ ,  $SE = .02$ ,  $95\% CI = .16, .23$ ).

Table 2 presents the direct and indirect effects of negative childhood exposure variables on worry over future negative events. Controlling for covariates, bullying and witnessing parental violence exhibited direct effects on worry over future negative events. Experiencing bullying, physical abuse, and sexual abuse also exhibited significant indirect effects on worry over the future through recent negative events.

### **Functional Impairment**

On average, college educated individuals reported less functional impairment compared to those with less than a high school diploma ( $\beta = -.33$ ,  $SE = .16$ ,  $95\% CI = -.65, -.01$ ) and respondents reporting higher income reported less functional impairment

( $\beta = -.12$ ,  $SE = .03$ ,  $95\% CI = -.18, -.07$ ). Respondents reporting more recent negative life also reported poorer functioning ( $\beta = .17$ ,  $SE = .02$ ,  $95\% CI = .13, .22$ ).

Table 2 presents the direct and indirect effects of negative childhood exposure variables on functional impairment. Controlling for covariates, parental neglect and sexual abuse had direct effects on functional impairment. Experiencing bullying, physical abuse, and sexual abuse exhibited indirect effects on functional impairment through recent negative life events.

### **Physician-diagnosed Mental Health Ailments**

Table 3 presents results of the Poisson regression models on adult mental health ailments. Respondents who reported bullying, parental neglect, and sexual abuse in childhood indicated a greater number of mental health ailments, on average, compared to those who did not report these negative childhood experiences.

### **Physician-diagnosed Physical Health Ailments**

Table 4 displays the results of the Poisson regression models addressing the association between negative childhood experiences and adult physical health ailments. Respondents who reported being bullied and sexually abused in childhood reported a greater number of physical health ailments, on average, compared to those who did not report these experiences.

## **Discussion**

This study provides insights about the unique direct and indirect associations between different types of negative childhood experiences and adult health outcomes using a large representative sample of Americans as well as a longitudinal design. Beyond demonstrating direct associations between childhood experiences and psychosocial outcomes similar to previous work (Cloitre et al., 2005; Duncan, 1999; Lang et al., 2008; McLaughlin, Green, Gruber, Sampson, Zaslavsky, & Kessler, 2010; Richmond et al., 2009; Wright, Crawford, & Del

Castillo, 2009), these findings also indicate how early life events may be indirectly associated with adulthood outcomes through the experience of recent negative life events. Due to the fact that childhood bullying, physical, and sexual abuse were all associated with reporting significantly more recent negative life events as well as poorer outcomes on all three psychosocial measures, it may be the case that these particular experiences may differ from other negative childhood experiences. For example, perhaps they involve physical injury or bodily pain that can serve as a persistent reminder of the event for an individual in a way that differs from parental neglect or witnessing parental violence. This may be evidenced by past research linking childhood bullying, physical and sexual abuse with a greater likelihood to experience pain without a measureable cause or somatize (Brown et al., 2005; McGee et al., 2011; Spitzer et al., 2009;) while other work has suggested that neglect and witnessing parental violence may not be associated with somatization (Brown et al., 2005). Consequently, these experiences may be associated with a greater degree of rumination regarding the experience contributing to a more negative mood as well as greater endorsement of more negative events occurring in the future. Findings are also consistent with recent neurobiology research suggesting that childhood physical and sexual abuse may alter neural mechanisms involved in the brain's fear-regulatory circuit as well as result in the inability to effectively modulate anxiety and fear responses (Herringa et al., 2013), and may result in greater psychological burden in response to negative events.

The findings also demonstrate associations between specific types of childhood maltreatment and adulthood mental and physical health outcomes while accounting for an array of demographic factors. First, bullying, parental neglect, and sexual abuse were associated with reporting a greater number of mental health ailments. This finding supports a number of past

studies (Gladstone, Parker, & Malhi, 2006; Sourander et al., 2016; Vachon et al., 2015), but contradicts other research suggesting that both physical abuse and witnessing parental violence are also associated with poorer mental health. In the Vachon et al. study, children who reported physical abuse were also shown to have an increased risk of anxiety, depression, and somatization (Vachon et al., 2015). Their sample was representative of children in families receiving services from the Department of Human Services (DHS) and gathered from a research summer camp for low-income, school-aged children with more than half having a well-documented history of maltreatment. Consequently, the characteristics of their sample may account for the difference in results that were found in the current study as our sample was nationally representative and not limited to respondents from less advantaged financial backgrounds who may already be at greater risk for poorer mental health.

Second, the current findings regarding physical health outcomes support prior work suggesting that being bullied and sexual abuse are associated with an increased risk for a physical health problems (Irish, Kobayashi, & Delahanty, 2010; Wolke et al., 2013). In contrast, our findings diverge from other work demonstrating that other forms of maltreatment may be associated with adult physical health (Bair-Merritt, Blackstone, & Feudtner, 2006; Springer et al., 2007; Widom et al., 2012). However, the results discussed in the Bair-Merritt et al. (2006) review suggesting that witnessing parental violence was linked to poorer physical health were limited due to generalizability issues as several studies utilized samples gathered from IPV shelters as well as samples that were relatively small. The study by Springer et al. (2007) only measured childhood physical abuse and does not account for other negative childhood experiences that may be contributing to physical health ailments. Furthermore, Widom and colleagues' 2012 study only used official court records of neglect that occurred prior to age 11

that does not capture other cases occurring after age 11, but within the period of adolescence, and fails to consider unreported cases in the control group to which neglected children were compared. These issues all represent potential explanations for why our findings diverge from prior research linking negative childhood experiences to physical health ailments.

Lastly, as researchers and healthcare providers seek to better understand adverse childhood experiences, the present study accentuates the alarmingly high frequency with which these experiences occur within a nationally representative sample of U.S. adults. While causal claims cannot be inferred, our findings contribute to a growing body of work demonstrating that adverse childhood experiences are linked to higher rates of distress, impaired functioning, and health ailments in adulthood. The financial cost of childhood victimization represents one of the most significant public health issues in the United States (Anda et al., 2006) and the present study may have important implications for helping reduce these costs. These findings highlight the need for early identification of individuals who have experienced different types of child maltreatment before they become adults so that efforts can be made to promote healthy coping strategies and consequently make individuals more efficient in dealing with future stressors. By doing so, it can help minimize the detrimental health and psychosocial outcomes that follow by encouraging adolescents and caregivers to seek out the help that is needed to effectively deal with potential negative repercussions of these experiences. Furthermore, by establishing a better understanding of how specific experiences are associated with changes in immediate well-being, it can help inform more targeted interventions providing young people with skills to cope with negative life experiences in healthy ways and also how to be more adept in dealing with future negative events.

Beyond negative early life experiences, these findings also highlight a need to investigate the current stressors to which an individual is exposed to as a way of gathering a more complete picture of what is contributing to present overall health status. Health professionals who provide clinical and medical services to patients may benefit especially from this information in terms of what experiences patients are screened for and how treatments are administered based on the potential risks for health ailments. For example, psychosocial variables such as distress and impairment are significant indicators for clinicians attempting to diagnose patients with mental ailments and are included in the diagnostic criteria for several types of psychopathology. If we can clearly identify which early experiences put individuals at risk for poor functioning, it may help healthcare providers better recognize who is in greatest need for support in daily functioning.

### **Limitations**

This study has several limitations that are important to acknowledge when interpreting the results. First, data was gathered using respondents' self-reports of childhood experiences and necessarily rely on the use of retrospective memory that is potentially inaccurate due to long passages of time. Although we tried to minimize social desirability through the administration of anonymous, confidential online surveys, we cannot rule out that respondents might have underreported negative child experiences, the experience of recent negative life events, and poor outcomes on psychosocial or health outcomes. Additionally, respondents were asked to indicate whether an adverse life experience occurred prior to age 18, but were not asked to provide a clear indication of the specific time period in their childhood that each of their negative experiences occurred. Research has demonstrated that negative experiences occurring during sensitive developmental periods in childhood may contribute to more adverse outcomes than events not

taking place during these periods (Dunn et al., 2013; Teicher & Samson, 2016) and consequently may have a role in later associations with adult outcomes. The measure of childhood exposures also did not include an assessment of the chronicity or severity of each of the negative childhood experiences and failed to take into account that variability. Moreover, we did not assess who was responsible for causing the adverse experience in childhood whether it be a family member, neighbor, or peer. Finally, our measure of bullying did not distinguish between various types of bullying that can occur in childhood including cyber, physical, or verbal or the setting in which the bullying occurred (e.g., juvenile corrections vs. school). As a result, failure to account for these various nuances may interfere with the ability to fully understand the distinct physical and psychological repercussions that underlie these experiences and further contribute to subsequent negative life events as well as adulthood health outcomes.

### **Summary and Conclusion**

Negative childhood experiences have been linked to many adverse outcomes throughout the lifespan. The current study provides evidence for possible associations between specific childhood experiences and poor psychosocial outcomes in adulthood as partially mediated by exposure to recent negative life events. Further attempts should be made to better understand how the developmental time periods during which these negative experiences occur may be differentially associated with adulthood outcomes. Additionally, the location of negative experiences in terms of taking place inside or outside the home should be further explored as this may play an important role in subsequent outcomes. Future research should also explore frequently co-occurring adverse childhood experiences and how different combinations are associated with outcomes in adulthood. Lastly, a better understanding of the psychological ramifications of negative early life events as well as interventions that can be administered to

address them and effectively minimize the lingering effects of maltreatment on health and psychosocial well-being later in the life span should also be explored.

## References

- Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C., Perry, B. D., Dube, S. R., & Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood: A convergence of evidence from neurobiology and epidemiology. *European Archives of Psychiatry and Clinical Neuroscience*, *256*, 174-186. doi: 10.1007/s00406-005-0624-4
- Bair-Merritt, M. H., Blackstone, M., & Feudtner, C. (2006). Physical health outcomes of childhood exposure of intimate partner violence: A systematic review. *Pediatrics*, *117*, e278-e290. doi: 10.1542/peds.2005-1473
- Blum, S. C., Silver, R. C., & Poulin, M. J. (2014). Perceiving risk in a dangerous world: Associations between life experiences and risk perceptions. *Social Cognition*, *32*, 297-314. doi: 10.1521/soco.2014.32.3.297
- Brosschot, J. F., Pieper, S., & Thayer, J. F. (2005). Expanding stress theory: Prolonged activation and perseverative cognition. *Psychoneuroendocrinology*, *30*, 1043-1049. doi: 10.1016/j.psyneuen.2005.04.008
- Brown, R. J., Schrag, A., & Trimble, M. R. (2005). Dissociation, childhood interpersonal trauma, and family functioning in patients with somatization disorder. *American Journal of Psychiatry*, *162*, 899-905. doi: 10.1176/appi.ajp.162.5.899
- Caetano, R., Field, C. A., & Nelson, S. (2003). Association between childhood physical abuse, exposure to parental violence, and alcohol problems in adulthood. *Journal of Interpersonal Violence*, *18*, 240-257. doi: 10.1177/0886260502250074

- Cloitre, M., Stolbach, B. C., Herman, J. L., van der Kolk, B., Pynoos, R., Wang, J., & Petkova, E. (2009). A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress, 22*, 399-408. doi: 10.1002/jts.20444
- Cloitre, M., Miranda, R., Stovall-McClough, K. C., & Han, H. (2005). Beyond PTSD: Emotion regulation and interpersonal problems as predictors of functional impairment in survivors of childhood abuse. *Behavior Therapy, 36*, 119-124. doi: 10.1016/S0005-7894(05)80060-7
- Copeland, W. E., Wolke, D., Angold, A., & Costello, E. (2013). Adult psychiatric outcomes of bullying and being bullied by peers in childhood and adolescence. *JAMA Psychiatry, 70*, 419-426. doi:10.1001/jamapsychiatry.2013.504
- Cogle, J. R., Timpano, K. R., Sachs-Ericsson, N., Keough, M. E., & Riccardi, C. J. (2010). Examining the unique relationships between anxiety disorders and childhood physical and sexual abuse in the National Comorbidity Survey-Replication. *Psychiatry Research, 177*, 150-155. doi: 10.1016/j.psychres.2009.03.008
- Cui, M., Ueno, K., Gordon, M., & Fincham, F. D. (2013). The continuation of intimate partner violence from adolescence to young adulthood. *Journal of Marriage and Family, 75*, 300-313. doi: 10.1111/jomf.12016
- Danese, A., Moffitt, T. E., Harrington, H., Milne, B. J., Polanczyk, G., Pariante, C. M., Poulton, R., & Caspi, A. (2009). Adverse childhood experiences and adult risk factors for age-related disease: Depression, inflammation, and clustering of metabolic risk markers. *Archives of Pediatrics & Adolescent Medicine, 163*, 1135-1143. doi: 10.1001/archpediatrics.2009.214

- Derogatis, L. R. (2001). Brief Symptom Inventory-18: Administration, scoring and procedures manual. Minneapolis, MN: NCS Assessments.
- Dube, S. R., Felitti, V. J., Dong, M., Chapman, D. P., Giles, W. H., & Anda, R. F. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The Adverse Childhood Experiences study. *Pediatrics*, *111*, 564-572. doi: 10.1542/peds.111.3.564
- Duncan, R. D. (1999). Maltreatment by parents and peers: The relationship between child abuse, bully victimization, and psychological distress. *Child Maltreatment*, *4*, 45-55. doi: 10.1177/1077559599004001005
- Dunn, E. C., McLaughlin, K. A., Slopen, N., Rosand, J., & Smoller, J. W. (2013). Developmental timing of child maltreatment and symptoms of depression and suicidal ideation in young adulthood: Results from the National Longitudinal Study of Adolescent Health. *Depression and Anxiety*, *30*, 955-964. doi: 10.1002/da.22102
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, *14*, 245-258. doi: 10.1016/S0749-3797(98)00017-8
- Fergusson, D. M., Horwood, L. J., & Lynskey, M. T. (1997). Childhood sexual abuse, adolescent sexual behaviors and sexual revictimization. *Child Abuse & Neglect*, *21*, 789-803. doi: 10.1016/S0145-2134(97)00039-2

- Follette, V. M., Polusny, M. A., Bechtle, A. E., & Naugle, A. E. (1996). Cumulative trauma: The impact of child sexual abuse, adult sexual assault, and spouse abuse. *Journal of Traumatic Stress, 9*, 25-35. doi: 10.1007/BF02116831
- Gil, A., Gama, C. S., de Jesus, D. R., Lobato, M. I., Zimmer, M., & Belmonte-de-Abreu, P. (2009). The association of child abuse and neglect with adult disability in schizophrenia and the prominent role of physical neglect. *Child Abuse & Neglect, 33*, 618-624. doi:10.1016/j.chiabu.2009.02.006
- Gladstone, G. L., Parker, G. B., & Malhi, G. S. (2006). Do bullied children become anxious and depressed adults? A cross-sectional investigation of the correlates of bullying and anxious depression. *Journal of Nervous and Mental Disease, 194*, 201-208. doi: 10.1097/01.nmd.0000202491.99719.c3
- Goodyer, I. M. (2002). Social adversity and mental functions in adolescents at high risk of psychopathology. *The British Journal of Psychiatry, 181*, 383-386. doi: 10.1192/bjp.181.5.383
- Harkness, K. L., & Wildes, J. E. (2002). Childhood adversity and anxiety versus dysthymia comorbidity in major depression. *Psychological Medicine, 32*, 1239-1249. doi: 10.1017/S0033291702006177
- Henning, K., Leitenberg, H., Coffey, P., Turner, T., & Bennett, R. T. (1996). Long-term psychological and social impact of witnessing physical conflict between parents. *Journal of Interpersonal Violence, 11*, 35-51. doi: 10.1177/088626096011001003

- Herrington, R. J., Birn, R. M., Ruttle, P. L., Burghy, C. A., Stodola, D. E., Davidson, R. J., & Essex, M. J. (2013). Childhood maltreatment is associated with altered fear circuitry and increased internalizing symptoms by late adolescence. *Proceedings of the National Academy of Sciences, 110*, 19119-19124. doi: 10.1073/pnas.1310766110
- Holman, E. A., & Silver, R. C. (2011). Health status and health care utilization following collective trauma: A 3-year national study of the 9/11 terrorist attacks in the United States. *Social Science & Medicine, 73*, 483-490. doi:10.1016/j.socscimed.2011.06.018
- Hovens, J. G., Giltay, E. J., Wiersma, J. E., Spinhoven, P., Penninx, B. W., & Zitman, F. G. (2012). Impact of childhood life events and trauma on the course of depressive and anxiety disorders. *Acta Psychiatrica Scandinavica, 126*, 198-207. doi: 10.1111/j.1600-0447.2011.01828.x
- Irish, L., Kobayashi, I., & Delahanty, D. L. (2010). Long-term physical health consequences of childhood sexual abuse: A meta-analytic review. *Journal of Pediatric Psychology, 35*, 450-461. doi: 10.1093/jpepsy/jsp118
- Janoff-Bulman, R. (1989). Assumptive worlds and the stress of traumatic events: Applications of the schema construct. *Social Cognition, 7*, 113-136. doi: 10.1521/soco.1989.7.2.113
- Janoff-Bulman, R., & Frieze, I. H. (1983). A theoretical perspective for understanding reactions to victimization. *Journal of Social Issues, 39*, 1-17. doi: 10.1111/j.1540-4560.1983.tb00138.x
- Kamen, C., Bergstrom, J., Koopman, C., Lee, S., & Gore-Felton, C. (2012). Relationships among childhood trauma, posttraumatic stress disorder, and dissociation in men living with HIV/AIDS. *Journal of Trauma & Dissociation, 13*, 102-114. doi: 10.1080/15299732.2011.608629

- Kendler, K. S., Bulik, C. M., Silberg, J., Hettema, J. M., Myers, J., & Prescott, C. A. (2000). Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. *Archives of General Psychiatry, 57*, 953-959. doi:10.1001/archpsyc.57.10.953
- Klomek, A. B., Kleinman, M., Alschuler, E., Marrocco, F., Amakawa, L., & Gould, M. S. (2011). High school bullying as a risk for later depression and suicidality. *Suicide and Life-Threatening Behavior, 41*, 501-516. doi: 10.1111/j.1943-278X.2011.00046.x.
- Lang, A. J., Aarons, G. A., Gearity, J., Laffaye, C., Satz, L., Dresselhaus, T. R., & Stein, M. B. (2008). Direct and indirect links between childhood maltreatment, posttraumatic stress disorder, and women's health. *Behavioral Medicine, 33*, 125-136. doi: 10.3200/BMED.33.4.125-136
- Lo, C. C., & Cheng, T. C. (2007). The impact of childhood maltreatment on young adults' substance abuse. *The American Journal of Drug and Alcohol Abuse, 33*, 139-146. doi: 10.1080/00952990601091119
- MacMillan, H. L., Fleming, J. E., Streiner, D. L., Lin, E., Boyle, M. H., Jamieson, E., Duku, E. K., Walsh, C. A., Wong, M. Y., & Beardslee, W. R. (2001). Childhood abuse and lifetime psychopathology in a community sample. *American Journal of Psychiatry, 158*, 1878-1883. doi: 10.1176/appi.ajp.158.11.1878
- Madrugá, C. S., Viana, M. C., Abdalla, R. R., Caetano, R., & Laranjeira, R. (2017). Pathways from witnessing parental violence during childhood to involvement in intimate partner violence in adult life: The roles of depression and substance use. *Drug and Alcohol Review, 36*, 107-114. doi: 10.1111/dar.12514

- Mancini, C., Van Ameringen, M., & MacMillan, H. (1995). Relationship of childhood sexual and physical abuse to anxiety disorders. *The Journal of Nervous and Mental Disease*, *183*, 309-314. doi: 10.1097/00005053-199505000-00006
- Matthews, K. A., Jennings, J. R., Lee, L., & Pardini, D. A. (2017). Bullying and being bullied in childhood are associated with different psychosocial risk factors for poor physical health in men. *Psychological Science*, *28*, 808-821. doi: 0956797617697700
- McGee, T. R., Scott, J. G., McGrath, J. J., Williams, G. M., O'Callaghan, M., Bor, W., & Najman, J. M. (2011). Young adult problem behaviour outcomes of adolescent bullying. *Journal of Aggression, Conflict and Peace Research*, *3*, 110-114. doi: 10.1108/17596591111132936
- McLaughlin, K. A., Basu, A., Walsh, K., Slopen, N., Sumner, J. A., Koenen, K. C., & Keyes, K. M. (2016). Childhood exposure to violence and chronic physical conditions in a national sample of US adolescents. *Psychosomatic Medicine*, *78*, 1072-1083. doi: 10.1097/PSY.0000000000000366
- McLaughlin, K. A., Conron, K. J., Koenen, K. C., & Gilman, S. E. (2010). Childhood adversity, adult stressful life events, and risk of past-year psychiatric disorder: A test of the stress sensitization hypothesis in a population-based sample of adults. *Psychological Medicine*, *40*, 1647-1658. doi:10.1017/S0033291709992121
- McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2010). Childhood adversities and adult psychopathology in the National Comorbidity Survey Replication (NCS-R) III: Associations with functional impairment related to DSM-IV disorders. *Psychological Medicine*, *40*, 847-859. doi: 10.1017/S0033291709991115

- Meyerson, L. A., Long, P. J., Miranda, R., & Marx, B. P. (2002). The influence of childhood sexual abuse, physical abuse, family environment, and gender on the psychological adjustment of adolescents. *Child Abuse & Neglect, 26*, 387-405. doi: 10.1016/S0145-2134(02)00315-0
- Miniati, M., Rucci, P., Benvenuti, A., Frank, E., Battenfield, J., Giorgi, G., & Cassano, G. B. (2010). Clinical characteristics and treatment outcome of depression in patients with and without a history of emotional and physical abuse. *Journal of Psychiatric Research, 44*, 302-309. doi:10.1016/j.jpsychires.2009.09.008
- Moyal, N., Henik, A., & Anholt, G. E. (2014). Cognitive strategies to regulate emotions—current evidence and future directions. *Frontiers in Psychology, 4*, 1-4. doi: 10.3389/fpsyg.2013.01019
- Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association, 285*, 2094-2100. doi: 10.1001/jama.285.16.2094
- Nanni, V., Uher, R., & Danese, A. (2012). Childhood maltreatment predicts unfavorable course of illness and treatment outcome in depression: A meta-analysis. *American Journal of Psychiatry, 169*, 141-151. doi: 10.1176/appi.ajp.2011.11020335
- National Center on Child Abuse and Neglect. (1988). *Study of national incidence and prevalence of child abuse and neglect: 1988*. Washington, DC: U.S. Department of Health and Human Services.

- Noll, J. G., Shenk, C. E., & Putnam, K. T. (2009). Childhood sexual abuse and adolescent pregnancy: A meta-analytic update. *Journal of Pediatric Psychology, 34*, 366-378. doi: 10.1093/jpepsy/jsn098
- Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Vos, T. (2012). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. *PLoS Medicine, 9*, 1-31. doi:10.1371/journal.pmed.1001349
- Oshri, A., Tubman, J. G., & Burnette, M. L. (2012). Childhood maltreatment histories, alcohol and other drug use symptoms, and sexual risk behavior in a treatment sample of adolescents. *American Journal of Public Health, 102*, S250-S257. doi: 10.2105/AJPH.2011.300628
- Pereda, N., Guilera, G., Forns, M., & Gómez-Benito, J. (2009). The prevalence of child sexual abuse in community and student samples: A meta-analysis. *Clinical Psychology Review, 29*, 328-338. doi: 10.1016/j.cpr.2009.02.007
- Polcari, A., Rabi, K., Bolger, E., & Teicher, M. H. (2014). Parental verbal affection and verbal aggression in childhood differentially influence psychiatric symptoms and wellbeing in young adulthood. *Child Abuse & Neglect, 38*, 91-102. doi: 10.1016/j.chiabu.2013.10.003
- Putnam, F. W. (2003). Ten-year research update review: Child sexual abuse. *Journal of the American Academy of Child & Adolescent Psychiatry, 42*, 269-278. doi: 10.1097/01.CHI.0000037029.04952.72
- Read, J., & Bentall, R. P. (2012). Negative childhood experiences and mental health: Theoretical, clinical and primary prevention implications. *British Journal of Psychiatry, 200*, 89-91. doi: 10.1192/bjp.bp.111.096727

- Richmond, J. M., Elliott, A. N., Pierce, T. W., Aspelmeier, J. E., & Alexander, A. A. (2009). Polyvictimization, childhood victimization, and psychological distress in college women. *Child Maltreatment, 14*, 127-147. doi: 10.1177/1077559508326357
- Roodman, A. A., & Clum, G. A. (2001). Revictimization rates and method variance: A meta-analysis. *Clinical Psychology Review, 21*, 183-204. doi: 10.1016/S0272-7358(99)00045-8
- Schreier, A., Wolke, D., Thomas, K., Horwood, J., Hollis, C., Gunnell, D., Lewis, G., Thompson, A., Zammit, S., Duffy, L., Salvi, G., & Harrison, G. (2009). Prospective study of peer victimization in childhood and psychotic symptoms in a nonclinical population at age 12 years. *Archives of General Psychiatry, 66*, 527-536. doi: 10.1001/archgenpsychiatry.2009.23
- Scott, K. M., Smith, D. R., & Ellis, P. M. (2010). Prospectively ascertained child maltreatment and its association with DSM-IV mental disorders in young adults. *Archives of General Psychiatry, 67*, 712-719. doi: 10.1001/archgenpsychiatry.2010.71
- Seery, M. D., Holman, E. A., & Silver, R. C. (2010). Whatever does not kill us: Cumulative lifetime adversity, vulnerability, and resilience. *Journal of Personality and Social Psychology, 99*, 1025-1041. doi: 10.1037/a0021344
- Silver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *JAMA, 288*, 1235-1244. doi:10.1001/jama.288.10.1235
- Simon, N. M., Herlands, N. N., Marks, E. H., Mancini, C., Letamendi, A., Li, Z., Pollack, M. H., Van Ameringen, M., & Stein, M. B. (2009). Childhood maltreatment linked to greater symptom severity and poorer quality of life and function in social anxiety disorder. *Depression and Anxiety, 26*, 1027-1032. doi: 10.1002/da.20604

- Sourander, A., Gyllenberg, D., Klomek, A. B., Sillanmäki, L., Ilola, A. M., & Kumpulainen, K. (2015). Association of bullying behavior at 8 years of age and use of specialized services for psychiatric disorders by 29 years of age. *JAMA Psychiatry, 73*, 159-165. doi: 10.1001/jamapsychiatry.2015.2419
- Spitzer, C., Barnow, S., Wingenfeld, K., Rose, M., Löwe, B., & Grabe, H. J. (2009). Complex post-traumatic stress disorder in patients with somatization disorder. *Australian and New Zealand Journal of Psychiatry, 43*, 80-86. doi: 10.1080/00048670701881538
- Springer, K. W., Sheridan, J., Kuo, D., & Carnes, M. (2007). Long-term physical and mental health consequences of childhood physical abuse: Results from a large population-based sample of men and women. *Child Abuse & Neglect, 31*, 517-530. doi:10.1016/j.chiabu.2007.01.003
- Stoltenborgh, M., Bakermans-Kranenburg, M. J., Alink, L. R., & IJzendoorn, M. H. (2014). The prevalence of child maltreatment across the globe: Review of a series of meta-analyses. *Child Abuse Review, 24*, 37-50. doi: 10.1002/car.2353
- Teicher, M. H., & Samson, J. A. (2016). Annual research review: Enduring neurobiological effects of childhood abuse and neglect. *Journal of Child Psychology and Psychiatry, 57*, 241-266. doi: :10.1111/jcpp.12507
- Teicher, M. H. & Samson, J. A. (2013). Childhood maltreatment and psychopathology: A case for ecophenotypic variants as clinically and neurobiologically distinct subtypes. *American Journal of Psychiatry, 170*, 1114-1133. doi: 10.1176/appi.ajp.2013.12070957. pmid:23982148
- Ursin, H., & Eriksen, H.R. (2004). The cognitive activation theory of stress. *Psychoneuroendocrinology, 29*, 567-592. doi: 10.1016/S0306-4530(03)00091-X

- U.S. Department of Commerce, U.S. Census Bureau (2012) American Community Survey.  
Available at [www.census.gov/acs/www/](http://www.census.gov/acs/www/)
- U.S. Department of Health and Human Services, National Center for Health Statistics. (2000).  
*National Health Interview Survey Questionnaire 2000*. Retrieved from  
[http://www.cdc.gov/nchs/nhis/quest\\_data\\_related\\_1997\\_forward.htm#2000\\_NHIS](http://www.cdc.gov/nchs/nhis/quest_data_related_1997_forward.htm#2000_NHIS)
- U.S. Department of Health & Human Services, Administration for Children and Families,  
Administration on Children, Youth and Families, Children's Bureau. (2016). *Child  
Maltreatment 2014*. Retrieved from [http://www.acf.hhs.gov/programs/cb/research-data-  
technology/statistics-research/child-maltreatment](http://www.acf.hhs.gov/programs/cb/research-data-technology/statistics-research/child-maltreatment)
- Vachon, D. D., Krueger, R. F., Rogosch, F. A., & Cicchetti, D. (2015). Assessment of the  
harmful psychiatric and behavioral effects of different forms of child maltreatment.  
*JAMA Psychiatry*, 72, 1135-1142. doi: 10.1001/jamapsychiatry.2015.1792
- Varese, F., Smeets, F., Drukker, M., Lieveerse, R., Lataster, T., Viechtbauer, W., Read, J., van  
Os, J., & Bentall, R. P. (2012). Childhood adversities increase the risk of psychosis: A  
meta-analysis of patient-control, prospective- and cross-sectional cohort studies.  
*Schizophrenia Bulletin*, 38, 661-671. doi: 10.1093/schbul/sbs050
- Walrath, C., Ybarra, M., Holden, E. W., Liao, Q., Santiago, R., & Leaf, P. (2003). Children with  
reported histories of sexual abuse: Utilizing multiple perspectives to understand clinical  
and psychosocial profiles. *Child Abuse & Neglect*, 27, 509-524. doi: 10.1016/S0145-  
2134(03)00035-8
- Ware, J. E., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36). 1.  
Conceptual framework and item selection. *Medical Care*, 30, 473-483.  
doi:10.1097/00005650-199206000-00002

- Widom, C. S., Czaja, S. J., Bentley, T., & Johnson, M. S. (2012). A prospective investigation of physical health outcomes in abused and neglected children: New findings from a 30-year follow-up. *American Journal of Public Health, 102*, 1135-1144. doi: 10.2105/AJPH.2011.300636
- Wolke, D., Copeland, W. E., Angold, A., & Costello, E. (2013). Impact of bullying in childhood on adult health, wealth, crime, and social outcomes. *Psychological Science, 24*, 1958-1970. doi: 10.1177/0956797613481608
- Wright, M. O., Crawford, E., & Del Castillo, D. (2009). Childhood emotional maltreatment and later psychological distress among college students: The mediating role of maladaptive schemas. *Child Abuse & Neglect, 33*, 59-68. doi:10.1016/j.chiabu.2008.12.007

**Table 1.**

Weighted Frequencies and Weighted Percentages of Reports of Negative Childhood Experiences (N=2,908)

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	<i>n</i>	%
Bullied	723	24.86
Physically abused	426	14.65
Witnessed parental violence	420	14.43
Sexually abused	298	10.24
Parental neglect	231	7.94

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**Table 2.**

Structural Equation Model Examining Direct Effects of Negative Childhood Experiences on Outcomes and Indirect Effects on Outcomes Through Recent Negative Life Events  
(N=2,908)

	<b>Distress</b>		<b>Concern For Future<sup>a</sup></b>		<b>Functional Impairment</b>	
	$\beta$ (95% CI)	SE <sup>b</sup>	$\beta$ (95% CI)	SE <sup>b</sup>	$\beta$ (95% CI)	SE <sup>b</sup>
Bullying-Direct	0.20 (0.06, 0.34)	0.07**	0.17 (0.05, 0.30)	0.06**	0.06 (-0.09, 0.20)	0.07
Bullying-Indirect	0.04 (0.02, 0.06)	0.01***	0.05 (0.02, 0.07)	0.01**	0.04 (0.02, 0.06)	0.01***
Physical Abuse-Direct	0.10 (-0.11, 0.30)	0.10	0.18 (-0.02, 0.38)	0.10	0.15 (-0.07, 0.37)	0.11
Physical Abuse-Indirect	0.04 (0.02, 0.07)	0.01**	0.05 (0.02, 0.08)	0.01**	0.04 (0.02, 0.07)	0.01**
Parental Neglect-Direct	0.30 (-0.02, 0.61)	0.16	0.08 (-0.16, 0.32)	0.12	0.37 (0.04, 0.70)	0.17*
Parental Neglect-Indirect	-0.01 (-0.04, 0.24)	0.02	-0.01 (-0.05, 0.03)	0.02	-0.01 (-0.04, 0.02)	0.02
Sexual Abuse-Direct	0.22 (-0.04, 0.48)	0.13	0.07 (-0.12, 0.27)	0.10	0.31 (0.02, 0.60)	0.15*
Sexual Abuse-Indirect	0.06 (0.03, 0.09)	0.02***	0.06 (0.03, 0.10)	0.02***	0.06 (0.03, 0.09)	0.01***
Witnessing Violence-Direct	0.14 (-0.06, 0.34)	0.10	0.31 (0.12, 0.49)	0.09**	0.13 (-0.09, 0.34)	0.11
Witnessing Violence-Indirect	0.02 (-0.01, 0.05)	0.01	0.02 (-0.01, 0.05)	0.01	0.02 (-0.01, 0.05)	0.01
	<b>Model Statistics</b>		<b>Model Statistics</b>		<b>Model Statistics</b>	
	AIC = 18135.97;		AIC = 17751.17;		AIC = 17917.86;	
	BIC = 18273.40		BIC = 17888.60		BIC = 18055.29	

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; <sup>a</sup>Worry over Future Negative Events; <sup>b</sup>Robust Standard Error

Note. All indirect effects represent mediation through recent negative life events. The following covariates were controlled for in each analysis: age, education, ethnicity, gender, and income. Significant values represent indirect effects of each negative childhood experience on the outcome variable as partially explained by exposure to recent negative life event

**Table 3.**

Poisson Regression Model Examining the Relationships Between Negative Childhood Experiences and Physician-diagnosed Mental Health Ailments

Variables	Model 1			Model 2		
	IRR(95% CI)	SE <sup>a</sup>	<i>p</i>	IRR(95% CI)	SE <sup>a</sup>	<i>p</i>
Demographics						
Female gender <sup>b</sup>	1.58(1.24, 2.00)***	0.19	0.000	1.51(1.18, 1.93)**	0.19	0.001
Age	1.04(0.93, 1.16)	0.06	0.486	0.99(0.89, 1.12)	0.06	0.917
Income	0.77(0.67, 0.89)***	0.06	0.000	0.82(0.71, 0.95)**	0.06	0.009
Ethnicity <sup>c</sup>						
African American/Black	0.84(0.56, 1.27)	0.18	0.419	0.77(0.51, 1.14)	0.16	0.191
Other, non-Hispanic	0.91(0.56, 1.48)	0.22	0.703	0.98(0.64, 1.52)	0.22	0.943
Hispanic/Latino	0.72(0.49, 1.07)	0.15	0.106	0.59(0.36, 0.98)*	0.15	0.041
Education <sup>d</sup>						
High school diploma	0.54(0.35, 0.81)**	0.11	0.003	0.55(0.37, 0.83)**	0.11	0.004
Some college	0.68(0.45, 1.04)	0.14	0.074	0.63(0.41, 0.95)*	0.13	0.029
Bachelor's degree or higher	0.49(0.31, 0.76)**	0.11	0.002	0.48(0.31, 0.75)**	0.11	0.001
Childhood experiences <sup>e</sup>						
Bullied	—	—	—	1.83(1.41, 2.35)***	0.24	0.000
Physical abuse	—	—	—	1.28(0.90, 1.81)	0.23	0.164
Parental neglect	—	—	—	1.76(1.26, 2.45)**	0.30	0.001
Witnessed parental violence	—	—	—	1.01(0.74, 1.39)	0.16	0.933
Sexual abuse	—	—	—	1.59(1.19, 2.13)**	0.24	0.002
Constant	0.34(0.22, 0.53)***	0.08	0.000	0.26(0.17, 0.39)***	0.06	0.000
<b>Model Statistics</b>	Wald's $\chi^2$ (9, 3450) = 72.59, <i>p</i> < .001			Wald's $\chi^2$ (14, 3008) = 213.77, <i>p</i> < .001		

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001; <sup>a</sup>Robust Standard Error

<sup>b</sup> Female=1; male=0

<sup>c</sup> Reference group=White

<sup>d</sup> Reference group=less than a high school diploma

<sup>e</sup> No negative childhood experience=0; At least one negative childhood experience=1

**Table 4.**

Poisson Regression Model Examining the Relationships Between Negative Childhood Experiences and Physician-diagnosed Physical Health Ailments

Variables	Model 1			Model 2		
	IRR(95% CI)	SE <sup>a</sup>	<i>p</i>	IRR(95% CI)	SE <sup>a</sup>	<i>p</i>
Demographics						
Female gender <sup>b</sup>	1.07(0.94, 1.22)	0.07	0.303	1.07(0.93, 1.22)	0.07	0.342
Age	1.83(1.71, 1.95)***	0.06	0.000	1.82(1.71, 1.95)***	0.06	0.000
Income	0.89(0.83, 0.96)**	0.03	0.002	0.91(0.85, 0.98)*	0.03	0.017
Ethnicity <sup>c</sup>						
African American/Black	1.17(0.93, 1.46)	0.13	0.176	1.00(0.78, 1.28)	0.13	0.998
Other, non-Hispanic	0.90(0.67, 1.23)	0.14	0.514	0.94(0.71, 1.25)	0.14	0.685
Hispanic/Latino	1.03(0.80, 1.33)	0.13	0.799	1.07(0.83, 1.38)	0.14	0.598
Education <sup>d</sup>						
High school diploma	0.98(0.72, 1.32)	0.15	0.881	0.94(0.71, 1.25)	0.14	0.677
Some college	0.96(0.70, 1.30)	0.15	0.777	0.92(0.69, 1.24)	0.14	0.604
Bachelor's degree or higher	0.88(0.65, 1.21)	0.14	0.442	0.82(0.61, 1.11)	0.13	0.201
Childhood experiences <sup>e</sup>						
Bullied	—	—	—	1.39(1.18, 1.63)***	0.12	0.000
Physical abuse	—	—	—	1.18(0.97, 1.43)	0.12	0.100
Parental neglect	—	—	—	1.14(0.90, 1.44)	0.14	0.270
Witnessed parental violence	—	—	—	1.04(0.86, 1.27)	0.10	0.668
Sexual abuse	—	—	—	1.44(1.19, 1.74)***	0.14	0.000
Constant	1.47(1.10, 1.96)**	0.21	0.008	1.32(1.00, 1.75)	0.19	0.054
<b>Model Statistics</b>	Wald's $\chi^2$ (9, 3280) = 484.73, <i>p</i> < .001			Wald's $\chi^2$ (14, 2942) = 607.79, <i>p</i> < .001		

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001; <sup>a</sup>Robust Standard Error

<sup>b</sup>Female=1; male=0

<sup>c</sup>Reference group=White

<sup>d</sup>Reference group=less than a high school diploma

<sup>e</sup>No negative childhood experience=0; At least one negative childhood experience=1