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Natural mentoring relationships among survivors of caregiver childhood abuse: findings from the Add Health Study

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Social support promotes resilience to adverse childhood events, but little is known about the role of natural mentors—caring, nonparental adults—in the lives of childhood abuse survivors. The current study draws from a large, longitudinal, nationally representative sample (Add Health) to examine the prevalence and characteristics of natural mentoring relationships for adolescents with a history of caregiver childhood abuse, and the extent to which these relationships are associated with psychological and health outcomes in adulthood. Among the sample ($n = 12,270$), 28.82% and 4.86% reported caregiver childhood physical and sexual abuse, respectively. Youth who reported caregiver childhood physical abuse were more likely than those who did not endorse abuse to report having a natural mentor, but their mentoring relationships were characterized by lower interpersonal closeness, shorter duration, and less frequent contact. Exposure to caregiver childhood abuse was associated with adverse outcomes during adulthood, including antisocial behavior, physical health limitations, and suicidality; the presence of a natural mentor did not buffer the negative impact of trauma on adult outcomes. However, longer mentoring relationships during adolescence buffered the strength of the association between both caregiver physical and sexual abuse during childhood and suicidality during early adulthood.

Keywords: childhood abuse; trauma; adult outcomes; natural mentoring; relationship characteristics

Introduction

National studies estimate that approximately a quarter of children in the United States experience physical and/or sexual abuse by caregivers before turning 18.^{1,2} Caregiver childhood abuse has been linked to difficulties with interpersonal relationships as well as long-term adverse developmental outcomes, such as increased risk for neurological abnormalities, immunological alterations, difficulties with interpersonal relationships, emotional dysregulation, substance abuse, and poor impulse control.^{3–6} These problems, which may begin early in life, often persist into adulthood, resulting in long-term mental and physical health difficulties.^{6,7}

Given the scope and impact of caregiver childhood abuse, researchers have sought to identify protective factors that offset the negative impact of these early traumatic experiences. Several studies have identified social support as a key factor that promotes resilience.^{8–10} In particular, natural mentoring relationships—those between youth and caring, nonparental adults that occur organically within existing social networks—are associated with a range of positive developmental outcomes among general populations, and among at-risk and marginalized youth populations.^{11–16} In particular, among at-risk youth, natural mentoring relationships are associated with improved psychological

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well-being, academic success, physical health, and fewer unhealthy behaviors (e.g., substance use, sexual risk, and delinquency).^{12,17,18} However, the majority of these studies have focused on these relationships within the context of youth in the foster care system.^{14–17} Although many youth in foster care have been exposed to caregiver-perpetrated trauma, youth enter foster care for reasons other than caregiver abuse (e.g., inadequate housing).^{19,20} Thus, studies of foster-care youth do not directly explore the role of natural mentoring in the lives of caregiver childhood abuse survivors. Additionally, foster-care youth studies do not incorporate the many youth outside of the foster-care system who have experienced caregiver abuse.²¹ The current study draws from a large, nationally representative sample to examine the prevalence and characteristics of natural mentoring relationships with a history of caregiver childhood abuse, as well as associations between these relationships and long-term psychological and health outcomes.

Background

Biopsychosocial effects of trauma. Childhood trauma has complex, multifaceted effects on development. Early trauma, particularly physical or sexual abuse by a caregiver, has been linked to major neurophysiological changes, including altered hypothalamic–pituitary–adrenal (HPA) functioning, such as hyper- and hypoactivation.^{22–25} Specifically, changes in the HPA axis may increase the ease with which cortisol is triggered in stressful situations. This results in the downregulation of cortisol receptors and hypocortisolism.^{3,26} However, when exposed to mild daily stressors, individuals may respond with hyperactivation of their HPA axis.²⁴ Activation has been linked to poor physical health outcomes (e.g., reductions in immune function) and the production of proinflammatory cytokines.^{27,28} In turn, cytokine production has been shown to be associated with sleep difficulties, fatigue, and reduced appetite.³ Chronic and systemic inflammation (impacting C-reactive protein and interleukin-6) has also been found to be associated with developing cardiovascular disease.²⁹ Impairment in immune functioning, hypertension, and cardiovascular disease can persist and even worsen in adulthood.^{3,7,30} This relationship may in part explain why those with childhood abuse have been found in at least one study to report more

cold-like symptoms, including sinus pain, fevers, and productive coughs.³¹

Exposure to significant adversity within the caregiving system may also impact both structural and functional aspects of brain development.³² Brain imaging studies have correlated caregiver childhood abuse with altered brain functioning in the prefrontal cortex, hippocampus, and amygdala, which are responsible for executive functioning and planning, learning, and behavioral functioning, respectively.^{32,33} Such changes in the brain due to disruptions in the parent–child relationship can have deleterious effects on youth cognitive abilities and emotional regulation. This may in part explain challenges with information processing, memory, planning and organization, and social functioning.^{25,34,35}

Furthermore, caregiver-perpetrated abuse that results in increased strain on the relationship reduces support from caregivers and increases insecure or disorganized attachment.^{36,37} Disruptions in early attachment are associated with poor emotional regulation, negative internal working models of self, maladaptive coping, and increased risk for psychological distress later in life.^{36,38,39} Outcomes may be mediated by strength of parental attachment; research has found that youth with a history of abuse experienced weaker bonds with parents and worse depressive symptoms and quality of life in adulthood.³⁷

In sum, the heightened stress response associated with childhood interpersonal trauma can lead to affective, cognitive, and behavioral difficulties. As a result, adolescents and adults who were abused as children tend to experience emotional dysregulation and executive functioning deficits, particularly impulse control, placing them at higher risk for mental health difficulties, including anxiety, depression, posttraumatic stress symptoms, substance abuse, self-harm, sexual risk-taking, suicidality, and violent and antisocial behavior in adulthood.^{4,5,40–43}

Protective influence of caring relationships for survivors of childhood abuse. Due to impairments in emotional and interpersonal functioning, childhood abuse can make it more difficult for victims to access social support.^{9,10} However, survivors who have social support throughout adolescence and adulthood appear to experience better psychosocial adjustment and are less likely to

develop posttraumatic stress disorder (PTSD) compared with those with less social support.^{44,45} Thus, caring, supportive relationships appear to be key protective factors for survivors of childhood abuse.

In particular, youth who have previously experienced abuse from caregivers might benefit from positive relationships with other adults. Forming consistent, trusting relationships with adults who respect and care for them might be a corrective experience for these young people, repairing some of the distorted relationship schemas previously altered by abuse.^{39,46} Adults can also model and scaffold adaptive emotional regulation strategies, mitigating some risk for developing affective and behavioral difficulties and possibly moderating hyperactivity in young people's stress response system.⁴⁷ To date, these reparative processes primarily have been studied in relationships with nonperpetrating caregivers, as well as therapists and other mental health professionals. Yet, there may be other adults in young people's lives who can help survivors recover from childhood trauma. Researchers have documented the ubiquity and influence of natural mentoring relationships with caring, nonparental adults, such as teachers, coaches, extended family members, and other mentors. In general populations, approximately 75% of youth have a natural mentor. The presence of a natural mentor is associated with lower rates of anxiety, depression, substance use, and behavioral problems.^{11,12,48} Longitudinal evidence shows that adults who had an informal mentor during adolescence report lower criminal activity, higher optimism and self-efficacy, lower levels of depression, and greater satisfaction in romantic relationships.¹³

Given these protective benefits, it is surprising that no studies to date have examined the prevalence and influence of naturally occurring mentoring relationships in general populations of childhood abuse survivors. Some studies have shown that informal mentoring relationships are prevalent among youth in the foster care system, a group with high rates of abuse exposure. In these studies, rates of informal mentoring among foster care youth range from 62% to 69%, which are somewhat lower than those found in the general population.^{49,50} Compared with their nonmentored counterparts, foster care youth with mentors reported better overall health, less suicidal ideation, lower likelihood of a sexually transmitted infec-

tion (STI), and lower rates of violent behavior.¹⁷ Although these studies are informative, as mentioned before, not all youth in foster care necessarily have experienced childhood abuse, and not all victims of childhood abuse enter foster care.^{20,51}

Studies of caregiver abuse survivors in formal mentoring programs can shed additional light onto this topic. In particular, researchers have found that youth with histories of trauma and negative relationships with caregivers tend to experience shorter formal mentoring relationships than those without a trauma history and/or more positive caregiving relationships.⁵²⁻⁵⁴ These shorter-term relationships are concerning because studies have consistently shown that the benefits of mentoring are dose dependent. That is, longer-lasting relationships are associated with improvements across several domains of functioning, but those that end prematurely have almost no measurable effect.⁵² It is important to note, however, that formal and natural mentoring relationships differ in several ways. Natural mentors are embedded within their mentee's social circles, making them more involved and accessible and more likely to have similar sociocultural backgrounds to mentees.¹⁸ Furthermore, formal mentoring reaches far fewer youth, with approximately 4% of youth finding mentors through formal programs.⁵⁵ Thus, findings from formal mentoring research must be interpreted with caution when applied to natural mentoring.

One major limitation of the literature on childhood abuse and mentoring relationships is that it does not distinguish between types of abuse to parse out the differential effects of abuse type upon outcomes.⁵² However, research has noted that different child abuse histories can result in substantially different outcomes in adulthood. For example, childhood physical abuse has been associated with aggression, while physical abuse with co-occurring neglect has been associated with depression, anger, and dissociation.^{56,57} Additionally, childhood physical abuse has been associated with greater expectations that others will be rigid, strict, and stern.⁵⁸ By contrast, childhood sexual abuse has been associated with riskier sexual behavior and significant challenges in establishing and sustaining healthy intimate relationships, including lower relationship satisfaction, lower levels of trust, and worse communication with partners, and challenges with serving in a parental role.^{56,59,60} Others have found that

sexual abuse was associated with anxiety, depression, and dissociation.⁵⁷ Given the differences in the impact of abuse types on functioning, the importance of separately exploring the effects of type of abuse upon outcomes, and the clear benefits of social support on survivors of childhood sexual and physical abuse, the present study sought to focus specifically on these two abuse types.

The current study

The present study seeks to examine the rates at which youth who experienced physical or sexual abuse by a caregiver reported the presence of informal mentors, the characteristics of these mentoring relationships, and the extent to which these relationships serve as protective factors by buffering the negative impact of trauma on adult outcomes. In pursuit of these aims, we utilized the Add Health dataset, which is large, nationally representative, and longitudinal.

Drawing from previous literature, we developed the following hypotheses. First, we hypothesized that caregiver childhood physical and sexual abuse would be negatively associated with the presence of a mentor—as well as with frequency of contact, relational closeness, and length of the mentoring relationship—based on previous studies demonstrating that youth with histories of caregiver abuse and/or insecure attachment tend to struggle to develop high-quality mentoring relationships.^{52–54} Second, we hypothesized that reports of caregiver childhood physical and sexual abuse would be positively associated with physical health problems (i.e., health-related limitations and recent STI), mental health problems (i.e., suicidal ideation and binge drinking), behavioral problems (i.e., violent and nonviolent antisocial behavior), and revictimization (i.e., recent violence exposure).^{30,41,42,61} Third, we hypothesized the presence of a mentor and the length of mentoring relationships would negatively associated with the aforementioned physical health, mental health, and behavioral problems, as well as violence reexposure during adulthood. Finally, based on existing studies linking natural mentoring relationships to positive adult outcomes and demonstrating that longer mentoring relationships are more impactful,^{13,52,62} we hypothesized that the presence of a mentoring relationship and the length of mentoring relationships would interact with caregiver childhood physical and sexual

abuse in predicting adult outcomes. Thus, we expect that the presence of a mentor and longer mentoring relationships would reduce the association between caregiver abuse and negative adult outcomes.

Methods

Data collection

The study sample was drawn from the National Longitudinal Study of Adolescent Health (Add Health). Add Health researchers used a multistage, school-based cluster probability sampling design. Stratification methods selected 80 high schools in the United States that were nationally representative in terms of region, urbanicity, size, type (i.e., private, public, etc.), and ethnic composition of the student body. In addition, 52 middle schools that were feeder schools to the participating high schools were included, resulting in a final set of 132 schools.

Students attending these schools between grades 7 and 12 during the 1994–1995 school year participated in an in-school survey. Participating students were stratified by grade and sex, and randomly selected within each stratum to participate in in-depth, in-home interviews. The Wave I in-home interview covered a range of topics related to health, relationships, academics, and behaviors ($n = 20,745$). Participants completed follow-up, in-home interviews in 1996 (Wave II; $n = 14,738$), 2001–2002 (Wave III; $n = 15,197$), and 2008–2009 (Wave IV; $n = 15,701$). Wave III surveys, which participants completed when they were aged 18–28, asked participants to report on the presence and characteristics of a nonparental adult mentor during adolescence (among other topics). Wave IV surveys, which participants completed when they were aged 24–34, asked about a range of health, behavioral, relationship, and vocational outcomes during early adulthood.

Sample

The current study relies on data collected from children and their parents during the Wave I, III, and IV in-home interviews. Consistent with Add Health guidelines,⁶³ participants were excluded from the current study if they did not have valid sample weights ($n = 2882$) for analyses incorporating these waves in order to maintain the nationally representative nature of the sample. Additionally, since the scope of the current investigation is focused on mentoring, participants were excluded if they

Table 1. Participant characteristics and descriptive statistics of key variables

	Main sample (<i>n</i> = 12,270)	Sexual abuse subsample (<i>n</i> = 606)	Physical abuse subsample (<i>n</i> = 3650)
Female	49.39%	49.17%	47.25%
Age at baseline (mean (SD))	15.43 (0.12)	15.48 (0.18)	15.50 (0.13)
Race			
White	65.83%	57.92%	62.09%
Black	15.54%	21.51%	15.79%
Hispanic	11.85%	13.86%	13.39%
Asian	3.58%	3.23%	4.83%
Other	3.19%	3.47%	3.89%
Born in the United States	74.07%	76.10%	76.16%
SES (public assistance)	16.90%	26.90%	19.15%
Abuse exposure			
Sexual abuse	4.86%	–	13.83%
Physical abuse	28.82%	81.98%	–
Mentoring			
Mentor presence	76.25%	74.89%	78.75%
Closeness (mean (SD)) ^a	2.57 (0.04)	2.37 (0.12)	2.54 (0.05)
Frequency (mean (SD)) ^b	3.89 (0.05)	3.65 (0.19)	3.90 (0.08)
Duration (mean (SD)) ^c	6.50 (0.11)	6.02 (0.35)	6.33 (0.16)

^a5-point Likert-type scale (1 = “Not close at all,” 5 = “Very close”).
^b8-point Likert-type scale (0 = “Not at all,” 7 = “Almost every day”).
^cIn years.

did not specify their relationship to their mentor (*n* = 18). Finally, since participants who were incarcerated (*n* = 38) were not administered questions related to suicidal ideation, they were not included in analyses where suicidal ideation was the primary outcome.

Demographic data from the full sample of individuals with appropriate sample weights (*n* = 12,270) indicate that the study consisted of slightly more males (50.6%) than females (49.4%). Participants self-identified as Non-Hispanic White (65.8%), Black or African American (15.5%), Hispanic (11.9%), Asian or Pacific Islander (3.6%), and Other (3.2%). Most of the sample reported being born in the United States (74%). At the start of the study, students were in 7th–12th grade (mean age = 15.43, SD = 0.12). Subsamples were created for those who retrospectively reported caregiver sexual abuse (*n* = 606) and caregiver physical abuse (*n* = 3650) (Table 1). In analyses involving mentoring variables, participants were also excluded if they identified a peer or younger sibling as a mentor (*n* = 2061) because same-age or younger youth do not meet the widely accepted definition of natural

mentors in the established literature, consistent with previous Add Health mentoring studies.^{11,64}

Measures
Mentoring.

Presence of mentor. At Wave III, all participants were asked a series of questions about mentoring. Specifically, participants were asked: “Other than your parents or step-parents, has an adult made an important positive difference in your life at any time since you were 14 years old?” Participants responded either “yes” or “no” to this question. Those who answered “yes” were asked follow-up questions. If the participant identified more than one person, they were asked to focus on the most influential person during subsequent questions about mentoring.

Length of relationship. At Wave III, individuals who stated they had been mentored were asked: “For how many years was [your mentor]/has [your mentor] been important in your life?” Participants’ responses ranged from 1 to 54 years. Those who noted that their mentor had been important in their life prior to their birth were assigned their age at

Wave III as the total length of their mentoring relationship. This question was intended to measure relationship duration. However, we also recognize that this variable may reflect differences in when mentoring relationships began (i.e., in childhood/early adolescence versus middle/late adolescence of emerging adulthood). Therefore, results including this variable are interpreted with caution as any effects may suggest a substantial buffering impact of relationships beginning earlier in life rather than an effect of relationship duration.

Frequency of contact. Those who reported having had a mentor were asked if this person was still living. Those who reported their mentor was still living were asked two questions about current mentoring frequency: (1) "How often do you see [him/her]?" and (2) "How often do you talk with [him/her] on the telephone or exchange e-mail or letters?" For both questions, participants were asked to select a frequency ranging from 0 to 7, where 0 represented "not at all," 4 represented "once a month," and 7 represented "almost every day." Given the age demographics of the sample, some youth may have moved away from their mentor. To retain a gross measure of contact, the highest score on either measure was used to reflect the most frequent level of contact. This composite variable was based upon recent research on digital media use that notes a marked increase in youth access to media platforms and reports that a large proportion (40%) of youth use these platforms to stay in contact and interact with others.^{65,66}

Closeness. Participants who reported having a mentor who was still living were asked: "How close do you feel to [him/her] these days?" Participants responded using a 5-point Likert-type scale, where 0 represented "not close at all" and 4 represented "very close."

Childhood caregiver abuse exposure.

Caregiver physical and sexual abuse. At Wave III, all participants were asked a series of questions about early life traumatic events. Specifically, participants were asked one question about sexual abuse ("How often had one of your parents or other adult care-givers touched you in a sexual way, forced you to touch him or her in a sexual way, or forced you to have sexual relations?") and one question about physical abuse ("How often had your parents or other adult care-givers slapped,

hit, or kicked you?"). These variables were highly skewed, such that the majority of participants did not experience caregiver abuse, but most of those who did experience abuse were exposed multiple times. To address skewness, these variables were dichotomized to compare those who selected any occurrence of abuse to those who reported, "this never happened."

Physical health outcomes.

Recent STI. At Wave IV, participants were asked whether they had been diagnosed with an STI in the past 12 months. Specifically, participants were asked: "In the past 12 months, have you been told by a doctor, nurse, or other health professional that you had any of the following sexually transmitted diseases?" Diseases included chlamydia, gonorrhea, trichomoniasis, syphilis, genital herpes, genital warts, hepatitis B, human papilloma virus, pelvic inflammatory disease, cervicitis or mucopurulent cervicitis, HIV infection or AIDS, and any other sexually transmitted disease. For the purposes of the current study, anyone who endorsed having an STI in the past 12 months was considered to have had a recent STI.

Recent health limitations. At Wave IV, participants were questioned about health limitations. Specifically, participants were asked: "The following [question is] about activities you might do during a typical day. How much does your health now limit you in these activities: moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?" Responses were rated on a Likert-type scale from 1 to 3, where 1 was "not limited at all" and 3 was "limited a lot." For the purposes of the current study, anyone who endorsed having any level of difficulty was considered to have health limitations.

Mental health outcomes.

Suicidal ideation. At Wave IV, participants were asked about suicidal ideation: "During the past 12 months, have you ever seriously thought about committing suicide?" Participants responded either "yes" or "no" to these questions. This dichotomous variable was used in analyses. This item was not administered to participants who were incarcerated at the time of the survey ($n = 38$).

Recent binge drinking. At Wave IV, participants were asked about their drinking habits. Participants who indicated that they had drunk an alcoholic

beverage were asked: “During the past 12 months, on how many days did you drink [5 or more/4 or more (for women)] drinks in a row?” Responses were rated on a Likert-type scale. For the purposes of the current study, a dichotomous variable was created to indicate any occurrence of binge drinking within the last year.

Behavioral outcomes.

Recent nonviolent antisocial behavior. At Wave IV, participants were asked about the frequency of seven nonviolent antisocial behaviors. Specifically, participants were asked: “In the past 12 months, how often did you”: (1) “deliberately damage property that didn’t belong to you?”; (2) “steal something worth less than \$50?”; (3) “steal something worth more than \$50?”; (4) “go into a house or building to steal something?”; (5) “sell marijuana or other drugs?”; (6) “buy, sell, or hold stolen property?”; and (7) “use someone else’s credit card, bank card, or automatic teller card without their permission or knowledge?” Responses were scored on frequency scales of 0–3, where 0 represented “never” and 3 represented “5 times or more.” For the purposes of the current study, anyone who endorsed having involvement in any of these activities was considered to have engaged in recent nonviolent antisocial behavior. This dichotomous variable was used in analyses.

Recent violent antisocial behavior. At Wave IV, participants were asked about the frequency of six violent antisocial behaviors. Specifically, participants were asked: “In the past 12 months, how often did you”: (1) “use or threaten to use a weapon to get something from someone?”; (2) “take part in a physical fight where a group of your friends was against another group?”; (3) “get into a serious physical fight that he or she needed care from a doctor or nurse?”; (4) “hurt someone badly enough in a physical fight that he or she needed care from a doctor or nurse?”; (5) “shoot or stab someone?”; and (6) “pull a knife or gun on someone?” Participants responded either yes or no to these questions. For the purposes of the current study, anyone who endorsed having involvement in any of the six outlined activities was considered to have engaged in recent violent antisocial behavior. This dichotomous variable was used in analyses.

Violence reexposure. At Wave IV, participants were asked: “Which of the following things happened in the past 12 months”: (1) “you saw some-

one shoot or stab another person?”; (2) “someone pulled a knife or gun on you?”; (3) “someone shot or stabbed you?”; (4) “someone slapped, hit, choked, or kicked you?”; and (5) “you were beaten up?” Participants responded either “yes” or “no” to these questions. For the purposes of the current study, anyone who endorsed having experienced any of these events in the past year was considered to have had recent violence exposure. This dichotomous variable was used in analyses.

Covariates.

Age. During home interviews with youth at Wave I, participants were asked for their date of birth. This date was subtracted from the date of the Wave I survey in order to determine participants’ age. This continuous variable was added to the analyses.

Sex. During home interviews with youth at Wave I, participants were asked to indicate their biological sex.

Race. During home interviews at Wave I, participants were asked to identify if they were of “Hispanic or Latino origin.” Participants responded either “yes” or “no.” Participants were also asked “what is your race” and were given the options of: “White,” “Black or African American,” “American Indian or Native American,” “Asian or Pacific Islander,” and “Other.” Participants were told they could select more than one option. Race was coded into mutually exclusive categories according to Add Health analysis guidelines.⁶³ Dichotomous variables were created to indicate membership in each racial group.

Socioeconomic status. Receipt of government benefits, which was assessed at Wave I, was used as a proxy for socioeconomic status (SES). At Wave I, guardians were asked: (1) “Are you receiving public assistance, such as welfare?”; (2) “Last month, did you or any member of your household receive”: (a) “Supplemental Security Income (SSI)?”; (b) “Aid to Families with Dependent Children (AFDC)?”; (c) “food stamps?”; or (d) “a housing subsidy or public housing?” All questions were answered with a “yes” or “no.” Guardians who answered “yes” to any of the above questions were classified as having received public assistance. When guardian information was missing, youth’s responses were used to determine if the family was receiving financial assistance.

Table 2. Association between childhood sexual and physical abuse and mentoring relationships during adolescence

	Sexual abuse	Physical abuse
Presence of a mentor ($t(10,208)$)	-0.17 (coef. = -0.03)	3.42 ^d (coef. = 0.25)
Length of relationship ($t(7327)$) ^a	-1.27 (coef. = -0.61)	-3.43 ^d (coef. = -0.79)
Frequency of contact ($t(6895)$) ^b	-0.49 (coef. = -0.11)	-3.08 ^d (coef. = -0.26)
Perceived closeness ($t(6895)$) ^c	-0.84 (coef. = -0.10)	-3.89 ^e (coef. = -0.20)

^aIn years.

^b8-point Likert-type scale (0 = "Not at all," 7 = "Almost every day").

^c5-point Likert-type scale (1 = "Not close at all," 5 = "Very close").

^dKendall's tau-b ≤ 0.01 .

^eKendall's tau-b ≤ 0.001 .

Data analysis

Data were analyzed in Stata version 14.2. Missing data were managed using multiple imputation by chained equations.^{67,68} This procedure assumes missingness at random: that missing data can be correlated with variables observed in the model. Analyses were based on 20 imputed datasets with 200 burn-ins. Since the procedure is noted to lead to a reduction in bias, it is preferred to listwise deletion.^{68,69} As discussed above, only those who participated in Waves I, III, and IV with valid sample weights were included in the analyses and had their data imputed.

All adult outcome variables were dichotomized due to a strong right skew. Logistic regressions were used to examine the extent to which caregiver childhood sexual and physical abuse predicted physical health, mental health, and behavioral outcomes, as well as likelihood of violence exposure during adulthood. For the outcomes that abuse was found to predict, the presence of a mentor and the interaction term between the abuse and mentor presence were added. Additionally, among participants who reported the presence of a mentor, the length of the mentoring relationship and the interaction term between relationship length and caregiver abuse were also examined as predictors of adult outcomes.

Finally, caregiver childhood physical and sexual abuse were used as predictors of the presence of a mentor, as well as the length, frequency of contact, and perceived closeness within mentoring relationships. Analyses of relationship characteristics were conducted only for participants who reported the presence of a mentor.

Because of collinearity between caregiver physical and sexual abuse, these predictors were examined in separate regressions for each outcome.

All analyses controlled for age, sex, race, and SES.

Results

Characteristics of youth mentoring relationships

Descriptive statistics indicated that 74.89% of youth with a history of caregiver sexual abuse and 78.75% of youth with a history of caregiver physical abuse reported having a mentor. In the general sample of all Add Health youth, 76.25% of youth reported a mentoring relationship at Wave III. Relationships for all youth tended to last on average around 6 years. On average, all youth in the sample, including those with trauma exposure, reported feeling "somewhat close" to their mentors, and seeing their mentor a little less than once a month at Wave III (Table 1).

Associations between childhood abuse and mentoring relationships

Logistic regressions that controlled for age, sex, race, and SES were conducted to determine whether caregiver childhood physical or sexual abuse was associated with the presence of a mentor in adolescence at Wave III. Results indicated that caregiver physical abuse—but not sexual abuse—was positively associated with the presence of a mentor at Wave III ($t(10,208) = 3.42, P < 0.01$) (Table 2). Among participants who reported the presence of a mentor, linear regressions were run to determine if caregiver childhood sexual or physical abuse were associated with characteristics of the mentoring relationship. Although caregiver childhood physical abuse was associated with an increased likelihood of identifying a mentor, mentoring relationships for youth with a physical abuse history tended to be shorter

Table 3. Associations between childhood physical and sexual abuse and adult outcomes

	Sexual abuse	Physical abuse
Nonviolent antisocial behavior (<i>t</i> (12,269))	2.74 ^a (OR = 1.60)	6.19 ^a (OR = 1.67)
Recent violent antisocial behavior (<i>t</i> (12,269))	2.08 ^a (OR = 1.59)	4.50 ^c (OR = 1.61)
Recent violence exposure (<i>t</i> (12,269))	3.57 ^b (OR = 1.77)	4.99 ^c (OR = 1.50)
Recent STI (<i>t</i> (12,269))	2.47 ^a (OR = 1.59)	3.02 ^b (OR = 1.32)
Recent health limitations (<i>t</i> (12,269))	2.75 ^b (OR = 1.61)	2.30 ^a (OR = 1.25)
Suicidality (<i>t</i> (12,231))	3.74 ^c (OR = 1.89)	4.03 ^c (OR = 1.55)
Recent binge drinking (<i>t</i> (12,269))	-0.69 (OR = 0.92)	4.10 ^c (OR = 1.30)

^aKendall's tau-b ≤ 0.05.

^bKendall's tau-b ≤ 0.01.

^cKendall's tau-b ≤ 0.001.

(*t*(7327) = -3.43, *P* < 0.01), with a reduced frequency of contact (*t*(6895) = -3.08, *P* < 0.01), and perceived closeness (*t*(6895) = -3.89, *P* < 0.01), compared with youth without a history of caregiver physical abuse. Caregiver sexual abuse was not related to the absence or presence of a mentor, or mentoring length, frequency, or closeness (Table 2).

Associations between abuse and adult outcomes

Linear and logistic regressions were computed in order to determine if the presence or absence of self-reported caregiver childhood abuse was associated with more adverse adult outcomes. Results revealed that caregiver childhood physical and sexual abuse were related to a broad set of negative outcomes in adulthood at Wave IV. Controlling for age, sex, race, and SES, caregiver childhood sexual abuse was related to both nonviolent and violent antisocial behavior (*t*(12,269) = 2.74, *P* = 0.01 and *t*(12,269) = 2.08, *P* = 0.04). Caregiver sexual abuse was also associated with violence reexposure in adulthood (*t*(12,269) = 3.57, *P* < 0.01). Physical abuse was also related to both nonviolent and violent antisocial behavior (*t*(12,269) = 6.19, *P* < 0.01 and *t*(12,269) = 4.50, *P* < 0.01, respectively) and violence reexposure in adulthood (*t*(12,269) = 4.99, *P* < 0.01) (Table 3).

Looking to mental and physical health outcomes, both caregiver sexual abuse and physical abuse were associated with a recent STI (*t*(12,269) = 2.47, *P* = 0.015 and *t*(12,269) = 3.02, *P* < 0.01, respectively). Both caregiver sexual (*t*(12,269) = 2.75, *P* = 0.01) and physical abuse (*t*(12,269) = 2.30, *P* = 0.023) were associated with health limitations in the past 12 months. Both care-

giver sexual (*t*(12,231) = 3.74, *P* < 0.01) and physical abuse (*t*(12,231) = 4.03, *P* < 0.01) were also associated with suicidality. Caregiver physical but not sexual abuse was associated with recent binge drinking (*t*(12,269) = 4.10, *P* < 0.01) (Table 4).

Main and interactional effects of mentoring

Further analyses were conducted on the adverse outcomes that were identified as associated with trauma exposure. Analyses were only conducted for outcomes that caregiver childhood physical abuse and/or sexual abuse were found to predict, specifically nonviolent and violent antisocial behavior, reexposure to violence, recent physical health issue, recent STI, recent health limitations, suicidality, and binge drinking. As discussed above, separate analyses were conducted for caregiver sexual and physical abuse due to collinearity.

A dichotomous indicator of the presence of a mentor and the interaction term between mentor presence and each caregiver abuse indicator was used to determine whether the presence of a mentor had a main and/or moderating effect on adult outcomes. Controlling for age, sex, race, and SES, analyses revealed a significant main effect of mentoring, suggesting that, in the absence of caregiver abuse, having a mentor during adolescence is associated with fewer health limitations in adulthood in both caregiver physical abuse (*t*(10,208) = -3.97, *P* < 0.01) and sexual abuse (*t*(10,208) = -3.41, *P* < 0.01) analyses. However, the interaction effects of mentoring and both types of caregiver abuse were not significant in predicting health limitations. There were no other significant main or interactional effects of the presence of a mentor on other outcomes (Table 4).

Table 4. Associations among childhood physical and sexual abuse, adverse adult outcomes, the presence of an adult mentor, and the interaction between abuse and mentor presence

	Sexual abuse	Physical abuse
Nonviolent antisocial behavior (<i>t</i> (10,208))		
Abuse	1.23 (OR = 1.55)	2.60 ^a (OR = 1.64)
Mentoring	0.16 (OR = 1.02)	0.06 (OR = 1.01)
Abuse * mentoring	0.11 (OR = 1.10)	-0.20 (OR = .96)
Violent antisocial behavior (<i>t</i> (10,208))		
Abuse	2.56 (OR = 2.44)	3.34 ^a (OR = 1.90)
Mentoring	-1.55 (OR = 0.84)	-1.46 (OR = 0.83)
Abuse * mentoring	-1.68 (OR = 0.51)	-0.87 (OR = 0.83)
Violence reexposure (<i>t</i> (10,208))		
Abuse	2.94 ^b (OR = 2.33)	3.20 ^b (OR = 1.73)
Mentoring	-1.29 (OR = 0.87)	-1.02 (OR = 0.88)
Abuse * mentoring	-0.82 (OR = 0.74)	-0.80 (OR = 0.85)
Recent STI (<i>t</i> (10,208))		
Abuse	2.12 ^a (OR = 1.89)	2.00 ^a (OR = 1.43)
Mentoring	-0.90 (OR = 0.90)	-0.65 (OR = 0.92)
Abuse * mentoring	-0.66 (OR = 0.75)	-0.79 (OR = 0.83)
Recent health limitations (<i>t</i> (10,208))		
Abuse	0.85 (OR = 1.32)	-0.17 (OR = 0.96)
Mentoring	-3.41 ^b (OR = 0.66)	-3.97 ^b (OR = 0.61)
Abuse * mentoring	0.53 (OR = 1.24)	1.23 (OR = 1.35)
Suicidality (<i>t</i> (10,208))		
Abuse	3.10 ^b (OR = 2.55)	2.50 ^b (OR = 1.63)
Mentoring	-0.56 (OR = 0.92)	-0.64 (OR = 0.89)
Abuse * mentoring	-0.67 (OR = 0.74)	-0.22 (OR = 0.95)
Recent binge drinking (<i>t</i> (10,208))		
Abuse	-	2.30 ^a (OR = 1.34)
Mentoring	-	1.37 (OR = 1.11)
Abuse * mentoring	-	-0.36 (OR = 0.94)

^aKendall's tau-b ≤ 0.05.

^bKendall's tau-b ≤ 0.01.

In a separate set of analyses only among youth with a mentor, each type of caregiver abuse was added to equations to determine whether the length of the mentoring relationship had a main or moderating effect on adult outcomes. These analyses revealed that for caregiver sexual abuse (*t*(7327) = -2.50, *P* = 0.01) and caregiver physical abuse (*t*(7327) = -2.81, *P* = 0.01), relationship length had a significant main effect on nonviolent antisocial behavior. Results suggest that, in the absence of caregiver abuse, longer mentoring relationships are associated with lower rates of antisocial behavior in adulthood. In the caregiver physical abuse analyses, there was also a significant main effect of relationship length on binge drinking (*t*(7327) = -2.64, *P* = 0.01); it was not estimated in the caregiver sexual abuse analysis because caregiver sexual abuse

was not found to predict binge drinking. This suggests that, in the absence of caregiver physical abuse, longer mentoring relationships are associated with lower rates of binge drinking in adulthood. However, there were no significant interactions between abuse and mentoring length in predicting nonviolent antisocial behavior or binge drinking (Table 5).

Additionally, caregiver sexual abuse (*t*(7307) = -2.25, *P* = 0.02) and physical abuse (*t*(7307) = -2.42, *P* = 0.017) and mentoring length in adolescence were found to significantly interact with predicting suicidality in adulthood: longer mentoring relationships reduced the association between abuse and suicidality. There were no main or interactional effects of mentoring length on violent antisocial behavior, violence reexposure, or any of the physical health outcomes.

Table 5. Associations among childhood physical and sexual abuse, adverse adult outcomes, the length of mentoring relationship, and the interaction between abuse and mentoring length

	Sexual abuse	Physical abuse
Nonviolent antisocial behavior (<i>t</i> (7327))		
Abuse	2.01 ^a (OR = 1.62)	3.90 ^c (OR = 1.57)
Mentoring length (years)	-2.50 ^b (OR = 0.88)	-2.81 ^b (OR = 0.84)
Abuse * mentoring length	0.24 (OR = 1.07)	1.43 (OR = 1.17)
Recent violent antisocial behavior (<i>t</i> (7327))		
Abuse	0.73 (OR = 1.22)	3.42 ^b (OR = 1.59)
Mentoring length (years)	0.69 (OR = 1.04)	1.08 (OR = 1.09)
Abuse * mentoring length	0.10 (OR = 1.03)	-0.67 (OR = 0.92)
Violence reexposure (<i>t</i> (7327))		
Abuse	2.18 ^a (OR = 1.68)	3.82 ^c (OR = 1.50)
Mentoring length (years)	0.50 (OR = 1.02)	0.96 (OR = 1.06)
Abuse * mentoring length	1.30 (OR = 1.33)	-0.38 (OR = 0.96)
Recent STI (<i>t</i> (7327))		
Abuse	1.06 (OR = 1.34)	1.14 (OR = 1.16)
Mentoring length (years)	-0.29 (OR = 0.98)	-0.94 (OR = 0.93)
Abuse * mentoring length	0.43 (OR = 1.11)	-1.63 (OR = 1.21)
Recent health limitations (<i>t</i> (7327))		
Abuse	1.99 ^a (OR = 1.63)	2.16 ^a (OR = 1.32)
Mentoring length (years)	1.29 (OR = 1.09)	1.47 (OR = 1.11)
Abuse * mentoring length	0.13 (OR = 1.03)	-0.49 (OR = 0.95)
Suicide (<i>t</i> (7307))		
Abuse	1.27 (OR = 0.84)	2.23 ^b (OR = 1.30)
Mentoring length (years)	-1.12 (OR = 0.92)	0.12 (OR = 0.91)
Abuse * mentoring length	-2.25 ^a (OR = 0.95)	-2.42 ^a (OR = 1.05)
Recent binge drinking (<i>t</i> (7327))		
Abuse	-	3.07 ^b (OR = 1.44)
Mentoring length (years)	-	-2.64 ^b (OR = 1.01)
Abuse * mentoring length	-	0.60 (OR = 0.65)

^aKendall's tau-b ≤ 0.05.

^bKendall's tau-b ≤ 0.01.

^cKendall's tau-b ≤ 0.001.

Discussion

The current study sought to examine associations among caregiver childhood abuse, adverse adult outcomes, and informal mentoring relationships during adolescence. In our nationally representative sample, a sizeable minority of participants reported experiencing physical (29%) or sexual (5%) abuse during childhood. Although rates of exposure have varied in previous studies, those found in our study are within the range of those found in other national samples.^{1,2,70} Between-study differences in rates may reflect methodological differences, including reporters (self versus parent), item wording, and sampling. Contrary to the hypotheses, our findings indicated that caregiver childhood physical abuse was associated with an increased likelihood

of having a mentor. It is possible that nonparental adults, such as extended family members, family friends, neighbors, teachers, or professionals within the social service system, are more likely to intervene or become involved with children who experience physical abuse by caregivers. This finding also challenges the assumption that youth who have experienced abuse are unlikely to develop natural mentoring relationships. Interestingly, this finding stands in contrast to other studies that indicate that youth in the foster care system are less likely to report having a natural mentor,^{49,50} suggesting that other factors, such as caregiver transitions and geographical moves, may contribute to decreased natural mentoring within this population, rather than experiencing physical abuse per se.

However, consistent with the hypotheses, participants who experienced caregiver physical abuse reported having mentoring relationships characterized by limited closeness, shorter duration, and less frequent contact. These youth may have struggled to form strong bonds with other adults in their life, resulting in shorter, more distant relationships. These findings align with formal mentoring research of at-risk youth, which has found that youth who have experienced abuse, strained caregiver relationships, and other environmental risk factors tend to experience shorter and lower quality relationships with mentors.^{53,54,71} More generally, the experience of abuse, particularly at the hands of caregivers, can alter children's relational schemas and impair their sense of trust and safety with others; this makes it difficult to establish close, intimate relationships with others.^{72,73} Further, trauma-exposed youth may be exposed to other stressors and instabilities, such as neighborhood disorder, caregiver instability, and frequent moves, which may make it more difficult for them to establish close, long-lasting relationships with non-parental adults.⁷⁴

It was surprising that caregiver sexual abuse was not associated with the presence or characteristics of mentoring relationships. Research has shown that childhood sexual abuse, like physical abuse, threatens youth's ability to establish trusting, intimate relationships, leading to social dysfunction and isolation.⁷³ However, it is possible that these effects do not extend to informal mentoring relationships, specifically. Alternatively, the low base rate of caregiver sexual abuse in our sample may have made it difficult to uncover significant associations with relationship characteristics.

Consistent with previous research, which links caregiver childhood abuse to elevated risk for physical and mental health problems, as well as revictimization later in life,^{42,61,75,76} the current study documented a range of negative adult health outcomes associated with these adverse experiences during childhood, including an association of both caregiver physical and sexual abuse with violent and nonviolent antisocial behavior, health limitations, a recent STI, suicidality during adulthood, and recent reexposure to violence during adulthood. Our findings provided mixed support for the final set of hypotheses that the presence of a mentor and the length of the relationship would buffer the impact

of trauma on adult outcomes. Findings from the current study indicated the presence of a mentor did not moderate the impact of physical or sexual abuse on any of the adult outcomes we examined, suggesting that the simple presence of a mentor is insufficient in buffering against the negative effects of trauma. However, among participants who reported having a mentor during adolescence, the length of the mentoring relationships did significantly moderate the association of caregiver childhood physical and sexual abuse with suicidality during adulthood. This finding potentially suggests that mentoring relationships, when sufficiently long, may partially buffer the negative impact of caregiver childhood abuse upon mental health. Alternatively, this finding may reflect that when relationships begin earlier in life, they may have a great buffering effect. Further research is needed to elucidate the relationship between age, length of mentoring, and reduced suicidality in order to determine whether there are critical developmental periods during which mentorship may help improve mental health outcomes.

The findings are also consistent with previous literature demonstrating that social support in general can serve as a key protective factor among trauma survivors,⁴³ and that mentoring relationships specifically can positively impact psychosocial development among at-risk and maltreated youth.³⁹ Literature focused on mentoring for at-risk youth populations has found that the presence of a mentor and the duration of mentoring relationships were associated with improved psychosocial outcomes (e.g., lower depression, less risk-related behaviors, and greater life satisfaction).^{16,76} Although social support has been shown to promote better physical health⁷⁷ and mental health in a wider at-risk sample, mentoring relationships alone, even those that are long-lasting, may not be able to protect survivors against the maladaptive immunological, metabolic, and cardiovascular processes that have been linked to trauma^{22,30}. Overall, these findings suggest that mentoring relationships may support the healing process among individuals exposed to childhood abuse, but are not sufficient in protecting young people against the full range and severity of long-term difficulties.

Although not a panacea, mentoring may have played a more circumscribed, but still important, buffer role in the lives of young trauma survivors. The current findings extend previous research

that documented that social support reduced the association between childhood abuse and suicidal ideation.^{78,79} Youth who have access to supportive relationships could be less likely to consider suicide to manage abuse-related stress because they have a safe space to discuss and process feelings; supports may also provide youth with corrective relational experiences and reasons to live. Our results extend these findings to suggest that informal mentors may serve as a key protective factor among trauma survivors. Our findings, which highlight the potential impact of mentoring, suggest that those without mentors may benefit from recruiting caring relationships early on in life, as it is clear that access to such support can have a meaningful impact on young people's will to live in the face of abuse. These relationships may be keys for parents of children with psychiatric difficulties, and particularly those from marginalized racial backgrounds who may seek out mentoring rather than professional services due to practical and cultural barriers.⁸⁰ However, findings of the limited effect of mentoring for youth with histories of abuse also highlight the importance of continuing to improve upon the availability and cultural competency of professional services for marginalized youth and families; mentoring cannot take the place of professional care and lacks the broad range of effects attributed to professional interventions.

Contributions, limitations, and future directions

This study makes several contributions to the existing body of literature. First, it is among the first studies to examine associations among caregiver childhood abuse, adverse adult outcomes, and natural mentoring relationships. We conducted this investigation using the large, nationally representative Add Health dataset, and handled missing data using a rigorous multiple imputation approach, ensuring that the analytic sample remained representative of the original sample and thus the U.S. population as a whole. The longitudinal nature of the data allowed us to examine the long-term associations between caregiver childhood abuse and later mentoring relationships during adolescence. Our findings replicate previous literature linking childhood abuse to a range of adverse adult outcomes. We add to this literature by documenting the prevalence, characteristics, and protective role of natural mentoring relationships among previously maltreated youth.

Most prominently, our study contributes to the literature on the association between social support and childhood abuse by highlighting that experiences of abuse may not necessarily result in less access to supportive relationships. By contrast, our findings indicated that youth who have experienced caregiver physical abuse were more likely to have been mentored, though the quality of these mentoring relationships was lower than youth who have not been abused. Future research should further investigate these findings to understand the mechanisms that may contribute to the development of mentoring relationships for youth who have experienced caregiver abuse and to identify ways these relationships can be supported to benefit youth.

Our study also had some notable limitations that should be acknowledged and addressed in future studies. First, this study relied on retrospective self-report during adolescence of exposure to caregiver childhood physical and sexual abuse. This is a commonly used method of assessing abuse history, and our findings on prevalence were consistent with those found in other national studies.¹ However, limitations of memory, response patterns, as well as positive impression management and social desirability, may have biased estimates and associations with outcomes. For example, it is possible that participants who were more willing to acknowledge exposure to caregiver abuse were also more likely to acknowledge negative outcomes during adulthood. Moreover, as mentioned above, due to study design, it is not possible to separate the impact of relationship length from the impact of age (e.g., whether relationships earlier in life when a child may have been experiencing the caregiver abuse may have particular buffering effects). Future studies should attempt to explore the impact of these constructs separately to understand which one has a stronger buffering effect. Further, we utilized dichotomous indicators of the presence or absence of each type of abuse. Future research should utilize longitudinal methods that follow children from an earlier age (to eliminate limitations of retrospective reporting) and examine the impact of cumulative caregiver abuse exposure on adult outcomes and the protective role of natural mentoring relationships. Further, the Add Health dataset does not specifically measure PTSD symptoms, which would be an important outcome for future studies, given its relevance to childhood abuse.

Additionally, because previous literature suggests that the impact of childhood abuse is multifaceted and cuts across multiple domains of functioning, we examined a wide range of adult outcomes. All analyses were theory-driven, and we intentionally limited follow-up analyses to outcomes that previous literature has shown to be significantly associated with abuse. Still, the number of analyses we conducted and our large sample size raises the possibility of a Type I error. It will be important for these findings, particularly those related to the characteristics and buffering effect of natural mentoring relationships, to be subjected to replication. Finally, our study research questions and data were by nature observational, and causal conclusions about the effect of childhood trauma and mentoring relationships on adult outcomes could not be definitively established.

Recommendations and conclusions

Consistent with studies on formal mentoring relationships,³⁹ our findings suggest that natural mentoring relationships may help to offset some of the elevated risk for maladjustment associated with childhood abuse. However, this buffering effect was modest and limited, suggesting that mentoring is not a replacement for rigorous, empirically supported therapeutic interventions for childhood trauma. Rather, clinicians and other service providers working with maltreated youth (particularly those who were victimized by primary caregivers) might help youth take stock of the caring adults in their network and help them to cultivate and maintain connections, particularly those that are long lasting. In short, natural mentors might be a helpful component of the comprehensive support and services that should be available to youth who experienced early caregiver childhood abuse.

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Author contributions

E.W.K conceived the study, conducted all analyses, wrote the first version of the paper as her doctoral dissertation, and oversaw the writing of the submitted manuscript and revisions. M.H. and S.S. contributed to the reduction of the manuscript to publication length and the writing of the submitted version and subsequent revisions. M.P. contributed to the literature review and conducted significant revisions to the manuscript in response to the reviewers' comments. J.R. contributed to the conception and design of the study, interpretation of the findings, and revisions of drafts. L.E. provided statistical consultation, assisted with missing data management and analyses, and contributed to the interpretation of findings.

Competing interests

The authors declare no competing interests.

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