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Sleep It Off? Exploring Sleep Duration and Bedtime Regularity as Potential Protective Moderators of Early Adversity's Impact on Mental Health in Infancy, Childhood, And Adolescence

Sarah Lindsey Hipwell Kamhout
Brigham Young University

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Sarah Lindsey Hipwell Kamhout

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Master of Science

Kara Duraccio, Chair
Chad Jensen
Jared Nielsen

Department of Psychology

Brigham Young University

ABSTRACT

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Sarah Lindsey Hipwell Kamhout
Department of Psychology, Brigham Young University
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Introduction: Adverse Childhood Experiences (ACEs) are known to increase risk of mental health challenges throughout development, and sleep is known to decrease risk of mental health challenges. These have not been studied in tandem in younger cohorts. We investigated whether interactions between sleep duration and sleep regularity would moderate the impact of ACE exposure on risk for the development of mental health disorders.

Methods: We conducted secondary cross-sectional analyses on the 2020-2021 waves of the National Survey of Children's Health (NSCH) (n = 92,669). We used logistic and ordinal regression to replicate known main effects of ACEs (total, household, community, and single) and sleep (duration and irregularity) on mental health diagnostic status and symptom severity, and we examined the interaction of ACEs and sleep on mental health diagnostic status. To correct for multiple comparisons, all original models were performed with one half of the dataset and then replicated in the second half. Follow-up analyses by age cohort (0-5, 6-11, 12-17 years) further examined interaction effects across development. Poverty level, parental education status, child age, child sex, neighborhood safety, neighborhood support, and race/ethnicity were included as covariates, as indicated in a priori acyclic graph (DAG) modeling.

Results: Known main effects for ACE and sleep on mental health diagnoses were replicated across all models. Interactions between ACE exposure and adequate sleep duration or increased sleep irregularity were not clinically significant, although some were statistically significant due

to large sample size, such that adequate sleep duration was associated with marginally increased risk of mental health diagnosis (Omnibus B = 0.048, $p < 0.0001$) and greater bedtime irregularity was associated with marginally decreased risk of mental health diagnosis (Omnibus B = -0.030, $p < 0.001$).

Discussion: Main effects in this analysis are consistent with previous literature on ACEs, sleep, and mental health. However, interaction effects were largely small and clinically insignificant. Dichotomous and categorical parent-report items assessing sleep health may not be sensitive to interaction effects, compared with continuous data or physiological measurements. Further, examining mental health symptoms (rather than diagnosis status) may also allow for more nuanced understanding of potential interaction effects.

Keywords: Sleep regularity, sleep duration, adverse childhood experiences, family resilience

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Adverse Childhood Experiences (ACEs) are widely occurring, with estimates suggesting that 45% of minors have experienced at least 1 ACE, and 1 in 10 have experienced multiple ACEs (Sacks & Murphey, 2018). Nevertheless, evidence-based interventions for symptoms related to ACEs remain understudied and underdelivered, even as efforts towards screening increase (Finkelhor, 2018). Analyses of pooled NSCH responses from 2016-2019 suggest a dose-dependent relationship between ACEs and physical, mental, and neurodevelopmental health outcomes (Walker et al., 2022). Given ACEs' prevalence and their compounding effects, further research identifying potential points of intervention between ACE exposure and negative health outcomes is crucial to future public health efforts (Finkelhor, 2018). Despite prior studies suggesting the powerful effects of early interventions for improving developmental outcomes in children exposed to toxic stress (Beckmann, 2017), no standard treatments for multiple ACEs have been previously identified (Campbell, 2020). Further, even when treatment is available, rates of engagement can be very low due to systematic barriers to mental health care (Loveday et al., 2022). This is likely to be especially true in low-income or otherwise high-risk populations which already face greater likelihood of repeated ACE exposure within and across generations (Crouch, Probst, et al., 2019). It is possible that screening for ACEs without facilitating access to treatments may be more harmful than helpful, due to increases in client stress upon screener administration, limited time to discuss disclosures, and potential practitioner biases leading to over- or under-diagnosis (Finkelhor, 2018). Thus, identifying trauma symptoms which can be

addressed affordably, systemically, and communally may serve as a valuable supplement to traditionally recommended individual trauma therapies.

Sleep is vital to consider in this context as it has been previously observed as a mediating factor between childhood trauma and severe mental health conditions in adults ages 18-65 (Laskemoen et al., 2021) as well as between ACEs and long-term physical health in late adulthood (Mishra et al., 2020). Researchers theorize that relationships between ACEs, sleep, and adult health relate to epigenetic changes (Lang et al., 2020; Palagini et al., 2015), sleep's effects on metabolism (Lee et al., 2014), and inflammatory processes (Dolsen et al., 2019; Irwin et al., 2016). Such effects may be also be influenced by sleep's proposed impact on emotional regulation and reactivity of the hypothalamic pituitary adrenal (HPA) axis (Blake et al., 2018; Nicolaides et al., 2020; Palmer & Alfano, 2017), both of which are likely related to long-term stress sensitivity and management (van Dalfsen & Markus, 2018). Rapid Eye Movement (REM) sleep is similarly linked with amygdala-hippocampus-medial prefrontal cortex circuitry, particularly in regards to memory formation, which may be important to trauma processing (Genzel et al., 2015; Murkar & De Koninck, 2018). Regardless of the many, likely multifaceted mechanisms at play, these findings clearly demonstrate that sleep health should not be ignored and may even be key to reducing the known health effects of ACE exposure. However, sleep has not been included in previous NSCH analyses on ACEs and mental health, and even across all research paradigms, sleep-related factors are rarely studied as a preventative measure against adverse effects of ACEs (Crouch, Radcliff, et al., 2019).

Although sleep has not been thoroughly researched as a protective factor against trauma-related symptoms, many studies have identified sleep disturbances as a symptom of psychosocial stress. Trauma exposure has been consistently linked with delayed sleep onset (Glod et al., 1997;

Lai et al., 2020; Schneiderman et al., 2018; Wittmann et al., 2012), greater number of sleep disturbances (Baddam et al., 2019; Schneiderman et al., 2018; Wamser-Nanney & Chesher, 2018; Xiao et al., 2020), and reduced sleep duration (Geng et al., 2018; Schneiderman et al., 2018; Wittmann et al., 2012) in children and adolescents. Healthy sleep has similarly been shown to be influential in time periods immediately surrounding an adverse event, with appropriate sleep duration and depth preventing intrusive memories and ruminations in some adults (Colvonen et al., 2019; Porcheret et al., 2020). A systematic review also notes the importance of the pregnancy and infancy period, observing that stress exposure occurring perinatally may also lead to higher likelihood of alterations in HPA axis development, and thereby greater risk of long-term sleep disorders in adulthood (Lo Martire et al., 2020). Social factors also interact with biology, as children exposed to maltreatment may alter their sleep location or sleep schedule to avoid an abuser or reminders of an event; these altered routines may continue long after childhood, potentially leading to compounding effects over time (Greenfield et al., 2011; Spilsbury, 2009). Family rituals, such as consistent sleep routines, have been shown to prevent some forms of stressors, such as relational conflicts, and to improve at-risk families' capacities to cope with stress (Bocknek, 2018). Conversely, inconsistent bedtime routines may increase (or reflect increased) family stress and conflict (Lemola et al., 2012). Such interactions between social and biological protective and risk factors suggests a need to consider stress-related sleep alternations in the context of lost developmental benefits such as optimal intellectual development (Short et al., 2018) or physical growth (Liu et al., 2022), in addition to that of increased susceptibility to negative effects of stress.

In the face of these multidimensional risks, sleep stands as a potentially salient protective factor against negative health outcomes post-traumatic exposure, as well as an affordable and

accessible treatment target. Sleep interventions have been shown to help with a variety of mental health symptoms. A study of adults who were victims of a violent crime found that four sessions of sleep hygiene psychoeducation and instruction in guided imagery led to improvements in nightmare frequency, PTSD symptoms, anxiety, and depression at a 3-month follow-up (Krakow et al., 2001). Although more research is needed in younger cohorts which takes ACE exposure into account as a factor in treatment efficacy, across clinical trials of children ages 5-19, Cognitive Behavioral Therapy for Insomnia (CBT-I) has been associated with significant improvements in sleep onset latency and sleep efficiency (Ma et al., 2018). Further, multiple randomized controlled trials of CBT-I techniques have found that sleep interventions alleviate adolescent depression and anxiety by improving their sleep (Blake & Allen, 2020), and a pilot study of the Transdiagnostic Sleep and Circadian Intervention for Youth (TranS-C) found that treatment for circadian misalignment reduced ADHD symptoms in adolescents (Becker et al., 2022). These benefits may also extend to other important areas of life. A study of diverse, urban seventh graders found significant improvements in sleep quality, academic performance, and internalizing behaviors after eight Smart Sleep sessions were delivered in small groups, as compared with those who did not receive the intervention (Wolfson et al., 2015). Thus, although not directly addressing experiences of adversity, sleep treatment can improve areas of life known to be negatively impacted by early adversity, even beyond sleep difficulties themselves.

Further, sleep treatment can be offered in more accessible ways than traditional trauma therapies, and serve as a valuable supplement to them, or as an approachable first interaction with the mental health community. For instance, the group format of Wolfson et al.'s (2015) Smart Sleep school sessions speaks to the potential for affordable interventions to be offered on a public health scale. Even when considering individual delivery, in contrast with many other

forms of psychotherapy, sleep interventions are often condensed to under eight sessions and can be completed virtually (Adams et al., 2023; Dong et al., 2020; Garcia, 2020; Muench et al., 2022). Reduced costs, increased flexibility in scheduling, and decreased transportation needs associated with shorter and/or remote treatments can maximize clinician reach while also minimizing client burden. Further, in contrast with some other preventative medical interventions, sleep treatment does not require costly prescriptions, dietary changes, or external equipment and, due to its low risks, does not need to be limited to those with diagnosed sleep disorders (Harvey et al., 2021). Impaired sleep following abuse has also been previously associated with increased risk of revictimization, meaning that early sleep intervention is crucial not only to ongoing symptom management but also to long-term harm prevention (Noll et al., 2006). Sleep interventions may therefore be especially important for and implementable within high-ACE cohorts.

It is also likely that many youth with ACEs are in need of sleep treatment, given high rates of insufficient sleep across the general population of children and teenagers in the United States. Recent estimates from the 2016-2018 wave of NSCH surveys suggest that 1/3 of children between the ages of four months and 17 years sleep less than the recommended amount (Wheaton & Claussen, 2021). In childhood, reduced sleep duration is often associated with special healthcare needs, lower family income, lower parental education, and irregular bedtimes (Wheaton & Claussen, 2021). Rates of inadequate sleep duration may be even higher among teenagers, with other studies suggesting that nearly 70% of adolescents are not obtaining the 8-10 hours of sleep associated with best outcomes in their age group (Paruthi et al., 2016; Wheaton, 2018), and over 40% of US adolescents sleep less than seven hours per night (Wheaton, 2018). During adolescence, low sleep duration can also be related to natural delays in

sleep pressure and increased preference towards evening chronotype occurring as pubertal development progresses (Crowley et al., 2018). Social factors such as increased screen use (Power et al., 2017; Twenge et al., 2017), increased independence in setting bedtimes (Power et al., 2017), and school start times shifting earlier for upper grades (Dunster et al., 2018) are also likely at play. ACEs are another risk factor of poor sleep duration, timing, and quality across the lifespan (Albers et al., 2022; Duraccio et al., 2024; Sullivan et al., 2019; Yu et al., 2022). If sleep moderates the relationship between early adversity and later mental health difficulties, ACE screenings may help identify youth who are especially at risk of sleep problems and may thus benefit most from available sleep interventions.

Preliminary evidence suggests that the relationship between ACEs, mental health, and sleep is compelling, yet complex. Previous research in South Korean middle and high school students explored anxiety and depression as moderators of sleep quality in traumatized cohorts and found that a significant portion of variance in the relationship between ACEs and disturbed sleep is accounted for depression and anxiety symptoms (Park et al., 2021). Sleep duration has also been linked with increased occurrence of severe mental illnesses in children and adolescents, with risk being stronger in youth who also experienced psychosocial stressors such as perceived discrimination, bullying, feeling unsafe in neighborhoods, and feeling unsafe at school (Malika et al., 2023). Such findings may also generalize to abuse exposure. For instance, a recent study of Chinese adolescents found that sleep disturbance significantly mediated the relationship between childhood maltreatment and depressive symptoms (Chang et al., 2023). Together, these findings may demonstrate that rather than accepting disturbed sleep as an unavoidable symptom associated with experiencing adverse events, sleep may be thought of as a possible malleable treatment focus. Findings for externalizing conditions are more variable. A

study of 529 adolescents found that harsh parenting and child maltreatment were associated with increases in externalizing symptoms, as well as more sleep problems identified on the Sleep Habits Survey (Wolfson et al., 2003). However, the interaction between child maltreatment and parenting experiences and sleep did not explain variance in levels of internalizing or externalizing symptom levels (Calhoun et al., 2019). Another study of 193 children ages 0-11 undergoing evaluation at a specialty clinic found that higher ACEs were associated with greater difficulty sleeping, but were not associated with neurodevelopmental diagnosis, externalizing symptoms, or increased hyperactivity (Mehari et al., 2021). This deviation from trends identified in other studies on internalizing conditions can suggest that sleep may be more protective against some mental health symptoms than others.

In the proposed study, we seek to investigate the potentially moderating influence of adequate sleep duration and consistent weekday sleep timing on the relationship between ACE exposure and child and adolescent mental health. Findings from this project may inform medical and mental health professionals on the potential importance of considering sleep in evaluation of mental health outcomes in high-ACE minors. Findings could also inform future studies on interventions that target sleep routines and the obtaining of adequate sleep duration for parents of families in crisis, as well ways to enhance the accessibility of such interventions to overcome the systemic limitations that are prevalent in these cohorts. Our analysis is unique not only in its focus on sleep as a protective factor against negative mental health outcomes previously associated with ACEs, but also in its focus within the child and adolescent periods, as opposed to retrospective analyses on adulthood outcomes. Examination of moderating influences present earlier in development may illuminate ages at which sleep interventions may be most useful. On one hand, it is possible that children may be especially susceptible to the effects of poor sleep as

foundational habits are laid and more developmental years are impacted. On the other hand, it is possible that certain periods of childhood, such as adolescence, may be more sensitive to protective aspects of sleep due to the biological changes and social factors that place additional strain on sleep duration and sleep timing.

In addition to considering age at time of measurement, when analyzing ACEs, it is also important to consider event valence. While efforts have been made to screen for events which are both prevalent and known to be associated with negative health effects, items included in ACE screeners have not been psychometrically evaluated (Finkelhor, 2018). Additional events which are similarly significantly distressing (e.g. spiritual abuse, peer-peer violence, sibling abuse) and which may also impact present and future mental wellbeing are often not included on standardized questionnaires (Finkelhor, 2018). Furthermore, ACE counts do not control for ways in which even the same category of events may be present at wide spectrums of severity levels and durations. For example, living with friends or family members likely has different effects than living in a domestic violence shelter or on the street, even though each could be technically classified as being unhoused. Further, being sexually abused by a daycare worker during an isolated period may have different effects than being sexually abused by an in-home parent over the course of many years. One way to potentially address some of these limitations is to consider the difference between *community*-based adverse experiences and *household*-based adverse experiences. The former may represent more external risks such as neighborhood violence, which may respond best to community-wide psychoeducation and improvement of systemic supports. The latter may represent more internal risks such as family violence, which could present more constant or more intimate threats to the sleep environment, and may improve best with individual interventions for parental stress or children's emotional processing.

In this secondary analysis of NSCH nationally representative datasets, we will use a series of logistic and ordinal regressions to explore the interaction between two sleep-related variables (child sleeping an adequate amount and weekday bedtime regularity) and adverse childhood event exposure (total ACE count, household-based ACEs, community-based ACEs, and single ACEs) and their influence on mental health outcomes (overall presence and severity of anxiety, depression, behavioral/conduct, ADHD). Our analysis is a replication and extension of the existing literature base. Specifically, 1) we hypothesize that higher ACE scores will significantly predict increased presence or severity of current mental health conditions (replication); 2) we hypothesize that decreased sleep health (lower duration or more irregular bedtime) will significantly predict increased presence or severity of current mental health conditions (replication); and 3) we hypothesize that the interaction between increased ACE count and decreased sleep duration or increased bedtime irregularity will significantly predict increased presence or severity of current mental health conditions (extension). We will also examine whether different types of ACEs (household count vs. community count vs. single) differentially drive relationships between ACE and sleep and mental health (exploratory aim).

Methods

Survey Sampling and Administration

We performed secondary analyses of cross-sectional data from the 2020-2021 waves of the National Survey of Children's Health (NSCH; Child and Adolescent Health Measurement Initiative, 2023b). Although this dataset includes timepoints within the Covid-19 pandemic, we selected this wave due to its inclusion of additional ACE items. Given that this data is publicly available, this analysis was not subject to IRB review. This US Census Bureau survey is administered online and by mail. After parents respond to an initial screening survey with age

and sex of minors in the home, one child from each household is randomly selected to participate. Selection and survey data are weighted to derive state- and nationally-representative samples of non-institutionalized children and youth (0-17). More information on this process can be viewed in the 2021 National Survey of Children's Health codebook and methodology report (CAMHI, 2023a; CAMHI, 2023c). 92,669 completed surveys were available in the combined years dataset (approximately 1,873 per state; 42,777 total in 2020, and 50,892 in 2021). Due to high levels of missing responses (18.8-19.7%) on some items, values for income, household count, parent education, and federal poverty level were imputed by the US Census Bureau with regression imputation methods. For variables with near 5% missingness (race, ethnicity, sex), the U.S. Census Bureau used hot-deck imputation.

Measures

Adverse Childhood Experiences

ACEs served as one main predictor in each of the models. NSCH ACEs encompass insufficient household income, parent/guardian divorce/separation, parent/guardian death, parent/guardian jailed, child experiencing or witnessing domestic violence, child witnessing or experiencing neighborhood violence, child living with individual with mental illness, child living with individual abusing alcohol or drugs, child being treated unfairly due to race/ethnicity, and child being treated unfairly due to sexuality or gender-identity (see Supplementary Table 1 for full item descriptions). All items were dichotomous yes (1) no (2) answers and were recoded as 1 for present and 0 for not present, except for income, wherein responses of "somewhat often" or "very often" were recoded as yes (1). Additionally, the item on discrimination due to sexuality/gender was not administered to parents of children under 6 years and was not included their cumulative ACE counts. Total ACE count was calculated by the sum (0-10) of ACEs coded

as yes (1) for each child. Household ACE count was the sum of items ACE3 (divorce), ACE4 (parent/guardian death), ACE5 (parent/guardian jail), ACE6 (domestic violence), ACE8 (lived with someone with mental illness), and ACE 9 (lived with someone who had a problem with alcohol or drugs). Community ACE count was the sum of items ACE7 (experienced violence in neighborhood), ACE10 (treated or judged unfairly due to race/ethnicity), and ACE12 (treated or judged unfairly due to sexuality/gender).

Sleep Duration

Adequate sleep duration was a main predictor in half of the models. Sleep duration was measured with one item. The census bureau asked parents to record children's average sleep duration on weeknights and then recoded responses above the American Academy of Sleep Medicine guidelines for each age as 1 and those below the guideline as 2. We recoded this as adequate sleep duration being 1 and inadequate sleep duration being 0.

Sleep Irregularity

Sleep irregularity was also a main predictor in half of the models. Sleep irregularity was measured with item where parents were asked how often their child goes "to bed at about the same time on weeknights." 1 denoted "Always," 2 "Usually," 3 "Sometimes," and 4 "Rarely or never." Thus, lower values indicated more regular sleep, and higher values more irregular sleep.

Diagnostic Status

Presence of a mental health diagnosis (anxiety, depression, behavioral, ADHD, combined) served as the outcome in omnibus mental health and individual condition logistic regression models. Information on current mental health diagnoses was obtained from items K2Q31-34B. After parents indicated that their child had received the relevant mental health diagnosis, parents indicated whether their child currently had the diagnosis (1) or did not

currently have the diagnosis (2). This was recoded with current diagnosis represented with 1, and no current diagnosis represented by 0. We created an omnibus mental health variable in Microsoft Excel Version 16 (Redmond, Washington), with the presence of one or more of the four tested mental health conditions being coded as 1, and the absence of all conditions coded as 0.

Symptom Severity

Diagnosis severity served as the outcome in ordinal regression models. Diagnosis severity for each condition was derived from items K2Q31-34C, with 1 denoting "mild," 2 "moderate," and 3 "severe."

Data Preparation

In the final dataset, missingness of all variables did not significantly correlate with missingness of any independent or dependent variable included in this analysis. Before performing the analyses, the dataset was examined for assumptions of linear and ordinal regression. There were no outliers due to the limited age of the sample and the categorical nature of all other values. Linearity of independent variables and log-odds was visually inspected with scatter plots. Lack of significant multicollinearity was ensured with variance inflation factors (VIF) being under 10. Proportional odds between outcome groups were verified with nonsignificant brant test results ($p > 0.05$). In cases where one covariate did not meet this assumption, this covariate was eliminated from the model. In cases where more than one covariate did not meet this assumption, separate models were conducted with one covariate removed at a time.

To select covariates, factors known to be associated with ACEs were incorporated into a directed acyclic graph (DAG), representing a non-parametric structural equation model for

variable interactions. We tested for federal poverty level (income and household size), parental education status, child age, child sex, neighborhood safety, neighborhood support, and race/ethnicity. The final DAG indicated that models would be correctly adjusted when including all tested variables (Supplementary Figure 1). Wording and coding of covariate items is outlined in Supplementary Table 2.

All analyses were performed in RStudio.Version 2023.09.1+494 (Boston, MA). To facilitate self-replication and account for multiple comparisons, the full dataset was split into two randomized halves using the strata_col function. Age, sex, race, poverty status, parental education status, neighborhood support, and neighborhood safety were stratified to be as equivalent as possible between the randomized halves. In all, there were 12 models where sleep duration was the sleep-related predictor. The first logistic regression model included total ACE as another predictor, and diagnostic status of any of the four mental health conditions (anxiety, depression, behavioral, ADHD) as the outcome. The next series of logistic regression models had the same predictors, but used diagnostic status of each individual mental health condition as a separate outcome. Four more ordinal regression models followed, with the outcome being severity of each of the four mental health conditions, rather than presence of diagnosis.

After examining different mental health outcomes, the study extension involved examining different conceptualizations of ACEs. First, household ACE count was used as the predictor of the presence of any of the four tested mental health diagnoses, followed by community ACE count. Ten logistic regression models examining each single ACE as separate predictors were then conducted. All models were then repeated with sleep irregularity, rather than duration, as the sleep-related predictor.

After performing analyses on the first half of the dataset, any model which included significant main effects for ACE- or sleep-related variables or significant interactions between them was repeated in the second half of the dataset. Only models with significant outcomes in both runs were retained as significant.

If interactions between ACEs and sleep duration were significant such that inadequate sleep duration predicted worse mental health in the presence of ACEs, we planned to explore family resilience items as predictors (vs. ACEs) to examine the potential confounding impact of family traits potentially promoting healthy sleep behavior and improved mental health in tandem, without sleep being a moderating factor. If interactions between ACEs and sleep irregularity were significant such that greater sleep irregularity predicted worse mental health in the presence of ACEs, we planned to explore other aspects of family routines (screen and meal time) to explore whether the effect was related to consistency in family routines across domains, rather than being unique to sleep behaviors.

Following these analyses, we also elected to perform post-hoc follow up analysis by developmental period (0-5, 6-11, 12-17 years) to see whether directionality or magnitude was impacted by biological or social factors known to impact sleep in adolescence vs. early childhood. Importantly, when dividing the NSCH dataset by anything other than state of residence, samples are no longer nationally representative, and analyses have potential for inaccurate standard error estimation, and are thus exploratory in nature. All models described above were repeated with data limited to each age category. Because sample size was reduced when splitting the sample by age, this data was not split into halves for self-replication. Although all *p*-values were recorded in tables, for clinical interpretation, only $p < 0.01$ was deemed clinically significant in an effort to correct for multiple comparisons.

Results

In the initial full age group analysis, significant main effects of ACEs, sleep duration (see Tables 1-11), and bedtime irregularity (see Tables 12-22) were replicated across both halves of the split dataset for all models. To further investigate interaction effects, post-hoc analyses were also performed with the full dataset split by developmental period (0-5, 6-11, and 12-17 years) and are reported within the same tables for each applicable model.

Hypothesis 1 (Replication): Higher ACE Scores Will Significantly Predict Increased Presence or Severity of Current Mental Health Conditions

Across all age groupings in the model for sleep duration, higher cumulative ACE scores were significantly predictive of greater likelihood of currently experiencing a mental health condition (anxiety, depression, behavioral, or ADHD) (B = 0.257-0.359, $p < 0.001$) (Table 1). Cumulative ACE scores were similarly predictive of the presence of each separate mental health condition across all age groups (Anxiety: B = 0.234-0.431, $p<0.001$ (Table 2); Depression: B = 0.407-0.641, $p < 0.001$ (Table 3); Behavioral: B = 0.336-0.380, $p < 0.001$ (Table 4); ADHD: B = 0.222-0.355, $p < 0.001$ (Table 5)). ACE count was also significantly predictive of current anxiety severity in the combined age group model (B = 0.151, $p < 0.001$), for ages 6-11 (B = 0.078, $p < 0.01$), and for ages 12-17 (B = 0.183, $p < 0.0001$), but not for ages 0-5 (B = 0.037, $p > 0.05$) (Table 6). ACE count was similarly predictive of current depression severity (B = 0.155-0.359, $p < 0.001$) (Table 7) and current behavioral disorder severity (B = 0.122-0.148, $p <0.01$) across all age groups (Table 8), and predictive of current ADHD severity in the combined model (B = 0.149, $p < 0.001$) and for ages 6-11 (B = 0.177, $p < 0.001$) and ages 12-17 (B = 0.137, $p < 0.001$), but not for ages 0-5 (B = 0.003, $p > 0.05$) (Table 9).

As with sleep duration, in the model for sleep irregularity, higher cumulative ACE scores were significantly predictive of greater likelihood of currently experiencing a mental health condition (anxiety, depression, behavioral, or ADHD) (B = 0.387-0.458, $p < 0.001$) (Table 12). Cumulative sleep duration was also a significant predictor in models assessing bedtime irregularity and presence of separate mental health conditions (Anxiety: B = 0.362-0.611, p<0.001 (Table 13); Depression: B = 0.475-1.027, $p < 0.001$ (Table 14); Behavioral: B = 0.390-0.466, $p < 0.001$ (Table 15); ADHD: B = 0.358-0.466, $p < 0.001$ (Table 16)). Cumulative ACE count was also predictive of anxiety severity across bedtime irregularity models (B = 0.099-0.299, $p < 0.01$) (Table 17), but was only predictive of depression severity in the 12-17 years group (B = 0.144, $p < 0.01$) (Table 18). Cumulative ACE count was significantly predictive of behavioral disorder severity across age groups (B = 0.139-0.393, $p < 0.001$) (Table 19), and ADHD severity in the combined (B = 0.145, $p < 0.001$), 6-11 years (B = 0.141, $p < 0.001$), and 12-17 years (B = 0.197, $p < 0.0001$) groups (Table 20).

Hypothesis 2 (Replication): Decreased Sleep Health (Lower Duration or More Irregular Bedtime) will Significantly Predict Increased Presence or Severity of Current Mental Health Conditions

Sleep duration was a significant predictor of current presence of a mental health condition across all age groups (B = -0.285-0.407, $p < 0.0001$) (Table 1), such that presence of adequate sleep duration was associated with less likelihood of a current mental health diagnosis. This pattern was similar for current presence of anxiety in the combined age group model (B = -0.228, $p < 0.0001$) and for ages 6-11 (B = -0.140, $p < 0.01$) and ages 12-17 (B = -0.285, $p < 0.0001$), but not for ages 0-5 (B = -0.251, $p < 0.05$) (Table 2). Sleep duration was also significantly predictive of current depression diagnoses in the combined age (B = -0.397, $p <$

0.0001), 6-11 years (B = -0.425, $p < 0.0001$), and 12-17 years (B = -0.429 $p < 0.0001$) models, but not for 0-5 years (B = -0.260, $p > 0.05$) (Table 3). Sleep duration was significantly predictive of current externalizing conditions across age groups (Behavioral: B = -0.524- -0.362, $p < 0.0001$ (Table 3); ADHD: B = -0.397 - -0.289, $p < 0.001$ (Table 4)). In models exploring sleep duration and mental health condition severity, meeting sleep duration recommendations was variably associated with symptom intensity, with observed effects largely driven by younger cohorts as opposed to adolescent groups. Specifically, sleep duration was associated with less severe anxiety in 0-5 year olds (B = -0.513, $p < 0.01$) and 6-11 year olds with a current anxiety diagnosis (B = -0.219, $p < 0.01$), but not in 12-17 year olds (B = 0.044, p > 0.05) or overall (B = -0.056, p > 0.05) (Table 6). Sleep duration was only significantly predictive of depression severity in 0-5 year olds (B = -0.407, $p < 0.0001$) (Table 7), and was predictive of behavioral disorder severity in 0-5 year olds (B = -0.405, $p < 0.01$) and 6-11 year olds (B = -0.310- -0.432, $p < 0.001$), but not 12-17 year olds (B = 0.082, $p > 0.05$) or overall (B = -0.174, $p > 0.05$) (Table 8). Sleep duration was also only predictive of ADHD severity in 6-11 year olds (B = -0.299, $p < 0.001$) (Table 9).

Greater bedtime irregularity was associated with increased likelihood of any current mental health diagnosis across all age groups (B = 0.136-0.302, $p < 0.01$) (Table 12). For anxiety specifically, this pattern was maintained in the combined age analysis (B = 0.269, $p < 0.0001$), for ages 0-5 (B = 0.167, $p < 0.01$), and for ages 12-17 years (B = 0.330, $p < 0.0001$) but not for ages 6-11 (B = 0.078, $p > 0.05$) (Table 13). The trend was consistent across age groupings for presence of depressive disorders (B = 0.103-0.574, $p < 0.0001$) (Table 14) and for presence of behavioral disorders (B = 0.133-0.332, $p < 0.01$) (Table 15). For ADHD, bedtime irregularity significantly predicted diagnostic status in the combined age group model (B = 0.250, $p <$

0.0001) and for ages 6-11 (B = 0.171, $p < 0.0001$) and ages 12-17 (B = 0.272, $p < 0.0001$), but not for ages 0-5 (B = 0.097, $p > 1$) (Table 16). Bedtime irregularity was predictive of anxiety severity in ages 6-11 (B = 0.178, $p < 0.01$) and 12-17 (B = 0.104, $p < 0.01$) but not in ages 0-5 or overall (Table 17). It was also predictive of depressive disorder severity in adolescents (B = 0.289, $p < 0.001$) and in the overall combined sample (B = 0.201, $p < 0.01$) but not in younger cohorts (B = -1.999-0.101, $p > 1$) (Table 18). Within externalizing conditions, bedtime irregularity was predictive of more severe behavioral symptoms in the combined age group sample (B = 0.138, $p < 0.01$) and for older children (B = 0.150, $p < 0.01$) and adolescents (B = 0.123, $p < 0.01$) but not for ages 0-5 (B = 0.005, $p > 1$) (Table 19). Similar to depression severity, bedtime irregularity was predictive of ADHD severity in the combined sample (B = 0.144, $p < 0.001$) and in adolescents (B = 0.238-0.242, $p < 0.0001$), but not in children ages 0-11.

Hypothesis 3 (Extension): The Interaction Between Increased ACE Count and Decreased Sleep Duration and/or Increased Bedtime Irregularity will Significantly Predict Increased Presence or Severity of Current Mental Health Conditions

Presence of adequate sleep duration in conjunction with increased omnibus ACE count marginally increased likelihood of presence of a current mental health condition in the combined age samples (B = 0.048, $p < 0.0001$) and for ages 6-11 (B = 0.056, $p < 0.01$) and 12-17 (B = 0.067, $p < 0.0001$), but not for ages 0-5 (B = 0.050, $p > 1$) (Table 1). This interaction effect was mirrored in the model for household-based aces (Overall: B = 0.127, $p < 0.01$; 12-17 years: B = 0.123, $p < 0.01$) (Table 10) and for community-based ACEs (6-11 years: B = 0.060, $p < 0.01$; 12-17 years: B = 0.069, $p < 0.001$) (Table 11). These small coefficient values likely flagged as statistically significant due to the large sample size, but are an order of magnitude smaller than main effects, and are unlikely to be clinically significant. For anxiety specifically, the presence

of adequate sleep duration was associated with a small increase in likelihood of current diagnosis for ages 12-17 (B = 0.054, $p < 0.001$), but not overall (B = 0.034, $p > 1$) or for other ages (B = 0.041-0.092, $p > 1$) (Table 2). This was also true for depressive diagnoses (12-17 years B = 0.055, $p < 0.001$, all other ages ns) (Table 3). For behavioral diagnoses, adequate sleep duration was associated with small increases in likelihood of diagnosis in the combined age model (B = 0.080, $p < 0.0001$), for ages 6-11 (B = 0.087, $p < 0.0001$), and for ages 12-17 (B = 0.067, $p < 0.001$), but not for ages 0-5 (B = 0.094, $p > 0.05$) (Table 4). The same pattern emerged for ADHD diagnoses (Combined ages: B = 0.05, $p < 0.01$; 6-11 years: B = 0.054, $p < 0.01$; 12-17 years: B = 0.089, $p < 0.0001$; 0-5 years: B = 0.031, $p > 0.05$) (Table 5). Across models for mental health symptom severity, the interaction between ACE count and sleep duration was nonsignificant, except for depression severity in ages 6-11 (B = -0.216, $p < 0.01$) (Table 7). This model suggests that adequate sleep duration in the presence of ACEs was associated with significantly reduced symptom severity in children of that age with a current depression diagnosis as compared with those in the same cohort who had lower ACE counts and inadequate sleep.

Presence of greater sleep irregularity in conjunction with increased omnibus ACE count was associated with a marginal significant decrease in likelihood of presence of a current mental health condition in the combined age samples (B = -0.030, $p < 0.001$) but not by age group (see Table 12). This interaction effect was also mirrored in directionality and magnitude within the models for household-based ACEs (Combined Ages: B = -0.078, $p < 0.01$; all others ns) (Table 21) and community-based ACEs (Combined Ages: B = -0.027, $p < 0.01$; all others ns) (Table 22). As with findings for the interaction for sleep duration and ACEs, effects of such small magnitude are unlikely to be clinically significant. Models for individual mental health

conditions followed a similar pattern with increased bedtime irregularity in the presence of increased ACEs being associated with marginal decreases in mental health diagnoses (Anxiety | Combined Ages: B = -0.042, $p < 0.0001$; 12-17 years B = -0.023, $p < 0.01$, see Table 13; Depressive | Combined Ages: -0.058, $p < 0.0001$; 12-17 years B = -0.056, $p < 0.0001$, see Table 14; Behavioral | Combined Ages: B -0.030, $p < 0.001$; 6-11 years B = -0.042, $p < 0.001$, see Table 15; ADHD | Combined Ages: B = -0.047, $p < 0.0001$; 6-11 years: B = -0.033, $p < 0.01$; 12-17 years: B = -0.038, $p < 0.001$, see table 16). Only one interaction for condition severity within diagnostic groups and age groups was significant. It followed the same pattern of directionality and magnitude as the omnibus model. Specifically, for ages 0-5, increased bedtime irregularity in the presence of increased ACEs was associated with a small decrease in behavioral disorder symptom severity ratings (B = -0.099, $p < 0.01$) (Table 19).

Exploratory Aim: Different Types of ACEs (Household Count vs. Community Count vs. Single) May Drive Relationships Between ACE and Sleep and Mental Health

After examining the effects of total ACE count on mental health outcomes, we repeated omnibus models with ACE totals separated by household-based ACEs and community-based ACES. Within the omnibus models for sleep duration, increased number of household-based ACEs predicted increased likelihood of present mental health diagnosis across all age groups (B = 0.649 - 0.983, $p < 0.0001$) (Table 10), as did increased number of community-based ACEs (B = 0.346-0.448, $p< 0.0001$) (Table 11). This was also true within models for sleep irregularity (Household ACE: B = 0.729-0.938, $p < 0.0001$ (Table 21); Community ACE: B = 0.406-0.491, $p < 0.0001$) (Table 22)).

We also examined the predictive effects of each single ACE. Main effects for all ACEs (income, divorce, death, jail, domestic violence, neighborhood violence, caregiver/household

mental health, drug, racial discrimination, and sexual discrimination) on omnibus mental health outcomes were significant across sleep duration models for combined ages as well as each age group (see Supplementary Table 1). Main effects for each ACE were also significant for all bedtime irregularity models, except for those examining death and racial discrimination within ages 0-5 (see Supplementary Table 2). Significant main effects for sleep duration and bedtime irregularity on omnibus mental health were also maintained for each single ACE model (See Supplementary Tables 1 and 2). Directionality of these effects was consistent with all combined ACE models (See Tables 10, 11, 21, 22, and Supplementary Tables 1 and 2).

Because combined age group interactions between ACEs and sleep duration and bedtime irregularity were not significant, we did not examine family resilience or routines (meal time and screen use) as predictors in follow-up models.

Discussion

In this secondary analysis of a nationally representative dataset, known main effects for the influences of ACE and sleep duration and sleep irregularity were largely replicated, but interactions between these factors were clinically insignificant. Specifically, our first replication hypothesis was that higher ACE scores would significantly predict increased presence or severity of current mental health conditions. Across age groups and conditions, higher levels of ACEs generally predicted higher likelihood of mental health diagnosis or symptom severity. In regards to our exploratory aim surrounding types of adversity, this pattern was also maintained for conceptualizations of ACEs as a cumulative count, as separated by household and community exposure, and as single predictors, save some single ACEs (jail and death) in ages 0-5. This can suggest that many types of early adversity correspond with negative mental health outcomes in minors.

Our second replication hypothesis was that decreased sleep health (lower duration or less regular bedtime) would significantly predict increased presence or severity of current mental health conditions. Inadequate sleep duration was significantly predictive of higher levels of mental health diagnosis in the combined age models, and for separate internalizing conditions in ages 6-17 and externalizing conditions in ages 0-17. Results from models on sleep duration and condition severity were more variable, with adequate sleep duration predicting lower levels of anxiety and behavioral disorder severity in ages 0-11, but not 12-17 or overall, as well as lower levels of depression severity in ages 0-5 alone, and lower levels of ADHD severity in ages 6-11 alone. Bedtime irregularity was similarly associated with higher rates of any mental health diagnosis across age groups. Within models for specific conditions, it was associated with higher rates of anxiety diagnosis overall and in ages 0-5 and 12-17, but not for ages 6-11, as well as with higher rates of ADHD diagnosis overall and for ages 6-17, but not for ages 0-5. Models for bedtime irregularity and diagnosis of depressive or behavioral disorders were significant across all age groups. For condition severity, more irregular bedtimes were associated with greater depression and ADHD severity in the combined age model and for ages 12-17, but not for children 0-11. Effects were more consistent for older children, with increased bedtime irregularity also predicting increased anxiety severity in ages 6-17, but not 0-5 or overall, as well as increased behavioral disorder severity in ages 6-17 and overall, but not in ages 0-5. Together, these findings can suggest that multiple facets of sleep health are important to consider in this context, and that although associations between healthy sleep and improved omnibus mental health are largely consistent, symptoms most impacted by inadequate sleep duration or regularity may vary across development.

Our third extension hypothesis was that the interaction between increased ACE count and decreased sleep duration would significantly predict increased presence or severity of current mental health conditions, thus suggesting a moderating influence of sleep on the relationship between early adversity and current mental health. Although main effects identified sleep duration and regularity as protective factors against negative mental health outcomes when ACEs were controlled, interaction effects between sleep outcomes in the presence of increased ACEs did not reveal clinically significant protective effects. In many models, improved sleep health (adequate duration or decreased irregularity) was associated with statistically significant increases in adverse mental health outcomes (diagnosis and severity). This is opposite in direction to known main effects (see for example Becker et al., 2022; Blake & Allen, 2020; Wolfson et al., 2015) and those replicated in this study. Given our large sample size, and the small coefficient values for these effects, it is likely that these interactions flagged as statistically significant even if they are not clinically significant. In follow-up analyses by age group, one interaction was statistically significant and potentially clinically significant in direction and magnitude, suggesting that adequate sleep duration in the presence of ACEs was associated with significantly reduced depression severity in children ages 6-11 with a current depression diagnosis. However, these stratified follow-up analyses were not established a priori or self-replicated, as were our omnibus models. We recommend that future studies explore these symptoms in this age group, in order to fully establish whether sleep interventions may be especially beneficial in this cohort.

Although it is possible that there is no clinically significant interaction between sleep health following adverse exposure and mental health difficulties within other conditions or other periods of childhood or adolescence, it is also possible that the single-item sleep constructs

available in this dataset are not sufficiently sensitive to detect interactions effects. Since continuous sleep data was reported by parents and then recoded by the US Census Bureau, it may be feasible for national datasets to report continuous sleep duration data in addition to the dichotomous variables. This is important as dichotomous sleep data only considers general, one-way thresholds for sleep health, and may not identify individuals who sleep over the recommended amount to a detrimental degree. Recent studies of sleep duration and mental health are finding that health benefits of adequate sleep duration and regularity may be curved rather than linear, in that there are risks to having high *or* low levels, with optimal benefits occurring within intermediate ranges (Dong et al., 2022; Shimizu et al., 2020; Tamura & Okamura, 2023). Hypersomnolence is also a known symptom of depression, PTSD, and trauma exposure (American Psychological Association, 2013 Major Depressive Disorder criterion A4; Gupta, 2017; Kalantar-Hormozi & Mohammadkhani, 2024), and is thus important to capture in studies of high-ACE populations.

Additionally, the item for bedtime regularity only asked about weekday sleep routines. Although weekday routines are vital to success in school and can represent some aspects of family stability or resilience, adolescents struggling with mental health symptoms have been shown to oversleep on the weekends (Zhang et al., 2017), and weekend oversleep is also known to correspond with factors associated with ACEs such as reduced income or employment status (Noh et al., 2022). Consideration of weekend versus weekday routines is also important in adolescent cohorts, as later sleep and wake times on non-school days versus school days are associated with greater levels of social jetlag, a facet of circadian misalignment known to be associated with increased depression and anxiety in youth (Henderson et al., 2019; Mathew et al., 2019; Tamura & Okamura, 2023). Thus, full effects of sleep irregularity on mental health may

not be captured without data on weekend sleep, especially in high-ACE cohorts who may be especially at risk of disrupted sleep routines.

Only duration and bedtime regularity were captured in this dataset, but it is also common for individuals to experience sleep disturbance such as nighttime awakenings or nightmares after adverse events (Baddam et al., 2019; Lancel et al., 2021; Schneiderman et al., 2018; Wamser-Nanney & Chesher, 2018; Xiao et al., 2020), and to experience increased levels of nighttime fears (Kanady et al., 2018.; Werner et al., 2021). Further, PTSD was not a diagnosis captured in this dataset, and may be another mental health outcome of some ACEs involving risk to own or a caregiver's life (Lee et al., 2020). ACEs are also known to increase risk of PTSD after violence exposure later in life (LeardMann et al., 2010), suggesting that high ACE populations may be at risk for PTSD even from events not captured by ACE measures. It is also possible that individuals with higher ACEs and who also have inadequate or irregular sleep, as depicted in model interactions, represent a particularly high-risk group with lower access to or utilization of mental healthcare. Thus, lower diagnostic rates identified in models may correspond to inability to access diagnostic services rather than to absence or reduced levels of symptoms. This could be addressed by asking about presence or absence of key symptoms in a manner similar to currently used diagnostic surveys such as the Mini International Neuropsychiatric Interview (Sheehan et al., 1998) self- or parent-report versions. It also suggests the importance of asking about symptom severity in those who are formally diagnosed as well as undiagnosed, as this survey algorithm only allowed responses about severity in the presence of a current diagnosis.

In order to address these limitations, future national surveys could include more specific trauma/PTSD categories (vs. general anxiety/depression) and ask about symptoms for all represented conditions rather than relying solely on report of existing diagnoses. They could also

include continuous sleep data, with parents recording average number of hours of sleep on weekends and weekdays, to better account for weekend oversleep and social jetlag. More robust conceptualizations of sleep quality, beyond single items, could also facilitate improved factor analysis and identification of key components of sleep health to adversity resilience (Fabbri et al., 2021). Further, given that adolescent self-report has been shown to correspond with physiological measurements of sleep health (Lucas-Thompson et al., 2021), it may be beneficial for older children to self-report their own sleep duration, behaviors, and quality, rather than rely on parent reporting. Such improvements in measurement may lead to increased sensitivity to detect protective interaction effects.

Although we believe that more advanced measurement methods are needed to truly answer the question of whether sleep is a protective factor against negative mental health effects of ACEs, in the meantime, addressing sleep in high-ACE cohorts is still likely beneficial to many aspects of youth's current wellbeing. Main effects of improved sleep duration and regularity on improved mental health are well established in the literature (Becker et al., 2022; Blake & Allen, 2020; Wolfson et al., 2015) and were also self-replicated in this analysis. These findings suggest that healthy sleep can decrease adverse mental health outcomes in clinical groups and in the general population. Given the prevalence of ACEs (Sacks & Murphey, 2018) and poor sleep health (Crowley et al., 2018; Paruthi et al., 2016; Wheaton, 2018) in the general population, it is likely that many youth with ACEs also have sleep problems. Youth with increased ACEs are likely not excluded from benefits of sleep treatment on mental health, even if they do not experience extra benefits of this treatment compared with non-ACE cohorts, or benefits which entirely supersede negative impacts of early adversity. Further, subclinical symptoms, which are distressing, but which would not lead to clinical diagnosis, may also improve with sleep

treatment. Specifically, sleep treatment has the potential to reduce distress around individual symptoms associated with ACE exposure such as delayed sleep onset (Glod et al., 1997; Lai et al., 2020; Schneiderman et al., 2018; Wittmann et al., 2012), sleep disturbance (Baddam et al., 2019; Schneiderman et al., 2018; Wamser-Nanney & Chesher, 2018; Xiao et al., 2020), reduced sleep duration (Geng et al., 2018; Schneiderman et al., 2018; Wittmann et al., 2012), and nighttime fears (Kanady et al., n.d.; Werner et al., 2021). Although individual symptoms such as these may not reflect presence of full diagnostic criterion for mental health disorders, they do represent significant impairment to daily individual and familial wellbeing and quality of life, and ethically should not remain unaddressed. It is also possible that effects of sleep treatment are not strong enough to entirely prevent mental health diagnosis or symptom severity. Yet, improved sleep has been shown to enhance ability to cope with adversity and mental health symptoms (Brand et al., 2014; Cepuch et al., 2023; Wang & Yip, 2020; Xiong et al., 2019) and to promote increased family resilience (El-Sheikh & Kelly, 2017), and is thus still worthwhile to pursue, even in potential absence of protective or preventative influence.

In sum, main effects of our analysis demonstrated that increased ACEs, inadequate sleep duration, and increased sleep irregularity predict greater mental health diagnosis and condition severity. Clinically insignificant interaction effects suggest the need for more sensitive sleep and mental health measures in future studies. Despite these limitations, this study had several strengths, including very large sample size, representative sampling in omnibus age models, multiple conceptualizations of ACEs, self-replication of original models, and stratified follow-up analyses across age groups to examine potential changes across developmental stages. If future cross-sectional analyses suggest significant interactions between sleep and ACE level, future laboratory experiments could examine sleep behavior and mental health outcomes in high-

versus low-ACE cohorts, ideally incorporating gold-standard physiological measurements of sleep health such as actigraphy and dim light melatonin onset (DLMO), and eventually progressing to clinical trials where sleep intervention is provided following ACE exposure in addition to and versus treatment as usual.

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Table 1

Overall Presence of Mental Health Condition Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 38021)		0-5 Years (n = 18058)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.319 (0.032)***	9.93	0.359 (0.072)***	4.96	0.302 (0.039)***	7.81	0.257 (0.030)***	8.65
Sleep Duration	-0.309 (0.037)***	-8.39	-0.407 (0.081)***	-5.04	-0.285 (0.044)***	-6.46	-0.320(0.036)***	-8.96
Age	0.111 (0.003)***	34.31	0.397 (0.042)***	9.54	0.120 (0.010)***	12.33	0.039(0.008)***	5.14
Sex	-0.273 (0.028)***	-9.86	-0.652 (0.068)***	-9.65	-0.602 (0.034)***	-17.86	-0.004(0.026)	-0.15
Race	-0.038 (0.010)***	-3.92	-0.010 (0.021)	-0.47	-0.027 (0.011)*	-2.45	-0.058 (0.009)***	-6.16
Poverty	0.041(0.016)***	2.66	-0.066(0.036) .	-1.85	0.028 (0.019)	1.51	0.051 (0.015)***	3.52
Education	0.150(0.019)***	7.72	0.028 (0.046)	0.62	0.069 (0.023)**	2.94	-0.187 (0.018)***	10.41
Nbhd Support	-0.208(0.032)***	-6.52	-0.397 (0.075)***	-5.29	-0.216 (0.039)***	-5.62	-0.175 (0.030)***	-5.86
Nbhd Safety	0.120(0.028)***	4.29	0.141 (0.060)*	2.37	0.103 (0.033)**	3.12	0.076 (0.028)**	2.77
ACE*Duration	0.048(0.019)***	2.52	0.050 (0.045)	1.12	0.056 (0.023)*	2.43	0.067 (0.017)***	3.84

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 2

Presence of Current Anxiety Disorder Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 37748)		0-5 Years (n = 17995)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.360 (0.017)***	21.37	0.431 (0.046)***	9.31	0.351 (0.021)***	-22.65	0.324 (0.015)***	21.69
Sleep Duration	-0.228 (0.047)***	-4.87	-0.251 (0.134) .	-1.88	-0.140 (0.059)*	-2.37	-0.285 (0.042)***	-6.73
Age	0.139 (0.004)***	32.69	0.415 (0.067)***	6.19	0.150 (0.013)***	11.61	0.082 (0.009)***	9.11
Sex	0.227 (0.034)***	6.63	-0.156 (0.104)	-1.50	-0.184 (0.043)***	-4.24	0.510 (0.031)***	16.71
Race	-0.056 (0.012)***	-4.63	-0.020 (0.033)	-0.90	-0.047 (0.015)**	-3.22	-0.066 (0.011)***	-5.88
Poverty	0.098 (0.020)***	5.00	-0.071 (0.057)	-1.24	0.047 (0.024) .	1.92	0.092 (0.017)***	5.33
Education	0.220 (0.025)***	8.85	0.093 (0.074)	1.26	0.205 (0.032)***	6.43	0.220 (0.021)***	10.27
Nbhd Support	-0.230 (0.039)***	-5.84	-0.430 (0.120)***	-3.58	-0.219 (0.050)***	-4.35	-0.206 (0.035)***	-5.92
Nbhd Safety	0.103 (0.034)**	2.98	0.071 (0.094)	0.75	0.176 (0.042)***	4.20	0.079 (0.032)*	2.51

Table 2

Presence of Current Anxiety Disorder Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 37748)		0-5 Years (n = 17995)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE*Duration	0.034 (0.021)	1.60	0.092 (0.061)	1.51	0.041 (0.026)	1.57	0.054 (0.018)**	2.94

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 3

Presence of Current Depressive Disorder Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 37847)		0-5 Years (n = 17989)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.445 (0.021)***	20.87	0.641 (0.119)***	5.41	0.470 (0.413)***	-17.78	0.407 (0.232)***	24.17
Sleep Duration	-0.397 (0.074)***	-5.36	-0.260 (0.568)	-0.46	-0.425 (0.132)**	-3.23	-0.429 (0.057)***	14.24
Age	0.271 (0.008)***	32.16	0.788 (0.277)**	2.84	0.358 (0.030)***	11.76	0.170 (0.012)***	14.24
Sex	0.445 (0.052)***	8.57	-0.008 (0.381)	-0.02	-0.185 (0.091)*	-2.03	0.555 (0.040)***	13.85
Race	-0.059 (0.018)**	-3.21	-0.117 (0.130)	-0.90	-0.005 (0.028)	-0.17	-0.048 (0.014)***	-3.37
Poverty	0.018 (0.029)	0.62	-0.095 (0.210)	-0.45	-0.066 (0.050)	-1.32	0.032 (0.022)	1.47
Education	0.135 (0.035)	3.84	0.119 (0.263)	0.45	0.025 (0.060)	0.42	0.165 (0.027)***	6.14
Nbhd Support	-0.319 (0.058)	-5.45	-0.660 (0.483)	-1.37	-0.191 (0.106)	-1.81	-0.345 (0.045)***	-7.72
Nbhd Safety	0.073 (0.050)	1.47	0.388 (0.304)	1.28	0.227 (0.081)**	2.80	0.041 (0.039)	1.05
ACE*Duration	0.033 (0.027)	1.23	0.070 (0.159)	1.44	0.004 (0.042)	0.09	0.055 (0.021)**	2.64

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 4

Presence of Current Behavioral Disorder Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 27850)		0-5 Years (n = 17991)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.357 (0.0175)***	20.36	0.380 (0.036)***	10.49	0.341 (0.021)***	16.64	0.336 (0.018)***	19.03
Sleep Duration	-0.404 (0.054)***	-7.43	-0.524 (0.093)***	-5.65	-0.372 (0.059)***	-6.33	-0.362 (0.061)***	-5.91
Age	-0.005 (0.005)	-1.06	0.363 (0.048)***	7.59	-0.001 (0.013)	-0.04	-0.133 (0.012)***	-10.61
Sex	-0.904 (0.043)	-20.94	-0.875 (0.081)***	-10.83	-0.94 (0.047)***	-20.06	-0.879 (0.046)***	-19.32
Race	0.012 (0.013)	0.94	-0.008 (0.024)	-0.35	0.006 (0.014)	0.43	-0.003 (0.014)	-0.20
Poverty	-0.038 (0.022) .	-1.75	-0.073 (0.041)	-1.78	-0.019 (0.024)	-0.79	-0.064 (0.023)**	-2.79
Education	0.037 (0.027)	1.36	0.039 (0.052)	0.75	-0.024 (0.029)	-0.81	0.101 (0.028)***	3.60
Nbhd Support	-0.314 (0.046)***	-6.83	-0.455 (0.087)***	-5.25	-0.301 (0.050)***	-5.99	-0.280 (0.049)***	-5.77
Nbhd Safety	0.192 (0.038)***	5.092	0.165 (0.067)*	2.45	0.163 (0.041)***	3.95	0.222 (0.041)	5.45
ACE*Duration	0.080 (0.022)***	3.58	0.094 (0.049) .	1.89	0.087 (0.026)***	3.32	0.067 (0.022)**	3.06

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 5

Presence of Current ADHD Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 37786)		0-5 Years (n = 17974)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.272 (0.017)***	16.15	0.355 (0.049)***	-9.20	0.274 (0.020)***	13.77	0.222 (0.016)***	14.23
Sleep Duration	-0.289 (0.047)***	-6.11	-0.397 (0.140)**	-2.83	-0.328 (0.054)***	-6.11	-0.312 (0.045)***	-6.85
Age	0.102 (0.004)***	24.10	0.699 (0.078)***	8.93	0.148 (0.012)***	12.20	-0.024 (0.010)*	-2.51
Sex	-0.764 (0.037)***	-20.61	-0.944 (0.124)***	-7.59	-0.813 (0.043)***	-18.95	-0.756 (0.034)***	-22.03
Race	-0.021 (0.012) .	-1.76	-0.054 (0.038)	-1.43	-0.014 (0.013)	-1.04	-0.041 (0.012)***	-3.41
Poverty	-0.016 (0.020)	-0.83	-0.179 (0.061)**	-2.94	-0.009 (0.023)	-0.38	0.005 (0.018)	0.28
Education	0.058 (0.024)*	2.42	-0.089 (0.074)	-1.20	-0.032 (0.028)	-1.14	0.113 (0.022)***	5.05
Nbhd Support	-0.157 (0.041)***	-3.87	-0.364 (0.130)**	-2.80	-0.168 (0.047)***	-3.54	-0.069 (0.038) .	-1.83

Table 5

Presence of Current ADHD Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 37786)		0-5 Years (n = 17974)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Nbhd Safety	0.064 (0.036) .	1.81	0.045 (0.102)	0.44	0.006 (0.041)	0.15	0.035 (0.035)	1.01
ACE*Duration	0.050 (0.021)*	2.36	0.031 (0.069)	0.44	0.054 (0.026)*	2.10	0.089 (0.019)***	4.63

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 6

Severity of Current Anxiety Disorder Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 4407)		0-5 Years (n = 449)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.151 (0.026)***	5.81	0.037 (0.086)	0.44	0.078 (0.035)*	2.25	0.183 (0.022)***	8.22
Sleep Duration	-0.056 (0.085)	-0.66	-0.513 (0.252)*	-2.03	-0.219 (0.110)*	-1.99	0.044 (0.074)	0.60
Age	0.050 (0.008)***	6.07	0.191 (0.088)*	2.17	0.024 (0.024)	0.99	0.081 (0.015)***	5.26
Sex	0.055 (0.060)	0.91	-0.031 (0.191)	-0.16	-0.067 (0.079)	-0.85	0.098 (0.052)	1.88
Race	-0.033 (0.021)	-1.60	-0.062 (0.059)	-1.05	--	--	-0.012 (0.019)	-0.65
Poverty	-0.083 (0.031)**	-2.69	-0.024 (0.093)	-0.26	-0.120 (0.045)**	-2.70	-0.043 (0.029)	-1.46
Education	--	--	--	--	-0.064 (0.060)	-1.08	-0.065 (0.037)	-1.75
Nbhd Support	-0.195 (0.067)**	-2.91	-0.231 (0.220)	-1.05	-0.039 (0.091)	-0.44	-0.167 (0.058)**	-2.88
Nbhd Safety	0.022 (0.058)	0.39	0.227 (0.165)	1.37	0.065 (0.074)	0.87	0.024 (0.051)	0.46
ACE*Duration	0.014 (0.033)	0.42	0.159 (0.111)	1.43	0.028 (0.044)	0.63	-0.035 (0.027)	-1.27

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 7

Severity of Current Depressive Disorder Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 1894)		0-5 Years (n = 33)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.155 (0.035)***	4.42	0.359 (0.072)***	4.96	0.159 (0.059)**	2.690	0.161 (0.027)***	6.02
Sleep Duration	0.041 (0.0141)	0.292	-0.407 (0.081)***	-5.04	0.364 (0.274)	1.33	-0.074 (0.106)	-0.70
Age	0.081 (0.018)***	4.54	0.397 (0.042)***	9.54	0.105 (0.061) .	1.71	0.061 (0.022)**	2.82
Sex	0.341 (0.093)***	3.66	-0.652 (0.068)***	-9.65	0.240 (0.176)	1.36	0.278 (0.071)	3.94
Race	-0.033 (0.032)	-1.04	-0.010 (0.021)	-0.47	0.049 (0.051)	0.95	-0.006 (0.024)	-0.26
Poverty	-0.018 (0.051)	-0.35	-0.066 (0.036) .	-1.85	-0.136 (0.099)	-1.38	0.013 (0.035)	0.37
Education	0.040 (0.065)	0.62	0.028 (0.046)	0.62	-0.040 (0.122)	-0.33	--	--
Nbhd Support	-0.159 (0.102)	-1.56	-0.397 (0.075)***	-5.29	0.340 (0.213)	1.59	-0.176 (0.077)	-2.28
Nbhd Safety	0.123 (0.085)	1.45	0.141 (0.059)*	2.37	0.142 (0.160)	0.89	0.045 (0.066)	0.69
ACE*Duration	-0.030 (0.044)	-0.68	0.050 (0.045)	1.12	-0.216 (0.083)**	-2.60	-0.02 (0.034)	-0.64

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 8

Severity of Current Behavioral Disorder Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 3140)		0-5 Years (n = 903)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.148 (0.029)***	5.04	0.122 (0.057)*	2.14	0.169 (0.034)*** 0.172 (0.034)***	5.04 5.14	0.138 (0.029)***	4.73
Sleep Duration	-0.174 (0.101)	-1.73	-0.405 (0.166)*	-2.43	-0.310 (0.108)** -0.324 (0.108)**	-2.87 -3.01	0.082 (0.113)	0.73
Age	-0.008 (0.009)	-0.89	0.098 (0.062)	1.58	-0.049 (0.023)* -0.049 (0.023)*	-2.10 -2.11	-0.34 (0.023)	-1.51
Sex	-0.128 (0.078)	-1.63	-0.184 (0.147)	-1.25	-0.258 (0.085)** -0.255 (0.085)**	-3.02 -2.99	0.105 (0.082)	1.28
Race	--	--	-0.017 (0.041)	-0.42	-- -0.018 (0.024)	-- -0.74	-0.018 (0.026)	-0.68
Poverty	-0.157 (0.040)***	-3.92	-0.088 (0.072)	-1.23	-0.119 (0.044)** -0.147 (0.039)***	-2.74 -3.79	-0.168 (0.041)***	-0.83
Education	-0.038 (0.050)	-0.75	-0.236 (0.094)*	-2.51	-0.076 (0.054) --	-1.40 --	-0.042 (0.051)	0.41
Nbhd Support	-0.083 (0.082)	-1.01	-0.183 (0.157)	-1.17	0.004 (0.089) 0.006 (0.089)	0.04 0.06	-0.130 (0.085)	-1.53
Nbhd Safety	0.069 (0.065)	1.07	0.003 (0.117)	0.03	0.163 (0.072) 0.168 (0.071)*	2.29 2.36	0.021 (0.069)	0.30
ACE*Duration	0.028 (0.037)	0.75	0.102 (0.081)	1.26	-0.037 (0.043) -0.038 (0.043)	-0.86 -0.89	-0.011 (0.037)	-0.30

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 9

Severity of Current ADHD Predicted by ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 3939)		0-5 Years (n = 359)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.149 (0.028)***	5.38	-0.003 (0.084)	-0.03	0.177 (0.032)***	5.54	0.137 (0.026)*** 0.140 (0.026)***	5.23 5.35
Sleep Duration	-0.089 (0.086)	-1.03	-0.260 (0.262)	-1.00	-0.299 (0.096)**	-3.11	-0.032 (0.082) -0.037 (0.082)	-0.39 -0.46
Age	-0.077 (0.009)***	-8.57	0.087 (0.114)	0.76	-0.103 (0.023)***	-4.60	-0.065 (0.017)*** -0.063 (0.017)***	-3.80 -3.72
Sex	-0.162 (0.067)*	-2.44	-0.099 (0.230)	-0.43	-0.194 (0.077)*	-2.52	-- -0.184 (0.061)	-- -3.00
Race	--	--	0.009 (0.068)	0.13	-0.009 (0.024)	-0.36	0.016 (0.021) --	0.73 --
Poverty	-0.169 (0.035)***	-4.82	--	--	-0.147 (0.037)***	-4.00	-0.118 (0.032)*** -0.119 (0.032)***	-3.70 -3.72
Education	-0.018 (0.045)	-0.41	-0.386 (0.125)**	-3.09	--	--	-0.06 (0.041) -0.052 (0.041)	-1.48 -1.30
Nbhd Support	-0.067 (0.071)	-0.95	-0.302 (0.231)	-1.31	-0.103 (0.083)	-1.24	-0.184 (0.065)** -0.178 (0.066)**	-2.81 -2.72
Nbhd Safety	0.181 (0.061)**	2.95	0.047 (0.173)	0.274	0.152 (0.071)*	2.14	0.134 (0.059)* 0.143 (0.059)	2.28 2.44
ACE*Duration	0.002 (0.035)	0.06	0.090 (0.125)	0.724	0.014 (0.042)	0.32	0.015 (0.032) 0.017 (0.032)	0.46 0.53

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 10

Overall Presence of Mental Health Condition Predicted by Household ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 38029)		0-5 Years (n = 18061)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Household ACE	0.662 (0.052)***	12.65	0.983 (0.145)***	6.79	0.649 (0.070)***	9.33	0.664 (0.046)***	14.53
Sleep Duration	-0.311 (0.031)***	-10.16	-0.400 (0.070)***	-5.74	-0.267 (0.037)***	13.92	-0.285 (0.030)***	-9.61
Age	0.122 (0.003)***	38.36	0.410 (0.041)***	9.98	0.133 (0.010)***	-13.92	0.042 (0.008)***	5.56
Sex	-0.270 (0.027)***	-9.95	-0.655 (0.067)***	-9.80	-0.570 (0.033)***	-17.32	-0.010 (0.025)	-0.41
Race	-0.040 (0.009)***	-4.22	-0.004 (0.021)	-0.21	-0.027 (0.011)*	-2.48	-0.064 (0.009)***	-6.88
Poverty	-0.052 (0.015)***	-3.47	-0.151 (0.035)***	-4.35	-0.064 (0.018)***	-3.61	-0.032 (0.014)*	-2.32
Education	0.090 (0.019)***	4.79	-0.044 (0.044)	-0.99	0.006 (0.022)	0.27	0.124 (0.017)***	7.21
Nbhd Support	-0.267 (0.031)***	-8.57	-0.439 (0.074)***	-5.93	-0.265 (0.038)***	-7.03	-0.230 (0.029)***	-7.87
Nbhd Safety	0.143 (0.027)***	5.22	0.178 (0.059)**	3.03	0.148 (0.032)***	4.59	0.101 (0.027)***	3.74
ACE*Duration	0.167 (0.068)*	2.46	0.052 (0.207)	0.25	0.089 (0.091)	0.98	0.123 (0.058)*	2.12

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 11

Overall Presence of Mental Health Condition Predicted by Community ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 38029)		0-5 Years (n = 18061)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Commun. ACE	0.448 (0.041)***	-11.58	0.448 (0.041)***	-14.22	0.405 (0.022)***	18.32	0.356 (0.018)***	20.17
Sleep Duration	-0.417 (0.078)***	-5.34	-0.417(0.078)***	-6.57	-0.281 (0.043)***	-6.57	-0.320 (0.035)***	-9.26
Age	0.392 (0.041)***	9.46	0.392 (0.041)***	12.75	0.124 (0.010)***	12.75	0.046 (0.008)***	6.00
Sex	-0.649 (0.067)***	-9.65	-0.649 (0.067)***	-17.78	-0.597 (0.034)***	-17.78	0.003 (0.026)	0.10
Race	-0.003 (0.021)	-0.13	-0.003 (0.021)	-1.40	-0.015 (0.011)	-1.40	-0.046 (0.009)***	-4.88
Poverty	-0.107 (0.035)**	-3.03	-0.107 (0.035)**	-0.06	-0.001 (0.018)	-0.06	0.021 (0.014)	1.45
Education	0.024 (0.045)	0.52	0.024 (0.045)	2.86	0.066 (0.023)	2.86	0.179 (0.018)***	10.10
Nbhd Support	-0.430 (0.075)***	-5.77	-0.430 (0.075)***	-6.32	-0.242 (0.038)***	-6.32	-0.211 (0.030)***	-7.13
Nbhd Safety	0.177 (0.059)**	3.00	0.177 (0.059)***	4.59	0.150 (0.033)***	4.59	0.139 (0.027)***	5.12

Table 11

Overall Presence of Mental Health Condition Predicted by Community ACE Count and Sleep Duration

Age Group	All Ages (Replicated) (n = 38029)		0-5 Years (n = 18061)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE*Duration	0.051 (0.056)	0.92	0.0511 (0.056)*	2.12	0.060 (0.028)*	2.12	0.069 (0.022)**	3.17

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 12

Overall Presence of Mental Health Condition Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 38045)		0-5 Years (n = 18004)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.458 (0.025)***	18.20	0.414 (0.060)***	6.95	0.387 (0.030)***	12.80	0.396 (0.024)***	16.24
Bedtime	0.230 (0.024)***	9.54	0.136 (0.056)*	2.45	0.141 (0.030)***	4.66	0.302 (0.022)***	13.44
Age	0.104 (0.003)***	31.68	0.427 (0.041)***	10.34	0.126 (0.010)***	4.66	0.024 (0.008)**	3.13
Sex	-0.273 (0.028)***	-9.86	-0.659 (0.068)***	-9.72	-0.610 (0.034)***	-18.11	-0.005 (0.026)	-0.18
Race	-0.038 (0.010)***	-3.96	-0.008 (0.021)	-0.38	-0.028 (0.011)*	-2.51	-0.058 (0.009)***	-6.12
Poverty	0.036 (0.016)*	2.30	-0.077 (0.036)*	-2.14	0.020 (0.018)	1.06	0.049 (0.015)***	3.40
Education	0.147 (0.019)***	7.55	0.007 (0.046)	0.16	0.055 (0.023)*	2.37	0.195 (0.018)***	10.87
Nbhd Support	-0.195 (0.032)***	-6.11	-0.405 (0.075)***	-5.39	-0.213 (0.039)***	-5.54	-0.140 (0.030)***	-4.66
Nbhd Safety	0.110 (0.028)***	3.93	0.128 (0.060)*	2.14	0.092 (0.033)**	2.77	0.067 (0.028)*	2.44
ACE*Bedtime	-0.030 (0.011)**	-2.79	0.009 (0.027)	0.34	0.003 (0.015)	0.20	-0.017 (0.010)	-1.68

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 13

Presence of Current Anxiety Disorder Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 37768)		0-5 Years (n = 17941)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.467 (0.028)***	16.76	0.611 (0.079)***	7.71	0.362 (0.034)***	10.62	0.400 (0.026)***	15.42
Bedtime	0.269 (0.030)***	8.95	0.167 (0.090)*	1.85	0.078 (0.041) .	1.92	0.330 (0.026)***	12.52
Age	0.131 (0.004)***	30.30	0.423 (0.066)***	6.37	0.151 (0.013)***	11.82	0.067 (0.009)***	7.33
Sex	0.230 (0.034)***	6.72	-0.165 (0.104	-1.59	-0.183 (0.043)***	-4.24	0.516 (0.031)***	16.85
Race	-0.057 (0.012)***	-4.69	-0.029 (0.034)	-0.87	-0.048 (0.015)***	-3.31	-0.065 (0.011)***	-5.82
Poverty	0.095 (0.020)***	4.85	-0.075 (0.057)	-1.32	0.043 (0.024)	1.76	0.092 (0.017)***	5.34
Education	0.221 (0.025)***	8.91	0.085 (0.074)	1.16	0.204 (0.032)***	6.44	0.231 (0.021)***	10.78
Nbhd Support	-0.211 (0.039)***	-5.37	-0.429 (0.120)***	-3.57	-0.215 (0.050)***	-4.29	-0.169 (0.035)***	-4.83
Nbhd Safety	0.089 (0.034)**	2.58	0.070 (0.094)	0.75	0.165 (0.042)***	3.93	0.065 (0.032)*	2.06
ACE*Bedtime	-0.042 (0.012)***	-3.53	-0.066 (0.037) .	-1.80	0.007 (0.016)	0.46	-0.023 (0.011)*	-2.17

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 14

Presence of Current Depressive Disorder Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 37870)		0-5 Years (n = 17936)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.588 (0.037)***	15.90	1.027 (0.221)***	4.65	0.475 (0.056)***	8.52	0.564 (0.030)***	18.59
Bedtime	0.523 (0.045)***	11.62	0.103 (0.314)***	3.51	0.309 (0.086)***	3.59	0.574 (0.034)***	16.78
Age	0.252 (0.008)***	29.74	0.811 (0.276)**	2.94	0.366 (0.030)***	12.13	0.148 (0.012)***	12.18
Sex	0.446 (0.052)***	8.59	-0.063 (0.381)	-0.17	-0.188 (0.091)*	-2.06	0.558 (0.040)***	13.89
Race	-0.063 (0.018)***	-3.44	-0.127 (0.130)	-0.98	-0.005 (0.028)	-0.16	-0.047 (0.014)**	-3.32
Poverty	0.011 (0.029)	0.38	-0.043 (0.208)	-0.21	-0.078 (0.049	-1.58	0.030 (0.022)	1.38
Education	0.148 (0.035)	4.22	0.172 (0.262	0.66	-0.00008 (0.059)	-0.00	0.189 (0.027)***	6.99
Nbhd Support	-0.275 (0.059)	-4.69	-0.561 (0.480)	-1.17	-0.182 (0.106)	-1.73	-0.276 (0.045)***	-6.14
Nbhd Safety	0.043 (0.050	0.87	0.320 (0.305)	1.05	0.188 (0.082)*	2.30	0.018 (0.039)	0.46
ACE*Bedtime	-0.058 (0.015)***	-3.86	-0.161 (0.086)*	-1.86	-0.004 (0.025)	-0.18	-0.056 (0.012)***	-4.73

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 15

Presence of Current Behavioral Disorder Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 37874)		0-5 Years (n = 17939)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.466 (0.030)***	15.70	0.390 (0.065)***	5.96	0.473 (0.034)***	13.91	0.405 (0.031)***	12.98
Bedtime	0.258 (0.035)***	7.34	0.133 (0.064)*	2.09	0.243 (0.040)***	6.11	0.332 (0.037)***	8.98
Age	-0.012 (0.005)**	-2.61	0.401 (0.047)***	8.45	0.005 (0.013)	0.42	-0.154 (0.013)***	-12.05
Sex	-0.907 (0.043)***	-21.00	-0.878 (0.081)***	-10.85	-0.947 (0.047)***	-20.28	-0.889 (0.046)***	-19.48
Race	0.011 (0.013)	0.83	-0.006 (0.024	-0.25	0.006 (0.014)	0.40	-0.002 (0.014)	-0.16
Poverty	-0.045 (0.022)*	-2.05	-0.090 (0.041)*	-2.18	-0.031 (0.024)	-1.29	-0.063 (0.023)**	-2.76
Education	0.032 (0.027)	1.17	0.016 (0.052)	0.31	-0.039 (0.029)	-1.32	0.112 (0.028)***	3.97
Nbhd Support	-0.298 (0.046)***	-6.46	-0.459 (0.087)***	-5.29	-0.297 (0.050)***	-5.91	-0.236 (0.049)***	-4.84

Table 15

Presence of Current Behavioral Disorder Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 37874)		0-5 Years (n = 17939)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Nbhd Safety	0.183 (0.038)***	4.85	0.153 (0.068)*	2.26	0.149 (0.041)***	3.61	0.220 (0.041)***	5.38
ACE*Bedtime	-0.030 (0.013)**	-2.39	0.017 (0.029)	0.57	-0.042 (0.016)**	-2.60	-0.016 (0.012)	-1.29

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 16

Presence of Current ADHD Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 37808)		0-5 Years (n = 17920)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.402 (0.028***	15.70	0.403 (0.090)***	4.47	0.367 (0.033)***	11.11	0.358 (0.027)***	13.38
Bedtime	0.219 (0.031)***	7.34	0.097 (0.096)	1.01	0.171 (0.037)***	4.64	0.272 (0.028)***	9.67
Age	0.096 (0.004)***	-2.61	0.733 (0.078)***	9.41	0.156 (0.012)***	12.92	-0.037 (0.010)***	-3.82
Sex	-0.763 (0.037)***	-21.00	-0.953 (0.125)***	-7.63	-0.821 (0.043)***	-19.16	-0.759 (0.034)***	-22.11
Race	0.022 (0.012) .	0.83	-0.053 (0.038)	-1.39	-0.013 (0.013)	-0.96	-0.041 (0.012)**	-3.43
Poverty	-0.022 (0.020)	-2.05	-0.195 (0.061)**	-3.21	-0.020 (0.023)	-0.88	0.003 (0.018)	0.18
Education	0.057 (0.024)*	1.17	-0.112 (0.074)	-1.52	-0.049 (0.028)	-1.79	0.122 (0.022)***	5.44
Nbhd Support	-0.145 (0.041)***	-6.46	-0.386 (0.130)**	-2.96	-0.170 (0.047)***	-3.59	-0.041 (0.038)	-1.09
Nbhd Safety	0.059 (0.035) ·	4.85	0.040 (0.103)	0.39	-0.006 (0.041)	-0.16	0.027 (0.035)	0.78
ACE*Bedtime	-0.047 (0.011)***,	-2.39	-0.016 (0.040)	-0.39	-0.033 (0.016)*	-2.08	-0.038 (0.011)***	-3.51

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 17

Severity of Current Anxiety Disorder Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 4416)		0-5 Years (n = 449)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.099 (0.043)*	2.31	0.299 (0.136)*	2.20	0.122 (0.0562)*	2.18	0.112 (0.038)**	2.95
Bedtime	0.081 (0.052)	1.56	0.169 (0.169)	1.00	0.178 (0.0714)*	2.49	0.104 (0.043)*	2.38
Age	0.045 (0.0085)***	5.25	0.158 (0.087)	1.81	0.032 (0.0241)	1.31	0.070 (0.016)***	4.51
Sex	0.043 (0.060)	0.72	-0.047 (0.192)	-0.25	-0.073 (0.0787)	-0.93	0.086 (0.052)	1.64
Race	-0.036 (0.021)	-1.71	-0.039 (0.059)	-0.66	--	--	-0.014 (0.018)	-0.78
Poverty	-0.079 (0.031)*	-2.56	-0.025 (0.094)	-0.27	-0.126 (0.0444)**	-2.84	-0.042 (0.029)	-1.42
Education	--	--	--	--	-0.073 (0.0595)	-1.22	-0.059 (0.037)	-1.58
Nbhd Support	-0.187 (0.067)**	-2.80	-0.264 (0.218)	-1.21	-0.044 (0.0905)	-0.49	-0.140 (0.058)*	-2.42
Nbhd Safety	0.001 (0.058)	0.021	0.227 (0.164)	1.38	0.037 (0.0745)	0.50	0.017 (0.051)	0.34
ACE*Bedtime	0.026 (0.018)	1.47	-0.088 (0.063)	-1.40	-0.016 (0.0262)	-0.61	0.019 (0.015)	1.29

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 18

Severity of Current Depressive Disorder Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 1904)		0-5 Years (n = 33)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.105 (0.062)	1.71	-0.967 (0.739)	1.31	-0.008 (0.106)	-0.08	0.144 (0.049)*	6.02
Bedtime	0.201 (0.083)*	2.43	-1.999 (1.330)	-1.50	0.101 (0.167)	0.61	0.289 (0.061)**	-0.70
Age	0.068 (0.018)	3.73	-0.035 (0.515)	-0.07	0.106 (0.061) .	1.73	0.039 (0.022)	2.82
Sex	0.346 (0.093)	3.72	2.599 (1.653)	1.57	0.224 (0.175)	1.28	0.288 (0.071)**	3.94
Race	-0.040 (0.032)	-1.26	-0.094 (0.520)	-0.18	0.044 (0.051)	0.88	-0.011 (0.024)	-0.26
Poverty	-0.021 (0.051)	-0.41	-2.803 (1.117)*	-2.51	-0.138 (0.097)	-1.42	0.021 (0.035)	0.37
Education	0.060 (0.064)	0.93	-2.567 (1.069)*	-2.40	-0.057 (0.120)	-0.48	--	--
Nbhd Support	-0.139 (0.101)	-1.37	1.498 (1.555)	0.96	0.320 (0.212)	1.51	-0.137 (0.077)*	-1.78
Nbhd Safety	0.079 (0.085)	0.93	0.476 (0.833)	0.57	0.072 (0.161)	0.44	0.033 (0.066)	0.51
ACE*Bedtime	0.011 (0.024)	0.45	0.240 (0.269)	0.89	0.027 (0.046)	0.59	-0.001 (0.018)	-0.07

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 19

Severity of Current Behavioral Disorder Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 3142)		0-5 Years (n = 902)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.218 (0.048)***	4.57	0.393 (0.099)***	3.95	0.150 (0.054)**	2.76	0.139 (0.049)**	2.84
Bedtime	0.138 (0.060)*	2.32	0.005 (0.105)	0.05	0.150 (0.067)*	2.25	0.132 (0.062)*	2.14
Age	-0.012 (0.009)	-1.33	0.076 (0.062	1.23	-0.045 (0.023) .	-1.96	-0.042 (0.023) .	-1.83
Sex	-0.126 (0.078)	-1.60	-0.175 (0.147)	-1.19	-0.261 (0.085)**	-3.06	0.105 (0.082)	1.28
Race	-0.003 (0.023)	-0.12	-0.003 (0.041)	-0.07	-0.018 (0.024)	-0.74	-0.017 (0.026)	-0.64
Poverty	-0.153 (0.040)***	-3.85	-0.105 (0.072)	-1.46	-0.172 (0.038)***	-4.52	-0.171 (0.041)***	0.37
Education	-0.043 (0.050)	-0.87	-0.280 (0.094)**	-2.99	--	--	-0.030 (0.051)	-0.60
Nbhd Support	-0.063 (0.082)	-0.78	-0.216 (0.156)	-1.38	-0.016 (0.089)	-0.18	-0.100 (0.086)	-1.17
Nbhd Safety	0.074 (0.065)	1.14	0.022 (0.117)	0.19	0.158 (0.071)*	2.21	0.021 (0.069)	0.31
ACE*Bedtime	-0.025 (0.020)	-1.28	-0.099 (0.042)*	-2.38	-0.0002 (0.025)	-0.01	-0.006 (0.019)	-0.30

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 20

Severity of Current ADHD Predicted by ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 4544)		0-5 Years (n = 357)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE Count	0.145 (0.046)**	3.15	0.218 (0.155)	1.41	0.141 (0.054)**	2.60	0.197 (0.044)*** 0.203 (0.044)***	4.51 4.63
Bedtime	0.144 (0.052)**	2.79	-0.005 (0.159)	-0.03	0.095 (0.062)	1.54	0.238 (0.048)*** 0.242 (0.048)***	4.97 5.05
Age	-0.084 (0.009)**	-9.05	0.060 (0.109)	0.55	-0.096 (0.022)***	-4.28	-0.081 (0.017)*** -0.081 (0.017)***	-4.69 -4.62
Sex	-0.166 (0.067)*	-2.50	-0.116 (0.230)	-0.50	-0.197 (0.077)*	-2.56	-- -0.189 (0.061)**	-- -3.08
Race	0.031 (0.022)	1.46	0.022 (0.068)	0.33	-0.006 (0.024)	-0.24	0.016 (0.021) --	0.76 --
Poverty	-0.169 (0.035)***	-4.82	--	--	-0.165 (0.036)***	-4.60	--0.116 (0.032)*** -0.116 (0.032) ***	-3.65 -3.65
Education	-0.013 (0.044)	-0.29	-0.404 (0.124)**	-3.25	--	--	-0.050 (0.040) -0.042 (0.040)	-1.24 -1.05
Nbhd Support	-0.048 (0.071)	-0.68	-0.338 (0.232)	-1.46	-0.108 (0.083)	-1.29	-0.163 (0.066)* -0.157 (0.066)*	-2.49 -2.39
Nbhd Safety	.169 (0.062)**	2.75	0.058 (0.174)	0.34	0.140 (0.071)*	1.97	0.127 (0.059)* 0.137 (0.059)*	2.16 2.32
ACE*Bedtime	-0.00057 (0.019)	-0.03	-0.087 (0.070)	-1.24	0.022 (0.025)	0.86	-0.025 (0.017) -0.026 (0.017)	-1.47 -1.49

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 21

Overall Presence of Mental Health Condition Predicted by Household ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 38054)		0-5 Years (n = 18008)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Household ACE	0.922 (0.092)***	10.06	0.938 (0.272)***	3.45	0.871 (0.118) ***	7.41	0.729 (0.083)***	8.75
Bedtime	0.239 (0.020)***	12.15	0.202 (0.046)***	4.39	0.184 (0.025) ***	7.45	0.312 (0.018)***	17.14
Age	0.113 (0.003)***	35.20	0.443 (0.041)***	10.87	0.138 (0.009)***	14.59	0.025 (0.008)**	3.29
Sex	-0.270 (0.027)***	-9.96	-0.664 (0.067)***	-9.91	-0.581 (0.033)***	-17.65	-0.012 (0.025)	-0.46
Race	-0.040 (0.010)***	-4.24	-0.003 (0.021)	-0.16	-0.028 (0.011)*	-2.54	-0.064 (0.009)***	-6.77
Poverty	-0.056 (0.015)***	-3.80	-0.161 (0.035)***	-4.62	-0.073 (0.018)***	-4.16	-0.032 (0.014)*	-2.27
Education	0.086 (0.019)***	4.62	-0.062 (0.044)	-1.39	-0.008 (0.022)	-0.36	0.134 (0.017)***	7.75
Nbhd Support	-0.250 (0.031)***	-8.03	-0.446 (0.074)***	-6.02	-0.260 (0.038) ***	-6.89	-0.189 (0.029)***	-6.44
Nbhd Safety	0.131 (0.027)***	4.78	0.161 (0.059)**	2.74	0.135 (0.032)***	4.19	0.090 (0.027)***	3.31
ACE*Bedtime	-0.078 (0.038)*	-2.04	0.022 (0.115)	0.20	-0.091 (0.055) .	-1.65	-0.006 (0.034) .	-0.17

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 22

Overall Presence of Mental Health Condition Predicted by Community ACE Count and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 38054)		0-5 Years (n = 18008)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Commun. ACE	0.491 (0.031)***	16.01	0.434 (0.074)***	5.89	0.406 (0.037)***	10.99	0.429 (0.030) ***	20.17
Bedtime	0.233 (0.023)***	10.03	0.157 (0.053)**	2.95	0.135 (0.029) ***	4.58	0.314 (0.022)***	-9.26
Age	0.108 (0.003)***	32.94	0.424 (0.041)***	10.32	0.129 (0.010)***	13.39	0.029 (0.008)***	6.00
Sex	-0.265 (0.028)***	-9.62	-0.658 (0.068)***	-9.74	-0.605 (0.034)***	-18.03	0.001 (0.026)	0.10
Race	-0.027 (0.009)**	-2.83	-0.001 (0.021)	-0.05	-0.016 (0.011)	-1.50	-0.046 (0.009)***	-4.86
Poverty	0.005 (0.015)	0.30	-0.117 (0.035)***	-3.30	-0.010 (0.018)	-0.52	0.020 (0.014)	1.38
Education	0.141 (0.019)***	7.31	0.002 (0.045)	0.05	0.052 (0.023)*	2.28	0.189 (0.018)***	10.59
Nbhd Support	-0.232 (0.032)***	-7.35	-0.437 (0.075)***	-5.85	-0.238 (0.038)***	-6.21	-0.173 (0.030)***	-5.82
Nbhd Safety	0.159 (0.028)***	5.74	0.163 (0.059)**	2.75	0.138 (0.033)***	4.21	0.126 (0.027)***	4.64
ACE*Bedtime	-0.027 (0.014)*	-2.01	0.019 (0.034)	0.56	0.019 (0.018)	1.07	-0.017 (0.013)	-1.32

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Supplementary Table 3

Overall Presence of Mental Health Condition as Predicted by Single ACEs and Sleep Duration

Age Group	All Ages (Replicated) (n = 37551-37930)		0-5 Years (n = 17894-18023)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Income ACE	0.743 (0.060)***	12.45	0.818 (0.0115)***	7.09	0.646 (0.070)***	9.30	0.716 (0.060)***	11.86
Sleep Duration	-0.300 (0.031)***	-9.55	-0.387 (0.075)***	-5.19	-0.278 (0.038)***	14.68	-0.291 (0.030)***	-9.81
Age	0.129 (0.003)***	40.91	0.412 (0.041)***	10.02	0.140 (0.010)***	14.68	0.049 (0.007)***	6.55
Sex	-0.250 (0.027)***	-9.24	-0.653 (0.067)***	-9.77	-0.571 (0.033)***	-17.31	0.014 (0.025)	0.56
Race	-0.023 (0.009)*	-2.40	0.008 (0.020)	0.38	-0.013 (0.011)	-1.16	-0.042 (0.009)***	-4.58
Poverty	-0.006 (0.015)	-0.39	-0.110 (0.036)**	-3.08	-0.025 (0.018)	-1.37	0.008 (0.014)	0.53
Education	0.107 (0.019)***	5.71	-0.016 (0.045)	-0.37	0.026 (0.023)	1.16	0.147 (0.017)***	8.49
Nbhd Support	-0.242 (0.031)***	-7.75	-0.408 (0.074)***	-5.48	-0.242 (0.038)***	-6.39	-0.212 (0.029)***	-7.25
Nbhd Safety	0.166 (0.027)***	6.07	-0.166 (0.059)**	2.84	0.143 (0.032)***	4.42	0.144 (0.027)***	5.36
ACE*Duration	0.086 (0.077)	1.12	0.031 (0.164)	0.19	0.208 (0.092)*	2.26	0.113 (0.075)	1.51
Divorce ACE	0.668 (0.048)***	13.88	0.682 (0.108)***	6.30	0.625 (0.056)***	11.17	0.510 (0.046)***	11.01
Sleep Duration	-0.294 (0.036)***	-8.24	-0.407 (0.077)***	-5.31	-0.262 (0.043)***	-6.10	-0.324 (0.035)***	-9.33
Age	0.121 (0.003)***	37.68	0.397 (0.041)***	9.64	0.128 (0.010)***	13.25	0.051 (0.008)***	6.77
Sex	-0.251 (0.027)***	-9.22	-0.655 (0.067)***	-9.78	-0.579 (0.033)***	-17.46	0.012 (0.025)	0.49
Race	-0.020 (0.009)*	-2.10	0.005 (0.021)	0.26	-0.006 (0.011)	-0.54	-0.040 (0.009)***	-4.30
Poverty	-0.029 (0.015) .	-1.90	-0.134 (0.035)***	-3.83	-0.037 (0.018)*	-2.05	-0.015 (0.014)	-1.05
Education	0.123 (0.019)***	6.50	0.002 (0.045)	0.03	0.039 (0.023) .	1.72	0.153 (0.017)***	10.10
Nbhd Support	-0.268 (0.031)***	-8.58	-0.441 (0.074)***	-5.94	-0.255 (0.038)***	-6.74	-0.238 (0.029)***	8.80
Nbhd Safety	0.203 (0.027)***	7.44	0.224 (0.058)***	3.83	0.191 (0.032)***	4.59	0.180 (0.027)***	6.75
ACE*Duration	0.026 (0.060)	0.44	0.087 (0.153)	0.57	0.072 (0.72)	1.00	0.141 (0.056)*	2.51
Death ACE	0.606 (0.106)***	5.72	0.613 (0.296)*	2.07	0.596 (0.130)***	4.60	0.488 (0.094)***	5.21
Sleep Duration	-0.306 (0.029)***	-10.41	-0.402 (0.068)***	-5.92	-0.275 (0.036)***	-7.72	-0.290 (0.028)***	-10.33
Age	0.129 (0.003)***	40.78	0.414 (0.041)***	10.05	0.138 (0.010)***	14.44	0.050 (0.007)***	6.70
Sex	-0.254 (0.027)***	-9.39	-0.647 (0.067)***	-9.70	-0.565 (0.033)***	-17.14	0.007 (0.025)	0.27
Race	-0.022 (0.009)*	-0.13	0.100 (0.021)	0.46	-0.007 (0.011)	-0.69	-0.042 (0.009)***	-4.58

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Supplementary Table 3 (Continued).

Age Group	All Ages (Replicated) (n = 37503-37534)		0-5 Years (n = 17875-17887)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Poverty	-0.065 (0.015)***	-3.03	-0.174 (0.035)***	-5.00	-0.075 (0.018)***	-4.22	-0.046 (0.014)***	-3.32
Education	0.97 (0.019)***	5.20	-0.034 (0.045)	-0.75	0.013 (0.023)	0.589	0.133 (0.017)***	7.70
Nbhd Support	-0.305 (0.031)***	-9.83	-0.454 (0.074)***	-6.11	-0.289 (0.038)***	-7.66	-0.272 (0.029)***	-9.34
Nbhd Safety	0.204 (0.027)***	7.51	0.225 (0.058)***	3.85	0.196 (0.032)***	6.12	0.189 (0.027)***	7.10
ACE*Duration	-0.082 (0.133)	-0.62	0.006 (0.450)	0.01	0.143 (0.173)	0.83	0.042 (0.115)	0.36
Jail ACE	0.868 (0.073)***	11.88	0.852 (0.165)***	5.17	0.774 (0.083)***	9.34	0.745 (0.071)***	10.51
Sleep Duration	-0.306 (0.030)***	-10.07	-0.433 (0.070)***	-6.17	-0.284 (0.037)***	-7.65	-0.297 (0.029)***	-10.27
Age	0.128 (0.003)***	40.39	0.413 (0.041)***	10.00	0.137 (0.010)***	14.27	0.053 (0.008)***	7.05
Sex	-0.248 (0.027)***	-9.12	-0.650 (0.067)***	-9.67	-0.568 (0.033)***	-17.15	0.017 (0.025)	0.69
Race	-0.025 (0.009)**	-2.69	0.003 (0.021)	0.15	-0.014 (0.011)	-1.25	-0.044 (0.009)***	-4.70
Poverty	-0.039 (0.015)**	-2.61	-0.150 (0.035)***	-4.27	-0.048 (0.018)**	-2.64	-0.022 (0.014)	-1.59
Education	0.121 (0.019)***	6.38	-0.005 (0.045)	-0.11	0.043 (0.023) .	1.89	0.159 (0.017)***	9.11
Nbhd Support	-0.301 (0.031)***	-9.64	-0.460 (0.074)***	-6.18	-0.289 (0.038)***	-7.64	-0.270 (0.029)***	-9.25
Nbhd Safety	0.192 (0.027)***	7.04	0.217 (0.059)***	3.71	0.182 (0.032)***	5.63	0.168 (0.027)***	6.26
ACE*Duration	0.096 (0.094)	1.02	0.356 (0.232)	1.54	0.242 (0.110)*	2.19	0.198 (0.088)*	2.25
Dom Vio ACE	1.049 (0.078)***	-13.48	0.405 (0.022)***	-14.22	0.985 (0.089)***	11.06	0.945 (0.076)***	12.47
Sleep Duration	-0.301 (0.030)***	-9.94	-0.281 (0.043)***	-6.57	-0.285 (0.037)***	-7.72	-0.287 (0.029)***	-9.96
Age	0.128 (0.003)***	40.31	0.124 (0.010)***	12.75	0.137 (0.010)***	14.16	0.051 (0.008)***	6.78
Sex	-0.255 (0.027)***	-9.37	-0.597 (0.034)***	-17.78	-0.572 (0.033)***	-17.20	0.005 (0.026)	0.20
Race	-0.027 (0.009)**	-2.83	-0.015 (0.011)	-1.40	-0.011 (0.011)	-1.05	-0.048 (0.009)***	-5.11
Poverty	-0.043 (0.015)**	-2.85	-0.001 (0.018)	-0.06	-0.053 (0.018)**	-2.95	-0.029 (0.014)*	-2.04
Education	0.111 (0.019)***	5.83	0.066 (0.023)**	2.86	0.028 (0.023)	1.21	0.147 (0.017)***	8.43
Nbhd Support	-0.284 (0.031)***	-9.07	-0.242 (0.038)***	-6.32	-0.268 (0.038)***	-7.04	-0.255 (0.029)***	-8.70
Nbhd Safety	0.183 (0.027)***	6.69	0.150 (0.033)***	4.59	0.174 (0.032)***	5.38	0.164 (0.027)***	6.10
ACE*Duration	0.110 (0.101)	1.09	0.060 (0.028)*	2.12	0.287 (0.118)*	2.43	0.147 (0.095)	1.55
Nbhd Vio ACE	1.129 (0.091)***	12.47	1.441 (0.205)***	7.02	1.169 (0.011)***	10.26	1.079 (0.082)***	13.12

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Supplementary Table 3 (Continued).

Age Group	All Ages (Replicated) (n = 37505-37515)		0-5 Years (n = 17882-17901)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Sleep Duration	-0.307 (0.030)***	-10.29	-0.415 (0.069)***	-6.01	-0.283 (0.036)***	-7.81	-0.278 (0.029)***	-9.72
Age	0.126 (0.003)***	39.66	0.412 (0.041)***	9.98	0.132 (0.010)***	13.64	0.046 (0.008)***	6.14
Sex	-0.261 (0.027)***	-9.56	-0.64 (0.067)***	-9.53	-0.572 (0.033)***	-17.22	0.006 (0.026)	0.25
Race	-0.025 (0.009)**	-2.66	0.007 (0.021)	0.350	-0.011 (0.011)	-1.06	-0.046 (0.009)***	-4.91
Poverty	-0.050 (0.015)***	-3.34	-0.144 (0.035)***	-4.10	-0.058 (0.018)	-3.20	-0.035 (0.014)*	-2.46
Education	0.103 (0.019)***	5.45	-0.029 (0.045)	-0.64	0.013 (0.023)	0.58	0.144 (0.017)***	8.26
Nbhd Support	-0.300 (0.031)***	-9.59	-0.452 (0.075)***	-6.06	-0.291 (0.038)***	-7.67	-0.267 (0.029)***	-9.09
Nbhd Safety	0.155 (0.028)***	5.62	0.195 (0.059)***	3.31	0.149 (0.033)***	4.57	0.121 (0.027)***	4.47
ACE*Duration	0.195 (0.117) .	1.67	0.038 (0.303)	0.13	0.075 (0.149)*	0.50	0.129 (0.103)	1.26
MenHealth ACE	1.234 (0.063)***	-19.53	1.119 (0.136)***	8.24	1.30 (0.078)***	16.68	1.198 (0.061)***	19.77
Sleep Duration	-0.327 (0.032)***	-10.24	-0.470 (0.073)***	-6.41	-0.307 (0.039)***	-7.96	-0.287 (0.031)***	-9.41
Age	0.125 (0.003)***	38.86	0.411 (0.041)***	9.90	0.136 (0.010)***	13.92	0.043 (0.008)***	5.65
Sex	-0.267 (0.028)***	-9.66	-0.658 (0.067)***	-9.77	-0.597 (0.034)***	-17.71	-0.002 (0.026)	-0.09
Race	-0.020 (0.010) *	-2.05	0.010 (0.021)	0.48	-0.011 (0.011)	-0.97	-0.039 (0.009)***	-4.17
Poverty	-0.037 (0.015)*	-2.46	-0.148 (0.035)***	-4.21	-0.041 (0.018)*	-0.03	-0.029 (0.014)*	-2.03
Education	0.075 (0.019)***	3.94	-0.039 (0.045)	-0.88	0.012 (0.023)	-0.52	0.118 (0.018)***	6.72
Nbhd Support	-0.249 (0.032)***	-7.87	-0.430 (0.074)***	-5.77	-0.235 (0.038)***	-6.12	-0.213 (0.030)***	-7.16
Nbhd Safety	0.168 (0.028)***	6.06	0.173 (0.059)**	2.94	0.148 (0.033)***	4.59	0.147 (0.027)***	5.38
ACE*Duration	0.109 (0.078)	1.41	0.228 (0.177)	1.29	0.087 (0.096)	0.91	0.066 (0.074)	0.90
Drug ACE	0.898 (0.062)***	14.43	1.052 (0.139)***	7.57	0.891 (0.075)***	11.85	0.792 (0.058)***	13.72
Sleep Duration	-0.314 (0.032)***	-9.94	-0.403 (0.072)***	-5.87	-0.292 (0.038)***	-7.67	-0.299 (0.030)***	-9.85
Age	0.124 (0.003)***	38.97	0.403 (0.041)***	9.76	0.133 (0.010)***	13.79	0.047 (0.008)***	6.19
Sex	-0.254 (0.027)***	-9.29	-0.634 (0.067)***	-9.46	-0.583 (0.033)***	-17.50	0.003 (0.026)	0.13
Race	-0.021 (0.009)*	-2.18	0.008 (0.021)	0.39	-0.006 (0.011)	-0.54	-0.038 (0.009)***	-4.13
Poverty	-0.045 (0.015)**	-3.03	-0.156 (0.035)***	-4.48	-0.057 (0.018)**	-3.15	-0.033 (0.014)*	-2.32
Education	0.099 (0.019)***	5.25	-0.020 (0.045)	-0.450	0.021 (0.023)	0.93	0.141 (0.017)***	8.07

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Supplementary Table 3 (Continued).

	0-5 Years (n = 0)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)			
	B (SE)	z	B (SE)	z	B (SE)	z		
Nbhd Support	-0.280 (0.031)***	-8.93	-0.436 (0.075)***	-5.85	-0.276 (0.038)***	-7.26	-0.249 (0.029)***	-8.48
Nbhd Safety	0.187 (0.027)***	6.80	0.205 (0.059)***	3.49	0.166 (0.032)***	5.12	0.166 (0.027)***	6.17
ACE*Duration	0.110 (0.078)	1.41	0.093 (0.019)	0.48	0.157 (0.096)	1.64	0.156 (0.071)*	2.20
Racial Dis. ACE	0.281 (0.088)**	3.19	0.729 (0.234)***	3.11	0.374 (0.114)**	3.29	0.221 (0.078)**	2.82
Sleep Duration	-0.321 (0.030)***	-10.80	-0.411 (0.041)***	-6.13	-0.281 (0.036)***	-7.82	-0.306 (0.028)***	-10.77
Age	0.129 (0.003)***	40.73	0.411 (0.041)***	9.97	0.139 (0.010)***	14.53	0.050 (0.007)***	6.70
Sex	-0.252 (0.027)***	-9.30	-0.650 (0.067)***	-9.71	-0.567 (0.033)***	-17.18	0.008 (0.025)	0.31
Race	-0.027 (0.009)**	-2.86	0.004 (0.021)	0.19	-0.014 (0.011)	-1.43	-0.049 (0.009)***	-5.29
Poverty	-0.064 (0.015)***	-4.35	-0.172 (0.035)***	-4.94	-0.077 (0.018)***	-4.32	-0.048 (0.014) ***	-3.47
Education	0.082 (0.019)***	4.38	-0.044 (0.044)	-1.00	0.000 (0.038)	0.011	0.118 (0.017)***	6.89
Nbhd Support	-0.292 (0.031)***	-9.39	-0.440 (0.074)***	-5.92	-0.278 (0.038)***	-7.35	-0.261 (0.029)***	-8.96
Nbhd Safety	0.190 (0.027)***	6.97	0.217 (0.058)***	3.71	0.181 (0.032)***	5.62	0.173 (0.027)***	6.50
ACE*Duration	0.211 (0.113) .	1.87	0.143 (0.325)	0.44	0.138 (0.147)	0.94	0.255 (0.099)**	2.59
Sexl Dis. ACE	1.471 (0.148)***	9.95	--	--	0.898 (0.247)***	18.32	1.570 (0.117)***	13.37
Sleep Duration	-0.284 (0.031)***	-9.23	--	--	-0.273 (0.035)***	-7.77	-0.266 (0.028)***	-9.51
Age	0.078 (0.004)***	18.68	--	--	0.139 (0.010)***	14.57	0.044 (0.008)***	5.79
Sex	-0.246 (0.029)***	-8.62	--	--	-0.573 (0.033)***	-17.36	-0.030 (0.026)	-1.18
Race	-0.024 (0.010)*	-2.39	--	--	-0.007 (0.011)	-0.63	-0.039 (0.009)***	-4.15
Poverty	-0.051 (0.016)**	-3.27	--	--	-0.080 (0.018)***	-4.46	-0.053 (0.014)***	-3.79
Education	0.095 (0.020)***	4.86	--	--	0.003 (0.022)	0.12	0.118 (0.017)***	6.83
Nbhd Support	-0.287 (0.033)***	-8.78	--	--	-0.282 (0.038)***	-7.49	-0.255 (0.029)***	-8.72
Nbhd Safety	0.191 (0.029)***	6.59	--	--	0.192 (0.032)***	5.99	0.168 (0.027)***	6.25
ACE*Duration	-0.073 (0.189)	-0.39	--	--	0.101 (0.321)	0.32	-0.141 (0.148)	-0.95

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[+]Question not included in survey before Age 6

Supplementary Table 4

Overall Presence of Mental Health Condition as Predicted by Single ACEs and Bedtime Regularity

Age Group	All Ages (Replicated) (n = 37574-37951)		0-5 Years (n = 17840-17969)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Income ACE	0.933 (0.105)***	8.92	0.775 (0.220)***	3.53	0.763 (0.124)***	6.14	0.941 (0.104)***	9.03
Bedtime	0.234 (0.020)***	11.49	0.187 (0.051)***	3.64	0.158 (0.026)***	6.03	0.333 (0.018)***	18.06
Age	0.121 (0.003)***	37.74	0.444 (0.041)***	10.87	0.146 (0.009)***	15.39	0.031 (0.008)***	4.14
Sex	-0.251 (0.027)***	-9.28	-0.659 (0.067)***	-9.84	-0.580 (0.033)***	-17.61	0.012 (0.025)	0.46
Race	-0.023 (0.009)*	-2.46	0.009 (0.020)	0.44	-0.013 (0.011)	-1.23	-0.042 (0.009)***	-4.58
Poverty	-0.012 (0.015)	-0.80	-0.121 (0.036)***	-3.39	-0.035 (0.018) .	-1.94	0.006 (0.014)	0.46
Education	0.104 (0.019)***	5.53	-0.036 (0.045)	-0.81	0.012 (0.022)	0.54	0.156 (0.017)***	8.98
Nbhd Support	-0.228 (0.031)***	-7.29	-0.415 (0.074)***	-5.58	-0.238 (0.038)***	-6.29	-0.171 (0.029)***	-5.80
Nbhd Safety	0.153 (0.027)***	5.60	0.154 (0.059)**	2.62	0.130 (0.032)***	4.02	0.130 (0.027)***	4.84
ACE*Bedtime	-0.071 (0.044)	-1.61	0.017 (0.096)	0.18	-0.003 (0.058)	-0.05	-0.079 (0.042)	-1.89
Divorce ACE	0.718 (0.082)***	8.81	0.471 (0.209)*	2.26	0.583 (0.099)***	5.92	0.600 (0.078)***	7.70
Bedtime	0.236 (0.023)***	10.17	0.163 (0.052**	3.14	0.153 (0.029)***	5.21	0.321 (0.022)***	14.79
Age	0.112 (0.003)***	34.48	0.429 (0.041)***	10.50	0.132 (0.010)***	13.81	0.034 (0.008)***	4.40
Sex	-0.253 (0.027)***	-9.28	-0.664 (0.067***	-9.89	-0.589 (0.033)***	-17.77	0.010 (0.026)	0.38
Race	-0.021 (0.009)*	-2.19	0.006 (0.021)	0.27	-0.007 (0.011)	-0.64	-0.040 (0.009)***	-4.32
Poverty	-0.033 (0.015)*.	-2.19	-0.143 (0.035***	-4.08	-0.044 (0.018)*	-2.45	-0.014 (0.014)	-1.00
Education	0.120 (0.019)***	6.37	-0.018 (0.045)	-0.39	0.026 (0.023)	1.14	0.162 (0.017)***	9.28
Nbhd Support	-0.252 (0.031)***	-8.06	-0.446 (0.074)***	-6.00	-0.250 (0.038)***	-6.58	-0.197 (0.029)***	-6.70
Nbhd Safety	0.188 (0.027)***	6.88	0.208 (0.059)***	3.55	0.177 (0.032)***	5.49	0.165 (0.027)***	6.14
ACE*Bedtime	-0.014 (0.037)	-0.38	0.124 (0.095)	1.30	0.051 (0.048)	1.05	-0.003 (0.033)	-0.10
Death ACE	0.464 (0.175)**	2.65	0.794 (0.557)	1.42	0.505 (0.232)*	2.18	0.590 (0.153***	3.85
Bedtime	0.241 (0.019)***	12.86	0.233 (0.044)**	5.24	0.170 (0.024)***	7.11	0.337 (0.017)***	19.54
Age	0.120 (0.003)***	37.40	0.446 (0.041)***	10.93	0.144 (0.009)***	15.13	0.032 (0.008)***	4.22
Sex	--0.256 (0.027)***	-9.46	-0.656 (0.067)***	-9.79	-0.575 (0.033)***	-17.45	0.004 (0.025)	0.16
Race	-0.023 (0.009)*	-2.43	0.010 (0.021)	0.50	-0.008 (0.011)	-0.76	-0.043 (0.009)***	-4.62
Poverty	-0.071 (0.015)***	-4.78	-0.182 (0.035)***	-5.23	-0.085 (0.018)***	-4.80	--0.045 (0.014)**	-3.24

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Supplementary Table 4 (Continued).

Age Group	All Ages (Replicated) (n = 37524-37556)		0-5 Years (n = 17822-17833)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Education	0.094 (0.019)***	5.01	-0.051 (0.044)	-1.15	-0.002 (0.022)	-0.11	0.142 (0.017)***	8.22
Nbhd Support	-0.288 (0.031)***	-9.26	-0.456 (0.074)***	-6.14	-0.284 (0.038)***	-7.53	-0.228 (0.029)***	-7.78
Nbhd Safety	0.189 (0.027) ***	6.95	0.209 (0.059)***	3.58	0.182 (0.032)***	5.67	0.172 (0.027)***	6.46
ACE*Bedtime	0.036 (0.077)	0.47	-0.096 (0.237)	-0.40	0.086 (0.111)	0.78	-0.039 (0.065)	-0.60
Jail ACE	1.238 (0.123)***	10.09	0.891 (0.310)**	2.88	0.856 (0.144)***	5.93	1.204 (0.119)***	10.11
Bedtime	0.254 (0.020)***	12.99	0.210 (0.047)***	4.52	0.171 (0.025)***	6.78	0.345 (0.018)***	19.30
Age	0.119 (0.003)***	37.05	0.447 (0.041)***	10.91	0.142 (0.009)***	14.93	0.035 (0.008)***	4.63
Sex	-0.250 (0.027)***	-9.19	-0.658 (0.067)***	-9.78	-0.577 (0.033)***	-17.43	0.015 (0.026)	0.60
Race	-0.026 (0.009)**	-2.75	0.005 (0.021)	0.23	-0.015 (0.011)	-1.37	-0.044 (0.009)***	-4.74
Poverty	-0.044 (0.015)**	-2.96	-0.159 (0.035)***	-4.53	-0.057 (0.018)**	-3.16	-0.022 (0.014)	-1.55
Education	0.118 (0.019)***	6.23	-0.024 (0.045)	-0.54	0.029 (0.023)	1.28	0.168 (0.018)***	9.60
Nbhd Support	-0.283 (0.031)***	-9.06	-0.462 (0.074)***	-6.21	-0.283 (0.038)***	-7.49	-0.226 (0.029)***	-7.68
Nbhd Safety	0.178 (0.027)	6.52	0.201 (0.059)***	3.43	0.168 (0.032)***	5.21	0.153 (0.027)***	5.69
ACE*Bedtime	-0.148 (0.054)	-2.76	0.063 (0.137)	0.46	0.030 (0.069)	0.43	-0.156 (0.049)**	-3.18
Dom Vio ACE	1.653 (0.132) ***	12.48	1.330 (0.310)***	4.30	1.280 (0.155)***	8.24	1.314 (0.130)***	10.08
Bedtime	0.253 (0.019)***	13.04	0.196 (0.047)***	4.17	0.169 (0.025)***	6.76	0.337 (0.018)***	19.00
Age	0.120 (0.003)***	37.02	0.442 (0.041)***	10.77	0.142 (0.010)***	14.86	0.034 (0.008)***	4.39
Sex	-0.256 (0.027)***	-9.40	-0.648 (0.067)***	-9.60	-0.581 (0.033)***	-17.48	0.003 (0.026)	0.10
Race	-0.027 (0.009)**	-2.89	0.001 (0.021)	0.05	-0.012 (0.011)	-1.12	-0.048 (0.009)***	-5.11
Poverty	-0.048 (0.015)**	-3.18	-0.160 (0.035)***	-4.57	-0.063 (0.018)**	-3.53	-0.048 (0.009)***	-1.96
Education	0.107 (0.019)***	5.64	-0.032 (0.045)	-0.71	0.013 (0.023)	0.56	0.156 (0.018)***	8.88
Nbhd Support	-0.266 (0.031)***	-8.51	-0.438 (0.075)***	-5.87	-0.263 (0.038)***	-6.92	-0.213 (0.029)***	-7.21
Nbhd Safety	0.171 (0.027)***	6.24	0.179 (0.059)**	3.02	0.163 (0.032)***	5.03	0.149 (0.027)***	5.54
ACE*Bedtime	-0.254 (0.057)***	-4.46	0.003 (0.133)	0.02	-0.068 (0.073)	-0.93	-0.132 (0.054)*	-2.47
Nbhd Vio ACE	1.365 (0.152)***	8.96	1.451 (0.405)***	3.58	1.434 (0.191)***	7.52	1.055 (0.145)***	7.26
Bedtime	0.233 (0.019)***	12.12	0.209 (0.046)***	4.58	0.187 (0.024)***	7.67	0.312 (0.018)***	17.73

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Supplementary Table 4 (Continued).

Age Group	All Ages (Replicated) (n = 37527-37537)		0-5 Years (n = 17828-17847)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
Age	0.118 (0.003) ***	36.48	0.445 (0.041)***	10.86	0.137 (0.010)***	14.36	0.030 (0.008)***	3.88
Sex	-0.262 (0.027)***	-9.60	-0.649 (0.067)***	-9.64	-0.583 (0.033)***	-17.55	0.004 (0.026)	0.14
Race	-0.026 (0.009)**	-2.73	0.007 (0.021)	0.36	-0.012 (0.011)	-1.12	-0.046 (0.009)***	-4.88
Poverty	-0.055 (0.015)***	-3.70	-0.156 (0.035)***	-4.43	-0.068 (0.018)***	-3.82	-0.034 (0.014)*	-2.39
Education	0.099 (0.019) ***	5.26	-0.048 (0.045)	-1.06	-0.003 (0.023)	-0.13	0.152 (0.018)***	8.70
Nbhd Support	-0.285 (0.031)***	-9.09	-0.458 (0.075)***	-6.15	-0.286 (0.038)***	-7.53	-0.226 (0.030)***	-7.65
Nbhd Safety	0.142 (0.028)***	5.15	0.180 (0.059)**	3.04	0.136 (0.033)***	4.17	0.109 (0.027)***	4.00
ACE*Bedtime	-0.063 (0.065) .	-0.97	-0.011 (0.171)	-0.07	-0.120 (0.092)	-1.31	0.029 (0.059)	0.49
MenHealth ACE	1.395 (0.103)***	13.58	1.381 (0.233)***	5.92	1.547 (0.126)***	12.28	1.128 (0.102)***	11.06
Bedtime	0.220 (0.021)***	10.63	0.216 (0.049)***	4.42	0.188 (0.026)***	7.17	0.296 (0.019)***	15.67
Age	0.117 (0.003) ***	35.90	0.445 (0.041)***	10.84	0.142 (0.010)***	14.73	0.027 (0.008)***	3.44
Sex	-0.267 (0.028)***	-9.68	-0.667 (0.068)***	-9.87	-0.606 (0.034)***	-18.01	-0.005 (0.026)	-0.20
Race	-0.020 (0.009)*	-2.11	0.011 (0.021)	0.52	-0.011 (0.011)	-1.02	-0.040 (0.009)***	-4.19
Poverty	-0.044 (0.015)**	-2.93	-0.159 (0.035)***	-4.53	-0.052 (0.018**	-2.89	-0.029 (0.014)*	-2.01
Education	0.070 (0.019)***	3.68	-0.062 (0.045)	-1.39	-0.030 (0.023)	-1.31	| 0.127 (0.018)***	7.15
Nbhd Support	-0.237 (0.032) ***	-7.49	-0.437 (0.075)***	-5.86	-0.232 (0.038)***	-6.02	-0.176 (0.030)***	-5.88
Nbhd Safety	0.157 (0.028)***	5.66	0.159 (0.059)**	2.71	0.136 (0.033)***	4.13	0.134 (0.027)***	4.91
ACE*Bedtime	-0.051 (0.046)	-1.13	-0.079 (0.109)	-0.73	-0.107 (0.062)	-1.73	0.038 (0.043)	0.89
Drug ACE	1.156 (0.104)***	11.08	1.112 (0.259)***	4.29	0.831 (0.128)***	6.48	1.034 (0.098)***	10.52
Bedtime	0.239 (0.020)***	11.72	0.215 (0.048)***	4.52	0.149 (0.026)***	5.73	0.328 (0.019)***	17.46
Age	0.116 (0.003) ***	35.87	0.436 (0.041)***	10.65	0.139 (0.010)***	14.53	0.029 (0.008)***	3.84
Sex	-0.255 (0.027)***	-9.35	-0.643 (0.067)***	-9.56	-0.592 (0.033)***	-17.79	0.001 (0.026)	0.03
Race	-0.021 (0.009)*	-2.23	0.008 (0.021)	0.40	-0.007 (0.011)	-0.64	-0.039 (0.009)***	-4.16
Poverty	-0.052 (0.015)**	-3.45	-0.165 (0.035)***	-4.72	-0.068 (0.018)***	-3.78	-0.032 (0.014)*	-2.29
Education	0.095 (0.019)***	5.04	-0.040 (0.045)	-0.90	0.005 (0.023)	0.20	0.150 (0.018)***	8.56
Nbhd Support	-0.265 (0.031)***	-8.45	-0.441 (0.075)***	-5.91	-0.272 (0.038)***	-7.16	-0.208 (0.030)***	-7.03
Nbhd Safety	0.173 (0.027)***	6.30	0.190 (0.059)**	3.23	0.154 (0.032)***	4.76	0.152 (0.027)***	5.62

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Supplementary Table 4 (Continued).

Age Group	All Ages (Replicated) (n = 28559)		0-5 Years (n = 0)		6-11 Years (n = xxxx)		12-17 Years (n = xxxx)	
	B (SE)	z	B (SE)	z	B (SE)	z	B (SE)	z
ACE*Bedtime	-0.095 (0.046)*	-2.06	-0.008 (0.120)	-0.06	0.077 (0.062)	1.24	-0.072 (0.041)	-1.76
Racial Dis. ACE	0.595 (0.154)***	3.85	0.598 (0.435)	1.37	0.626 (0.198)**	3.16	0.346 (0.142)*	2.44
Bedtime	0.245 (0.019)***	12.93	0.217 (0.045)***	4.82	0.182 (0.024)***	7.54	0.330 (0.017)***	18.90
Age	0. .120 (0.003)***	37.36	0.445 (0.041)***	10.89	0.145 (0.009)***	15.22	0.032 (0.008)***	4.23
Sex	-0.253 (0.027)***	-9.36	-0.659 (0.067)***	-9.82	-0.577 (0.033)***	-17.51	0.006 (0.025)	0.22
Race	-0.028 (0.009)**	-2.91	0.005 (0.021)	0.23	-0.015 (0.011)	-1.37	-0.049 (0.009)***	-5.21
Poverty	--0.070 (0.015)***	-4.72	-0.180 (0.035)***	-5.19	-0.087 (0.018)***	-4.89	-0.047 (0.014)***	-3.38
Education	0.078 (0.019)***	4.18	-0.064 (0.044)	-1.44	-0.016 (0.022)	-0.71	0.128 (0.017)***	7.42
Nbhd Support	-0.275 (0.031)***	-8.83	-0.446 (0.074)***	-5.99	-0.272 (0.038)***	-7.20	-0.218 (0.029)***	-7.45
Nbhd Safety	0.176 (0.027)***	6.44	0.200 (0.059)**	3.40	0.168 (0.032)***	5.20	0.158 (0.027)***	5.90
ACE*Bedtime	-0.089 (0.066)	-1.36	0.091 (0.188)	0.48	-0.093 (0.094)	-0.99	0.002 (0.057)	0.03
Sexl Dis. ACE	1.717 (0.269)***	6.38	--	--	0.904 (0.426)*	2.12	1.512 (0.216)***	7.00
Bedtime	0.250 (0.020)***	12.77	--	--	0.174 (0.024)***	7.36	0.320 (0.017)***	18.64
Age	0.067 (0.004)***	15.72	--	--	0.145 (0.010)***	15.25	0.027 (0.008)***	3.49
Sex	-0.247 (0.029)***	-8.65	--	--	-0.580 (0.033***	-17.55	-0.033 (0.026)	-1.28
Race	-0.025 (0.010)*	-2.49		--	-0.007 (0.011)	-0.63	-0.039 (0.009)***	-4.16
Poverty	-0.055 (0.016)***	-3.50	--	--	-0.091 (0.018)***	-5.14	-0.051 (0.014)***	--3.63
Education	0.092 (0.020)***	4.70	--	--	-0.013 (0.022)	-0.58	0.126 (0.017)***	7.21
Nbhd Support	-0.269 (0.033)***	-8.21	--	--	-0.277 (0.038)***	-7.34	-0.214 (0.030)***	--7.23
Nbhd Safety	0.177 (0.029)***	6.08	--	--	0.180 (0.032)***	5.60	0.152 (0.027)***	5.63
ACE*BEdtime	-0.134 (0.111)	-1.21	--	--	0.023 (0.198)	0.11	-0.023 (0.088)	-0.26

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[+]Question not included in survey before Age 6