**Supplementary Materials**

**Sample**

The NCS-A household sample (n=879) included adolescents recruited from households that participated in the National Comorbidity Survey Replication (NCS-R), a national household survey of adult mental disorders (Kessler *et al.*, 2004), and had a response rate, conditional on adult NCS-R participation, of 86.8%. The remaining adolescents (n=9,244) were recruited from a representative sample of schools in NCS-R sample areas (response rate 82.6%, conditional on school participation). The proportion of initially selected schools that participated in the NCS-A was low (28.0%), but replacement schools were recruited and carefully matched to the original schools. No bias in estimates of prevalence or correlates of mental disorders was found when household sample respondents from non-participating schools were compared with school sample respondents from replacement schools (Ronald C. Kessler *et al.*, 2009). Cases were weighted for variation in within-household probability of selection in the household sample and residual discrepancies between sample and population socio-demographic and geographic distributions. The household and school samples were then merged with sums of weights proportional to relative sample sizes adjusted for design effects in estimating disorder prevalence. Weighting procedures are detailed elsewhere (Ronald C Kessler *et al.*, 2009; Ronald C. Kessler *et al.*, 2009). The weighted socio-demographic distributions of the NCS-A sample closely approximate those of the Census population.

Study participants received $50 for their participation and written informed consent and assent were obtained from both parents and adolescents, respectively, in accordance to the procedures approved by the Human Subjects Committees of Harvard University and the University of Michigan.

**Early Life Adversity**

Information about ELA was obtained through both child-interviews and parent self-administered questionnaires (SAQ). Either parent or child report was considered an endorsement of an ELA event. Physical and emotional abuse of the child was assessed using a modified version of the Conflict Tactics Scale.(Straus, 1979) Sexual assault was assessed with questions from the Composite International Diagnostic Interview (CIDI) about sexual assault, attempted rape, and rape (Kessler and Üstün, 2004). Neglect was assessed with a battery of questions used in investigations of child welfare that ask about experiences with inadequate supervision, age-inappropriate chores, and not having adequate food, clothing or medical care (Courtney *et al.*, 2001). Domestic violence was assessed using the modified Conflict Tactics Scale. Economic adversity was assessed with questions in the SAQ including household income, parental education attainment, whether the respondent’s family had received welfare or other government assistance or often did not have enough money to pay for basic necessities of living. See (McLaughlin *et al.*, 2012) for more detail on how adversities were coded.

Although information on timing of ELA was not available for all forms of adversity considered in our analysis, timing information was available on several adversities included in the threat composite. We did not incorporate timing information into our main analyses because it was not available for any of the forms of adversity included in the deprivation composite, and we did not want to introduce a systematic difference in how threat- and deprivation-related adversities were assessed. However, for the purposes of ensuring that reverse causality did not explain the findings (i.e., earlier age of menarche contributing to increased risk for experiencing some forms of adversity, such as sexual assault), we ran sensitivity analyses excluding cases of sexual assault, physical abuse, witnessing domestic violence and witnessing or being the victim of violence in the community that occurred post-menarche.

A total of 22.4% of our sample experienced both threat- and neglect-related experiences. This level of co-occurrence should not be a problem with statistical modeling of adversities in the same model to isolate the relative effects of each.  We have used similar approaches in prior work in this and other population-based samples examining the associations of childhood adversities with first onset and persistence of psychiatric disorders (Green *et al.*, 2010; McLaughlin *et al.*, 2010, 2012). In those papers, 12 separate adversities were entered into a single model to isolate the unique contributions of each on disorder onset and persistence.  Many other studies of childhood adversity have used a similar approach. Within a large, representative sample such as this with wide variability in exposure to various adversities, co-occurrence of exposures at the level we see in these data is easily addressed with statistical control. Examining these types of adverse experiences in a large, nationally representative sample allows for generalization of the findings to the broader population.

**Covariates**

Models were adjusted for a series of potential confounding variables shown to impact both age at menarche and onset of psychiatric disorder in adolescence, including age at survey response, race/ethnicity (non-Hispanic white [reference group], non-Hispanic Black, Hispanic, other), body mass index (BMI; measured by self-reported height and weight) and family socioeconomic status (SES; determined by both parent income to poverty ratio and highest parental education attainment [coded into 4 categories: less than high school graduation (reference group), high school graduation, some college, college graduate or advanced degree]). As SES is included in our measure of deprivation, we included SES as a covariate only in models examining the effects of threat in isolation (i.e., the association between pubertal timing and disorder onset; final mediation models). BMI was modeled as a continuous variable, standardized according to established procedures for adolescents (Cole *et al.*, 2005; Kakinami *et al.*, 2014), using the SAS macro available here: <https://www.cdc.gov/nccdphp/dnpao/growthcharts/resources/sas.htm>.

**Data Analysis**

We investigated whether there was a significant indirect effect of cumulative ELA events on post-menarche psychiatric disorder through age at menarche. The mediation models were comprised of a model to estimate the conditional distribution of the mediator given the exposure and the set of observed covariates, and an outcome model to estimate the conditional distribution of the outcome given the exposure, mediator, and covariates. The mediation analysis proceeded in two steps. First, we specified two statistical models: the mediator model estimated the conditional distribution of the mediator given the exposure and the set of observed covariates, and the outcome model estimated the conditional distribution of the outcome given the exposure, mediator, and covariates. The assumptions necessary for unbiased estimation of mediation models include no residual confounding of either the exposure-mediator pathway and the exposure-outcome pathway. In our models, we assumed that the same covariate set could cause confounding in both pathways, therefore we included the same covariates in both mediation and outcome models. An additional assumption is no exposure-mediator interaction. None of the tests for multiplicative interaction were statistically significant (data not shown).

Each model’s fitted objects comprised the main inputs to the mediate function, which computed both the direct and mediated parameter estimates in the total mediation model (Imai, Keele and Tingley, 2010). This approach overcomes the limitation of the standard mediation methods. These methods allow for a greater flexibility of statistical models, including binary and count dependent variables (Imai *et al.*, 2014; Tingley *et al.*, 2014). A second advantage of this approach is that standard errors are computed using quasi-Bayesian Monte Carlo methods based on normal approximation, which allowed for the estimation of 95% confidence intervals around both the direct and mediated parameter estimates (Imai, Keele and Tingley, 2010).

All statistical analyses were conducted in R (version 3.3.2). Mediation models were completed using the “mediation” package (Tingley *et al.*, 2014). The “survey” package (Lumley, 2004, 2017) was used to adjust for the complex survey design.

**Sexual Assault and Age At Menarche**

When examining the individual impact of each type of ELA on age at menarche, we found the strongest association between childhood sexual assault and earlier age at menarche. These findings contribute to a relatively consistent literature suggesting that childhood sexual assault leads to earlier pubertal timing, especially in females (Herman-Giddens, 1988; Brown *et al.*, 2004; Boynton-Jarrett *et al.*, 2013; Noll *et al.*, 2017). This association has been demonstrated in both smaller, high-risk populations (females in foster care and females referred by child protective services; Mendle, Leve, Van Ryzin, Natsuaki, & Ge, 2011; Noll et al., 2017) as well as in larger, nationally representative sample, similar to the sample used in this current analysis (National Longitudinal Study of Adolescent Health; Mendle, Ryan, & McKone, 2016). However, the mechanism accounting for this association is not well understood. It is possible that there is something specific about how childhood sexual assault influences development of the hypothalamic pituitary adrenal (HPA) and hypothalamic pituitary gonadal (HPG) axes, that in turn, advance the onset of puberty in adolescent females. It is equally plausible that there is something psychologically unique about the nature of the stress of sexual assault that may in turn exacerbate associations between stress and pubertal timing. Most likely it is a combination of both of these mechanisms (Trickett and Putnam, 1993; Trickett, Noll and Putnam, 2011) and future work should explore these potential mechanisms in conjunction. **Sensitivity Analyses**

**Deprivation Composite Without Poverty**

We included poverty as an indicator of deprivation in our models, consistent with earlier work in this sample (Platt *et al.*, 2018) and based on extensive evidence demonstrating that children from families with low income experience reductions in cognitive and social stimulation than children from higher-SES families (Bradley *et al.*, 2001; Duncan and Magnuson, 2012). However, poverty has also been conceptualized as a risk factor for, rather than a direct marker of, deprivation (McLaughlin, Sheridan and Lambert, 2014; Sheridan and McLaughlin, 2014). To ensure that we had not diluted our deprivation composite by including poverty as an indicator, we re-ran our analyses without poverty or financial insecurity in the deprivation composite. When we poverty and financial insecurity from the deprivation count, deprivation remained unassociated with age at menarche (B=0.038, SE=0.047, *p*=0.429).

Removing poverty and financial insecurity from our composite measure of deprivation also did not change the direction or significance of our findings linking deprivation-related adversity to post-menarche mental disorders. Exposure to deprivation (excluding poverty and financial insecurity) was not associated with odds of post-menarche onset of distress (OR=1.05, 95% CI=0.72, 1.52), fear (OR=0.96, 95% CI=0.71, 1.29), or eating disorders (OR=1.15, CI=0.84, 1.59), consistent with our findings when parental education was included in the composite. However, without poverty and financial insecurity, deprivation is no longer associated with increased odds of post-menarche onset of externalizing disorders (OR=1.24, 95% CI=0.95, 1.61).

**Deprivation Composite Without Parental Education**

Although low levels of parental education are reliably associated with reductions in cognitive stimulation among children (Bradley, Corwyn, Burchinal, McAdoo, & Garcia Coll, 2001; Duncan & Magnuson, 2012; Gilkerson et al., 2017; Rosen et al., (Under review)), parental education is a proxy for deprivation rather than a direct measure. To ensure that we had not diluted our deprivation composite by including parent education as an indicator, we re-ran our analyses without parental education in the deprivation composite. When we removed parental education from the deprivation count, deprivation remained unassociated with age at menarche (B=0.002, SE=0.032, *p*=0.932).

Removing parental education from our composite measure of deprivation also did not change the direction or significance of our findings linking deprivation-related adversity to post-menarche mental disorders. Exposure to deprivation (excluding low levels of parental education) was not associated with odds of post-menarche onset of distress (OR=1.24, 95% CI=0.93, 1.64), fear (OR=1.06, 95% CI=0.83, 1.35), or eating disorders (OR=1.12, CI=0.81, 1.53), consistent with our findings when parental education was included in the composite. Deprivation remained associated with increased odds of post-menarche onset of externalizing disorders (OR=1.23, 95% CI=1.03, 1.47).

**Threat Composite Without Sexual Assault**

There is strong evidence that sexual abuse or assault in early childhood precedes the onset of early puberty (Mendle *et al.*, 2011b; Trickett, Noll and Putnam, 2011; Noll *et al.*, 2017), there is also evidence to suggest that early puberty may be a risk factor for later sexual abuse or assault (Chen, Rothman and Jaffee, 2017). Therefore, in order to alleviate concerns about the possibility of post-menarche sexual assault driving our findings, we have conducted additional analyses. To ensure that the associations of threat-related adversities with age at menarche still hold without sexual assault, we re-ran our models using a threat composite without sexual assault (still including physical abuse, witnessing domestic violence, witnessing or being the victim of violence in the community, and emotional abuse). Indeed, threat-related adversities (excluding sexual assault) remain significantly associated with earlier age at menarche (B=-0.09, SE=0.03, *p*=0.007). Similarly, threat-related adversities (excluding sexual assault), still significantly predict the post-menarche onset of all four disorder classes: distress (OR=1.72, 95% CI=1.47, 2.01), fear (OR=1.37, 95% CI=1.20, 1.57), externalizing (OR=1.86, 95% CI=1.64, 2.11) and eating disorders (OR=1.57, 95% CI=1.35, 1.83).

**Constraining Analysis to Pre-Menarche Threat-Related Adversities**

We excluded cases of sexual assault, physical abuse, witnessing domestic violence and witnessing or being the victim of violence in the community that occurred post-menarche and re-ran all analyses in order to ensure that reverse causality was not driving the results. Indeed, threat-related adversities that occurred pre-menarche were still significantly associated with earlier age at menarche (B=-0.10, SE=0.05, *p*=0.04) and deprivation-related adversities (that we don’t have timing information for) remained unassociated with age at menarche (B=-0.004, SE=0.03, *p*=0.88). Threat-related adversities that occurred pre-menarche still significantly predict the post-menarche onset of all four disorder classes: distress (OR=1.88, 95% CI=1.50, 2.36), fear (OR=1.33, 95% CI=1.09, 1.62), externalizing (OR=2.09, 95% CI=1.73, 2.53) and eating disorders (OR=1.72, 95% CI=1.37, 2.16).

Furthermore, using only pre-menarche threat-related adversities did not alter the results of our mediation analyses. We still observe a significant indirect effect of cumulative threat-related ELAs on distress (OR=1.004, 95% CI=1.002,1.010; proportion mediated=5.7%), fear (OR=1.003, CI=1.001,1.010; proportion mediated=15.0%), and externalizing disorders (OR=1.002, CI=1.001,1.005; proportion mediated=2.6%) through earlier age at menarche.

**Standardized Scores for Threat and Deprivation**

Given that the threat composite included six indicators and the deprivation composite included only five, we wanted to ensure that the reduced range in the deprivation composite was not responsible for our results. To do so we created a standardized score (M=0, SD=1) of each composites, consistent with prior work (Sumner, Colich, Uddin, Armstrong, & McLaughlin, 2018). Using these composites did not change the direction or significance of our results. Indeed, the standardized score for threat-related adversities remained significantly associated with earlier age at menarche (B=-0.10, SE=0.03, *p*<0.001) and the standardized score for deprivation-related adversities was unrelated to age at menarche (B=0.01, SE=0.03, *p*=0.63). Similarly, the standardized score for threat-related adversities predicted post-menarche onset of all four disorder classes: distress (OR=1.77, 95% CI=1.53, 2.05), fear (OR=1.37, 95% CI=1.20, 1.56), externalizing (OR=1.89, 95% CI=1.66, 2.14) and eating disorders (OR=1.53, 95% CI=1.29, 1.81). The standardized score for deprivation-related adversities predicted the post-menarche onset of externalizing disorders (OR=1.17, 95% CI=1.03, 1.33) but not distress (OR=1.11, 95% CI=0.89, 1.37), fear (OR=1.02, 95% CI=0.87, 1.21), or eating disorders (OR=1.04, 95% CI=0.84, 1.27).

**References**

Boynton-Jarrett, R, Wright, RJ, Putnam, FW, Lividoti Hibert, E, Michels, KB, Forman, MR, and Rich\_Edwards, J, (2013) Childhood Abuse and Age at Menarche, *Journal of Adolescent Health*, 52(2), 241–247. doi: 10.1016/j.jadohealth.2012.06.006.

Bradley, RH, Corwyn, RF, Burchinal, M, Pipes McAdoo, H, and Garcia Coll, C, (2001) The Home Environments of Children in the United States Part II: Relations with Behavioral Development through Age Thirteen, *Child Development*, 72(6), 1868–1886. doi: 10.1111/1467-8624.t01-1-00383.

Brown, J, Cohen, P, Chen, H, Smailes, E, Johnson, JG, (2004) Sexual trajectories of abused and neglected youths, *Journal of developmental and behavioral pediatrics*, 25(2), 77–82.

Chen, FR, Rothman, EF, and Jaffee, SR, (2017) Early Puberty, Friendship Group Characteristics, and Dating Abuse in US Girls, *Pediatrics*, 139(6), p. e20162847. doi: 10.1542/peds.2016-2847.

Cole, T, Faith, MS, Pietrobelli, A, and Heo, M, (2005) What is the best measure of adiposity change in growing children: BMI, BMI%, BMI z-score or BMI centile?, *European journal of clinical nutrition*, 59(3), 419–425.

Courtney, ME, Piliavin, I, Grogan-Kaylor, A, and Nesmith, A, (2001) Foster Youth Transition to Adulthood: A Longitudinal View of Youth Leaving Care, *Child Welfare, 80*(6), 685-717.

Duncan, GJ and Magnuson, K, (2012) Socioeconomic status and cognitive functioning: Moving from correlation to causation, *Wiley Interdisciplinary Reviews: Cognitive Science*, 3(3), 377–386. doi: 10.1002/wcs.1176.

Gilkerson, J, Richards, JA, Warren, SF, Montgomery, JK, Greenwood, CR, Kimbrough Oller, D, Hansen, JHL, and Paul, TD, (2017) Mapping the early language environment using all-day recordings and automated analysis, *American Journal of Speech-Language Pathology*, 26(2), 248–265. doi: 10.1044/2016\_AJSLP-15-0169.

Green, JG, McLaughlin, KA, Berglund, PA, Gruber, MJ, Sampson, NA, Zaslavsky, AM, and Kessler, RC, (2010) Childhood Adversities and Adult Psychiatric Disorders in the National Comorbidity Survey Replication I, *Archives of General Psychiatry*, 67(2), 113. doi: 10.1001/archgenpsychiatry.2009.186.

Herman-Giddens, ME, (1988) Sexual Precocity in Girls, *American Journal of Diseases of Children*, 142(4), 431. doi: 10.1001/archpedi.1988.02150040085025.

Imai, K, Keele, L, Tingley, D, and Yamamoto, Y, (2014) Causal Mediation Analysis Using R ∗, in Vinod, H. (ed.) *Advances in social science research using R*. New York, NY: Springer, pp. 129–154.

Imai, K, Keele, L, and Tingley, D, (2010) A general approach to causal mediation analysis.’, *Psychological methods*. American Psychological Association, 15(4), p. 309.

Kakinami, L, Henderson, M, Chiolero, A, Cole, TJ, and Paradis, G, (2014) Identifying the best body mass index metric to assess adiposity change in children, *Archives of disease in childhood*, 99, 1020-1024.

Kessler, RC, Avenevoli, S, Costello, EJ, Green, JG, Gruber, MJ, Heeringa, S, Merikangas, KR, Pennell, B-E, Sampson, NA, and Zaslavsky, AM, (2004) The US National Comorbidity Survey Replication (NCS-R): design and field procedures, *International Journal of Methods in Psychiatric Research*, 13(2), 69–92. doi: 10.1002/mpr.167.

Kessler, RC, Avenevoli, S, Costello, EJ, Green, JG, Gruber, MJ, Heeringa, S, Merikangas, KR, Pennell, B-E, Sampson, NA, Zaslavsku, AM, (2009) National comorbidity survey replication adolescent supplement (NCS-A): II. Overview and design, *Journal of the American Academy of Child & Adolescent Psychiatry*, 48(4), 380–385.

Kessler, RC, and Üstün, TB, (2004) The World Mental Health (WMH) Survey Initiative version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI), *International Journal of Methods in Psychiatric Research*, 13(2), 93–121. doi: 10.1002/mpr.168.

Lumley, T, (2004) Analysis of Complex Survey Samples, *Journal of Statistical Software*, 9(1), 1–19. doi: 10.18637/jss.v009.i08.

McLaughlin, KA, Green, JG, Gruber, MJ, Sampson, NA, Zaslavsku, AM, and Kessler, RC, (2012) Childhood Adversities and First Onset of Psychiatric Disorders in a National Sample of US Adolescent’, *Archives of General Psychiatry*, 69(11), 1151. doi: 10.1001/archgenpsychiatry.2011.2277.

McLaughlin, KA, Sheridan, MA, and Lambert, HK, (2014) Childhood adversity and neural development: Deprivation and threat as distinct dimensions of early experience, *Neuroscience and Biobehavioral Reviews*, 578–591. doi: 10.1016/j.neubiorev.2014.10.012.

Mendle, J, Leve, LD, Van Ryzin, MV, Natsuaki, MN, and Ge, X, (2011) Associations Between Early Life Stress, Child Maltreatment, and Pubertal Development Among Girls in Foster Care, *Journal of Research on Adolescence*, 21(4), 871–880. doi: 10.1111/j.1532-7795.2011.00746.x.

Mendle, J, Ryan, RM, and McKone, KM, (2016) Early Childhood Maltreatment and Pubertal Development: Replication in a Population-Based Sample, *Journal of Research on Adolescence*, 26(3), 595–602. doi: 10.1111/jora.12201.

Noll, JG, Trickett, PK, Long, JD, Negriff, S, Susman, EJ, Shalev, I, Li, JC, and Putnam, FW, (2017) Childhood Sexual Abuse and Early Timing of Puberty, *Journal of Adolescent Health*, 60(1), 65–71. doi: 10.1016/j.jadohealth.2016.09.008.

Platt, JM, McLaughlin, KA, Luedtke, AR, Ahern, J, Kaufman, AS, and Keyes, KM, (2018) Targeted Estimation of the Relationship Between Childhood Adversity and Fluid Intelligence in a US Population Sample of Adolescents, *American Journal of Epidemiology*, 187(7), 1456-1466. doi: 10.1093/aje/kwy006.

Rosen, M. L. *et al.* (no date) ‘Socioeconomic status and executive function: The role of cognitive stimulation in the early home environment.’

Sheridan, MA, and McLaughlin, KA, (2014) Dimensions of early experience and neural development: deprivation and threat., *Trends in cognitive sciences*, 18(11), 580–585. doi: 10.1016/j.tics.2014.09.001.

Straus, M, (1979), Measuring Intrafamily Conflict and Violence: The Conflict Tactics (CT) Scales, *Journal of Marriage and Family*, 41(1), 75–88. doi: 10.2307/351733.

Sumner, JA, Colich, NL, Uddin, M, Armstrong, D, and McLaughlin, KA, (2018) Early Experiences of Threat, but Not Deprivation, Are Associated With Accelerated Biological Aging in Children and Adolescents, *Biological Psychiatry*, 85(3), 268-278. doi: 10.1016/j.biopsych.2018.09.008.

Tingley, D, Yamamoto, T, Hirose, K, Keele, L, and Imai, K, (2014) mediation: R Package for Causal Mediation Analysis, *Journal of Statistical Software*, 59(5), 1–38. doi: 10.18637/jss.v059.i05.

Trickett, PK, Noll, JG, and Putnam, FW, (2011) The impact of sexual abuse on female development: Lessons from a multigenerational, longitudinal research study, *Development and Psychopathology*, 23(02), 453–476. doi: 10.1017/S0954579411000174.

Trickett, PK, and Putnam, FW, (1993) Impact of child sexual abuse on females: Toward a Developmental, Psychobiological Integration, *Psychological Science*, 4(2), 81–87. doi: 10.1111/j.1467-9280.1993.tb00465.x.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table S1. Participant characteristics for Included and Excluded Participants.** | | |  |  |  |  |  |  |
|  | **Included** | |  | **Excluded** | |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | Mean (*SD*) | % (*n*) |  | Mean (*SD*) | % (*n*) |  | *t* or 𝜘2 | *p* |
| Demographics |  | 4937 |  |  | 246 |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Age, years | 15.25 (1.47) |  |  | 13.96 (1.29) |  |  | -15.17 | <0.001 |
| Age at Menarche, years | 12.10 (1.26) |  |  | n/a |  |  |  |  |
| Race/ethnicity, % |  |  |  |  |  |  | 0.88 | 0.83 |
| White |  | 55.58 (2744) |  |  | 56.10 (138) |  |  |  |
| Black |  | 19.71 (973) |  |  | 17.50 (43) |  |  |  |
| Latino |  | 18.31 (904) |  |  | 19.51 (48) |  |  |  |
| Other |  | 6.40 (316) |  |  | 0.07 (17) |  |  |  |
| Parent income to poverty ratio | 6.13 (7.97) |  |  | 5.75 (7.86) |  |  | -0.75 | 0.45 |
| Parent Education, % |  |  |  |  |  |  | 19.25 | <0.001 |
| < High school graduate |  | 16.16 (798) |  |  |  |  | 26.42 (65) |  |
| High school graduate |  | 30.18 (1490) |  |  |  |  | 26.02 (64) |  |
| Some college |  | 19.61 (968) |  |  |  |  | 14.63 (36) |  |
| College graduate or advanced degree |  | 34.05 (1681) |  |  |  |  | 32.93 (81) |  |
|  |  |  |  |  |  |  |  |  |
| Early-life adversity exposure |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Threat exposure composite | 0.66 (1.06) |  |  | 0.45 (0.84) |  |  | -3.73 | <0.001 |
| Physical Abuse |  | 3.93 (194) |  |  | 4.07 (10) |  | 0.1 | 0.92 |
| Domestic Violence |  | 11.14 (550) |  |  | 4.47 (11) |  | -4.78 | <0.001 |
| Sexual Assault |  | 9.86 (487) |  |  | 4.07 (10) |  | -4.36 | <0.001 |
| Violent Victimization |  | 9.64 (476) |  |  | 4.89 (12) |  | -3.31 | 0.001 |
| Witnessing Violence |  | 11.06 (546) |  |  | 4.89 (12) |  | -4.27 | <0.001 |
| Emotional Abuse |  | 6.83 (337) |  |  | 6.50 (16) |  | -0.2 | 0.84 |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Deprivation exposure composite | 0.64 (0.86) |  |  | 0.66 (0.85) |  |  | 0.45 | 0.65 |
| Poverty (ratio of household income to poverty level <1.5) | | 16.89 (834) |  |  | 19.11 (47) |  | 0.86 | 0.39 |
| Parent Education (< high school graduate) |  | 16.16 (798) |  |  | 26.42 (65) |  | 3.58 | <0.001 |
| Financial Insecurity |  | 16.95 (837) |  |  | 9.76 (24) |  | -3.65 | <0.001 |
| Food Insecurity |  | 13.02 (643) |  |  | 10.16 (25) |  | -1.44 | 0.15 |
| Neglect |  | 0.75 (37) |  |  | 0.81 (2) |  | 0.11 | 0.91 |
|  |  |  |  |  |  |  |  |  |
| Psychopathology |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Lifetime Distress Diagnosis |  | 21.84 (1078) |  |  | 13.00 (32) |  | -3.96 | <0.001 |
| Lifetime Fear Diagnosis |  | 33.50 (1654) |  |  | 24.80 (61) |  | -3.07 | 0.002 |
| Lifetime Externalizing Diagnosis |  | 21.11 (1042) |  |  | 10.57 (26) |  | -5.14 | <0.001 |
| Lifetime Eating Diagnosis |  | 6.44 (318) |  |  | 5.69 (14) |  | -5.14 | <0.001 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table S2. Regression parameters for associations of all types of childhood adversity and age at menarche.** | | | | |
|  | Estimate | St. Error | *t* | *p* |
| Model 3 |  |  |  |  |
| Intercept | 10.560 | 0.261 | 40.400 | < 0.001\*\*\* |
| Physical Abuse | -0.195 | 0.171 | -1.141 | 0.265 |
| Domestic Violence | -0.145 | 0.087 | -1.660 | 0.110 |
| Sexual Assault | -0.341 | 0.163 | -2.087 | 0.048 \* |
| Violent Victimization | -0.101 | 0.169 | -0.595 | 0.558 |
| Witnessing Violence | 0.168 | 0.114 | 1.465 | 0.156 |
| Emotional Abuse | 0.230 | 0.123 | 1.868 | 0.074 |
| Poverty | -0.008 | 0.060 | -0.130 | 0.898 |
| Parental Education |  |  |  |  |
| High school | -0.006 | 0.074 | -0.081 | 0.936 |
| Some college | -0.104 | 0.067 | -1.554 | 0.133 |
| College | -0.034 | 0.091 | -0.371 | 0.714 |
| Financial Insecurity | -0.007 | 0.078 | -0.089 | 0.929 |
| Food Insecurity | 0.022 | 0.054 | 0.413 | 0.684 |
| Neglect | -0.260 | 0.354 | -0.734 | 0.470 |
| BMI | -0.215 | 0.023 | -9.209 | < 0.001\*\*\* |
| age | 0.119 | 0.018 | 6.544 | < 0.001\*\*\* |
| race |  |  |  |  |
| Black | -0.236 | 0.054 | -4.366 | < 0.001\*\*\* |
| Hispanic | -0.239 | 0.079 | -3.016 | 0.006 \*\* |
| other | -0.012 | 0.121 | -0.103 | 0.919 |
| \* p < 0.05 \*\* p < 0.01 \*\*\* p < 0.001 | |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table S3. Odds ratios for associations of childhood adversity and post-menarche mental disorders.** | | | | | | | |
|  | Distress Disorders | | Fear Disorders | | Externalizing Disorders | | Eating Disorders | |
|  | OR (95 % CI) | | OR (95% CI) | | OR (95% CI) | | OR (95% CI) | |
| Model 1 |  | |  | |  | |  | |
| Intercept | 0.075 (0.058, 0.096) \*\*\* | | 0.048 (0.035, 0.067) \*\*\* | | 0.103 (0.081, 0.130) \*\*\* | | 0.028 (0.019, 0.042) \*\*\* | |
| Threat Count | 1.710 (1.488, 1.966) \*\*\* | | 1.345 (1.188, 1.522) \*\*\* | | 1.816 (1.611, 2.048) \*\*\* | | 1.494 (1.274, 1.751) \*\*\* | |
| Dep Count | 1.124 (0.875, 1.444) | | 1.029 (0.851, 1.244) | | 1.204 (1.041, 1.393) \* | | 1.044 (0.822, 1.326) | |
| BMI | 1.126 (0.954, 1.330) | | 1.065 (0.927, 1.225) | | 1.081 (0.983, 1.188) | | 1.003 (0.821, 1.225) | |
| age | 1.300 (1.199, 1.409) \*\*\* | | 1.138 (1.011, 1.281) \* | | 1.494 (1.378, 1.619) \*\*\* | | 1.127 (0.980, 1.297) | |
| race |  | |  | |  | |  | |
| Black | 0.664 (0.447, 0.987) | | 1.323 (0.812, 2.156) | | 0.349 (0.229, 0.531) \*\*\* | | 1.114 (0.682, 1.819) | |
| Hispanic | 0.909 (0.623, 1.323) | | 1.269 (0.843, 1.912) | | 0.609 (0.437, 0.850) \*\* | | 2.030 (1.199, 3.746) \* | |
| other | 0.614 (0.334, 1.126) | | 1.038 (0.593, 1.819) | | 0.898 (0.472, 1.746) | | 0.933 (0.443, 1.965) | |
| Pre-Menarche Disorder | 0.944 (0.463, 1.923) | | 1.646 (1.166, 2.323) \*\* | | 2.791 (1.580, 4.932) \*\* | | 1.102 (0.228, 5.321) | |
|  |  | |  | |  | |  | |
| Model 2 |  | |  | |  | |  | |
| Intercept | 0.001 (0.00, 0.004)\*\*\* | | 0.007 (0.001, 0.039) \*\*\* | | 0.000 (0.000, 0.001) \*\*\* | | 0.000 (0.000, 0.001) \*\*\* | |
| Physical Abuse | 1.052 (0.528, 2.094) | | 1.392 (0.608, 3.187) | | 1.180 (0.597, 2.332) | | 1.332 (0.662, 2.682) | |
| Domestic Violence | 1.291 (0.885, 1.883) | | 0.890 (0.570, 1.389) | | 1.806 (1.108, 2.942) \* | | 1.834 (1.132, 2.971) \* | |
| Sexual Assault | 1.982 (1.166, 3.369) \* | | 1.477 (0.838, 2.603) | | 0.7614 (0.431, 1.344) | | 0.768 (0.436, 1.351) | |
| Violent Victimization | 2.070 (1.258, 3.406) \*\* | | 1.760 (1.018, 3.043) | | 5.716 (3.137, 10.415) \*\*\* | | 5.800 (3.166, 10.627) \*\*\* | |
| Witnessing Violence | 1.674 (1.010, 2.776) | | 0.912 (0.516, 1.612) | | 1.545 (0.983, 2.428) | | 1.523 (0.960, 2.417) | |
| Emotional Abuse | 1.903 (0.884, 4.094) | | 1.725 (1.043, 2.853) \* | | 1.924 (1.114, 3.322) \* | | 2.085 (1.252, 3.475) \*\* | |
| Poverty | 1.167 (0.837, 1.628) | | 0.907 (0.575, 1.431) | | 1.093 (0.729, 1.639) | | 1.083 (0.733, 1.602) | |
| Parental Education |  | |  | |  | |  | |
| High school | 1.078 (0.681, 1.706) | | 1.126 (0.725, 1.748) | | 0.967 (0.694, 1.348) | | 0.957 (0.685, 1.339) | |
| Some college | 1.372 (0.880, 2.138) | | 1.117 (0.728, 1.714) | | 0.766 (0.501, 1.171) | | 0.787 (0.520, 1.191) | |
| College | 1.373 (0.916, 2.060) | | 0.761 (0.472, 1.225) | | 0.591 (0.413, 0.845) \*\* | | 0.585 (0.413, 0.828) \*\* | |
| Financial Insecurity | 1.434 (1.009, 2.039) | | 1.256 (0.948, 1.664) | | 1.241 (0.894, 1.723) | | 1.306 (0.939, 1.818) | |
| Food Insecurity | 1.429 (0.894, 2.285) | | 0.929 (0.531, 1.628) | | 1.183 (0.826, 1.695) | | 1.205 (0.832, 1.745) | |
| Neglect | 1.135 (0.175, 7.368) | | 0.833 (0.257, 2.696) | | 1.512 (0.149, 15.315) | | 1.638 (0.180, 14.944) | |
| BMI | 1.131 (0.954, 1.341) | | 1.052 (0.923, 1.200) | | 1.052 (0.960, 1.153) | | 1.042 (0.949, 1.145) | |
| age | 1.294 (1.190, 1.408) \*\*\* | | 1.137 (1.016, 1.273) \* | | 1.503 (1.389, 1.628) \*\*\* | | 1.496 (1.377, 1.625) \*\*\* | |
| race |  | |  | |  | |  | |
| Black | 0.794 (0.552, 1.144) | | 1.428 (0.885, 2.304) | | 0.414 (0.277, 0.619) \*\*\* | | 0.400 (0.271, 0.590) \*\*\* | |
| Hispanic | 1.041 (0.711, 1.524) | | 1.272 (0.843, 1.918) | | 0.565 (0.392, 0.816) \*\* | | 0.566 (0.390, 0.820) \*\* | |
| other | 0.674 (0.370, 1.227) | | 1.073 (0.614, 1.875) | | 0.897 (0.467, 1.724) | | 0.886 (0.4537, 1.732) | |
| Pre-Menarche Disorder | 0.878 (0.427, 1.805) | | 1.616 (1.161, 2.249) \*\* | | 2.577 (1.472, 4.511) \*\* | | 1.929 (0.623, 5.975) | |
| \* p < 0.05 \*\* p < 0.01 \*\*\* p < 0.001 | |  | |  | |  | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table S4. Effect of threat-related ELA exposure on post-menarche mental disorder through age at menarche.** | | | | |
|  | Indirect Effect | Direct Effect | Total Effect | Proportion Mediated |
|  | OR (95 % CI) | OR (95% CI) | OR (95% CI) |
|  |  |  |  |  |
| Distress Disorders | 1.003 (1.002, 1.004) \*\*\* | 1.039 (1.033, 1.044)\*\*\* | 1.042 (1.036, 1.048)\*\*\* | 0.062 (0.039, 0.092) |
| Fear Disorders | 1.003 (1.002, 1.004) \*\*\* | 1.016 ( 1.011, 1.022)\*\*\* | 1.019 (1.014, 1.025)\*\*\* | 0.163 (0.104, 0.258) |
| Externalizing Disorders | 1.002 (1.001, 1.003)\*\*\* | 1.057 (1.050, 1.065)\*\*\* | 1.059 (1.052, 1.066)\*\*\* | 0.029 (0.014, 0.051) |
| Eating Disorders | 1.000(1.000, 1.001) | 1.015 (1.011, 1.018)\*\*\* | 1.015 (1.011, 1.019)\*\*\* | 0.020 (-0.016, 0.059) |