Supplementary Methods

The Environmental-Risk (E-Risk) Longitudinal Twin Study

Sample description

Participants were members of the Environmental Risk (E-Risk) Longitudinal Twin Study, which tracks the development of a birth cohort of 2,232 British children. The sample was drawn from a larger birth register of twins born in England and Wales in 1994–95 (1). Full details about the sample are reported elsewhere (2). Briefly, the E-Risk sample was constructed in 1999–2000, when 1,116 families (93% of those eligible) with same-sex 5-year-old twins participated in home-visit assessments. This sample comprised 55% monozygotic (MZ) and 45% dizygotic (DZ) twin pairs; sex was evenly distributed within zygosity (49% male). Families were recruited to represent the U.K. population of families with newborns in the 1990s, on the basis of residential location throughout England and Wales and mother's age. Teenaged mothers with twins were over-selected to replace high-risk families who were selectively lost to the register through non-response. Older mothers having twins via assisted reproduction were under-selected to avoid an excess of well-educated older mothers.

At follow up, the study sample represents the full range of socioeconomic conditions in the U.K., as reflected in the families' distribution on a neighborhood-level socioeconomic index (ACORN [A Classification of Residential Neighbourhoods], developed by CACI Inc. for commercial use in Great Britain) (3). ACORN uses census and other survey-based geodemographic discriminators to classify enumeration districts (~150 households) into socioeconomic groups ranging from "wealthy achievers" (Category 1) with high incomes, large single-family houses, and access to many amenities, to "hard pressed" neighborhoods (Category 5) dominated by government-subsidized housing estates, low incomes, high unemployment, and single parents. ACORN classifications were geocoded to match the location

of each E-Risk study family's home (4). E-Risk families' ACORN distribution closely matches that of households nation-wide: 25.6% of E-Risk families live in "wealthy achiever" neighborhoods compared to 25.3% nationwide; 5.3% vs. 11.6% live in "urban prosperity" neighborhoods; 29.6% vs. 26.9% live in "comfortably off" neighborhoods; 13.4% vs. 13.9% live in "moderate means" neighborhoods; and 26.1% vs. 20.7% live in "hard-pressed" neighborhoods. E-Risk underrepresents "urban prosperity" neighborhoods because such households are likely to be childless.

Follow-up home visits were conducted when the children were aged 7 (98% participation), 10 (96% participation), 12 (96% participation), and, most recently in 2012–2014, at 18 years (93% participation). Home visits at ages 5, 7, 10, and 12 years included assessments with participants as well as their mother (or primary caretaker); the home visit at age 18 included interviews only with the participants. Each twin participant was assessed by a different interviewer. Case missingness based on availability of cognitive scores at age 18 years was not associated with childhood poly-victimization (OR=1.05; 95%CI=0.82–1.34), age–5 IQ scores (OR=0.99; 95%CI=0.99–1.00), or socioeconomic status (SES) assessed when the cohort was initially defined (OR=1.07; 95%CI=0.84–1.38). The Joint South London and Maudsley and the Institute of Psychiatry Research Ethics Committee approved each phase of the study. Parents gave informed consent and twins gave assent between 5–12 years and then informed consent at age 18.

Childhood victimization

Exposure to several types of victimization was assessed repeatedly when the children were 5, 7, 10, and 12 years of age and dossiers have been compiled for each child with cumulative information about exposure to domestic violence between the mother and her partner; frequent bullying by peers; physical maltreatment by an adult; sexual abuse; emotional abuse; and physical neglect. The E-Risk team has previously reported evidence on the reliability and validity of the measures of domestic violence (5), bullying (6,7), physical maltreatment and

sexual abuse (8), and physical neglect (9). Emotional abuse has not been previously described but is included here. All the component measures are outlined briefly below.

Physical domestic violence. Mothers reported about perpetration by and victimization of 12 forms of physical violence (e.g., slapping, hitting, kicking, strangling) from the Conflict Tactics Scale (10), on three assessment occasions during the child's first decade of life (when the children were 5, 7, and 10 years of age). Reports of either perpetration or victimization constituted evidence of physical domestic violence. Families in which no physical violence took place were coded as 0 (55.2%); families in which physical violence took place on one occasion were coded as 1 (28.0%); and families in which physical violence took place on multiple occasions were coded as 2 (16.8%).

Bullying by peers. Experiences of victimization by bullies were assessed using both mothers' and children's reports. During the interview, the following standard definition of bullying was read out: "Someone is being bullied when another child (a) says mean and hurtful things, makes fun, or calls a person mean and hurtful names; (b) completely ignores or excludes someone from their group of friends or leaves them out on purpose; (c) hits, kicks, or shoves a person, or locks them in a room; (d) tells lies or spreads rumors about them; and (e) other hurtful things like these. We call it bullying when these things happen often, and when it is difficult to make it stop. We do not call it bullying when it is done in a friendly or playful way." Mothers were interviewed when children were 7, 10, and 12 years old and asked whether either twin had been bullied by another child, responding never, yes, or frequently. We combined mothers' reports at child age 7 and 10 to derive a measure of victimization during primary school. Mothers' reports when the children were 12 years old indexed victimization during secondary school. During private interviews with the children when they were 12 years old, the children indicated whether they had been bullied by another child during primary or secondary school. When a mother or a child reported victimization, the interviewer asked them to describe what happened. Notes taken by the interviewers were later checked by an independent rater to

verify that the events reported could be classified as instances of bullying operationally defined as evidence of (a) repeated harmful actions, (b) between children, and (c) where there is a power differential between the bully and the victim (7). Although inter-rater reliability between mothers and children was only modest (kappa = 0.20–0.29), reports of victimization from both informants were similarly associated with children's emotional and behavioral problems, suggesting that each informant provides a unique but meaningful perspective on bullying involvement (7). We thus combined mother and child reports of victimization to capture all instances of bullying victimization for primary and secondary school separately: reported as not victimized by both mother and child; reported by either mother or child as being occasionally victimized; and reported as being occasionally victimized by both informants or as frequently victimized by either mother or child or both (11). We then combined these primary and secondary school ratings to create a bullying victimization variable for the entire childhood period (5–12 years). Children who were never bullied in primary or secondary school or occasionally bullied during one of these time periods were coded as 0 (55.5%); children who were occasionally bullied during primary and secondary school, or frequently bullied during one of these time periods were coded as 1 (35.6%); and children who were frequently bullied at both primary and secondary school were coded as 2 (8.9%).

Physical and sexual harm by an adult. We assessed childhood physical and sexual harm in the E-Risk Study using an approach that resembles the process undertaken by child protection agencies. Essentially this is a two-stage process. In child protection, professionals such as teachers working with children typically raise concerns if they observe signs or symptoms or if they become aware of risk that children are victims of violence. When concerns are raised, child protection officers then review the concerns and evaluate them in the context of information previously gathered on that child or family in order to determine the likelihood that abuse has taken place. In the E-Risk Study, research workers visited the home in pairs, and were extensively trained to detect signs of abuse or neglect. Each time the two research workers

visited a home, they interviewed the mother using a structured interview about child harm, tested the children, and observed the family environment using the HOME. If either research-worker had any concerns, they flagged up the case for review. Immediately after each home visit, a review was performed if a family was flagged. In addition, at each wave, any family who had been flagged on a prior wave of the study was automatically reviewed again. The reviews were performed independently by at least 2 clinical psychologists or psychiatrists, and were based on comprehensive dossiers compiled across multiple home visits for each study member during the course of the ongoing longitudinal study. When the twins were aged 5, 7, 10 and 12 their mothers were interviewed about each twins' experience of intentional harm by an adult. At age 5 we used the standardized clinical protocol from the MultiSite Child Development Project (12,13). At ages 7, 10, and 12 this interview was modified to expand its coverage of contexts for child harm. Interviews were designed to enhance mothers' comfort with reporting valid child maltreatment information, while also meeting researchers' responsibilities for referral under the U.K. Children Act. Specifically, mothers were asked whether either of their twins had been intentionally harmed (physically or sexually) by an adult or had contact with welfare agencies. If caregivers endorsed a question, research workers made extensive notes on what had happened, and indicated whether physical and/or psychological harm had occurred. Under the U.K. Children Act, our responsibility was to secure intervention if maltreatment was current and ongoing. Such intervention on behalf of E-Risk families was carried out with parental cooperation in all but one case. No families left the study following intervention. Over the years of data collection, the study developed a cumulative profile for each child, comprising the caregiver reports, recorded debriefings with research workers who had coded any indication of maltreatment at any of the successive home visits, recorded narratives of the successive caregiver interviews, and information from clinicians whenever the Study team made a child-protection referral. Each time we visited a home, the research workers flagged concerns, and if there was sufficient evidence to code definite harm then, we did so. If evidence only met the

level of probable harm, we kept an “ongoing concern list” and if, at a later wave, there was continued evidence of probable harm, or new evidence, the code was upgraded to definite harm. The profiles were reviewed at the end of the age–12 phase by at least two clinical psychologists or psychiatrists. Inter-rater agreement between the coders was 90% of cases for whom maltreatment was identified (100% for cases of sexual abuse), and discrepantly coded cases were resolved by consensus review. These were coded as: 0 = no physical harm at any age; 1 = probable physical harm at any age; and 2 = definite physical harm at any age. There were 15.0% of children coded as probably being exposed to physical harm and 5.1% as definitely physically harmed by 12 years of age. There were 1.5% of the children coded as being exposed to sexual abuse.

Emotional abuse. Emotional abuse was coded from research workers’ narratives of home visit at ages 5, 7, 10, 12. We coded quite severe examples of parental behavior observed. For example, a mother who had schizophrenia screamed and swore at the children throughout the home visit. As another example, a father who was drunk during the home visit repeatedly spoke abusively to the children in front of the research workers. Inter-rater agreement between the coders exceeded 85% for cases with such emotional abuse, and discrepant cases were resolved by consensus review. Children with no evidence of emotional abuse were coded as 0 (88.3%), those where there was some indication of emotionally inappropriate/potentially abusive behavior were coded as 1 (8.7%), and where there was evidence of severe emotional abuse the children were coded as 2 (3%).

Physical neglect. The cumulative observations of the physical state of the home environment documented by the research workers during home visits to the twins at ages 5, 7, 10 and 12 were reviewed by two raters for evidence of physical neglect. This was defined as any sign that the caretaker was not providing a safe, sanitary, or healthy environment for the child. This included the child not having proper clothing or food, as well as grossly unsanitary home environments. (However, this did not include a family living in a crime-ridden

neighborhood for economic reasons.) Inter-rater agreement between the coders was 85%, and discrepantly coded cases were resolved by consensus review. Children with no evidence of physical neglect were coded as 0 (90.9%), those for whom there was an indication of minor physical neglect were coded as 1 (7.1%), and where there was evidence of severe physical neglect the children were coded as 2 (2.0%).

Childhood poly-victimization. Finkelhor et al operationalize poly-victimisation as the total number of victimization types that a child experiences (14). The E-Risk poly-victimization variable was derived by summing all victimization experiences that received a code of '2': 73.5% of children had zero victimization experiences; 20.1% had 1 victimization experience; 3.8% had 2 victimization experiences; 1.8% had 3 victimization experiences; 0.8% had 4 victimization experiences; and 0.1% had 5 victimization experiences. We winsorised the poly-victimization distribution into a 4-category variables, with 73.5% children having zero victimization experiences (n=1,641); 20.1% had 1 victimization experience (n=448); 3.8% had 2 victimization experiences (n=85) and 2.6% had 3 or more victimization experiences (n=58). We conducted sensitivity analyses using both the winsorized and non-winsorized exposure variables, and observed the same results.

Childhood Trauma Questionnaire. In addition to the above prospective measures of victimization, we were able to look at the recall of victimization assessed through the Childhood Trauma Questionnaire (CTQ) (15) completed by Study members at the age–18 follow-up. The CTQ inquires about the history of 5 categories of childhood maltreatment: emotional, physical, and sexual abuse and emotional and physical neglect. The validity of the instrument has been previously demonstrated in clinical and community samples. Based on evaluated scoring recommendations, we considered a specific category of maltreatment present if the Study member had a moderate to severe score. Subsequently, we derived a cumulative exposure index for each Study member.

Cognitive testing

IQ at age 12 years. At age 12 years, we administered a short version of the Wechsler Intelligence Scale for Children-Revised (WISC-R) (16). Using two subtests (Matrix Reasoning and Information), we prorated Study members' IQs (M = 100 and SD = 15), according to the method recommended by Sattler (17). Test-retest reliabillity=.87.

IQ at age 18 years. At age 18 years, we administered a short version of Wechsler Adult Intelligence Scale-IV (WAIS-IV) (18). Using two subtests (Matrix Reasoning and Information), we prorated Study members' IQs (M = 100 and SD = 15), according to the method recommended by Sattler (17). Test-retest reliabillity=.88.

Neuropsychological testing at age 18 years. The CANTAB (Cambridge Neuropsychological Test Automated Battery; www.cantab.com; CANTAB Eclipse Test Administration Guide, 2006, Cambridge Cognition, Cambridge, UK) (19) was administered using a touchscreen tablet computer during home visits. These measures are modestly correlated with each other (between .17 and .44), and modestly correlated with the WAIS-IV IQ (between .22 and .45). Reliability information is provided by Cambridge Cognition.

1. We used three CANTAB tests that tap *executive functions*: Rapid Visual Processing (RVP), Spatial Working Memory (SWM), Spatial Span (SSP). The variables generated by these tests are described below.
    1.1. Rapid Visual Processing: A' (A-prime), a signal-detection measure that taps sustained attention, often called attentional vigilance. The participant scans for a 3-digit target sequence in a digit stream that is ongoing for 7 minutes, and responds whenever a target sequence is spotted. At the most difficult level, the participant scans simultaneously for two target sequences. Higher scores are better; Test-retest reliability=.76;

1.2. Rapid Visual Processing: Total False Alarms records impulsive jumping to respond too soon before the correct target digit sequence is complete. Because relatively few participants made numerous false alarms, this measure is categorical, coded 0=none, 1=1 false alarm, 2=2 or more false alarms; Test-retest reliability not available;

1.3. Spatial Working Memory: Total Errors assesses capacity to hold information about spatial location in active memory while searching for information. At the most difficult level, participants memorize 10 locations in one problem. Lower scores are better; Test-retest reliability=.70;

1.4. Spatial Working Memory: Strategy records trials on which the participant applied a problem-solving strategy by opening boxes in a systematic sequence. Lower scores are better (fewer non-strategic trials); Test-retest reliability=.63;

1.5. Spatial Span is the visual non-verbal equivalent of the oral-auditory test Digit Span forward, and measures working memory. At the most difficult level, participants memorize a sequence of 9 colored stimuli. Higher scores are better; Test-retest reliability=.64;

1.6. Spatial Span Reversed is the visual non-verbal equivalent of the oral-auditory test Digit Span backward, and is a more difficult measure of working memory. Higher scores are better. Test-retest reliability not available.

2. These CANTAB tests also generate variables that tap visual-motor *processing speed*:

2.1. Rapid Visual Processing: Mean Latency measures the latency of response across target signals on the RVP vigilance task, and reflects reaction time to the visual targets. Lower scores are better (faster); Test-retest reliability=.64;

2.2. Spatial Working Memory: Mean Time measures the time to last response across trials, and reflects how rapidly participants solved visual spatial working memory problems. Lower scores are better (faster). Test-retest reliability not available.

Covariates

IQ at age 5 years. At age 5, we administered a short form of the Wechsler Preschool and Primary Scale of Intelligence—Revised (WPPSI–R) (20). Using two subtests (Vocabulary and Block Design), we prorated children's IQs following procedures described by Sattler (21). The prorated IQ score is highly correlated (above .86) with the full-scale IQ over a wide age range and is a good measure of "g" (21). Victimized children had lower pre-existing IQ (IQ scores at 5 years: beta=-.19, p<0.001) and, in turn, IQ at 5 years was correlated with IQ at later ages (Figure 2, Panel A).

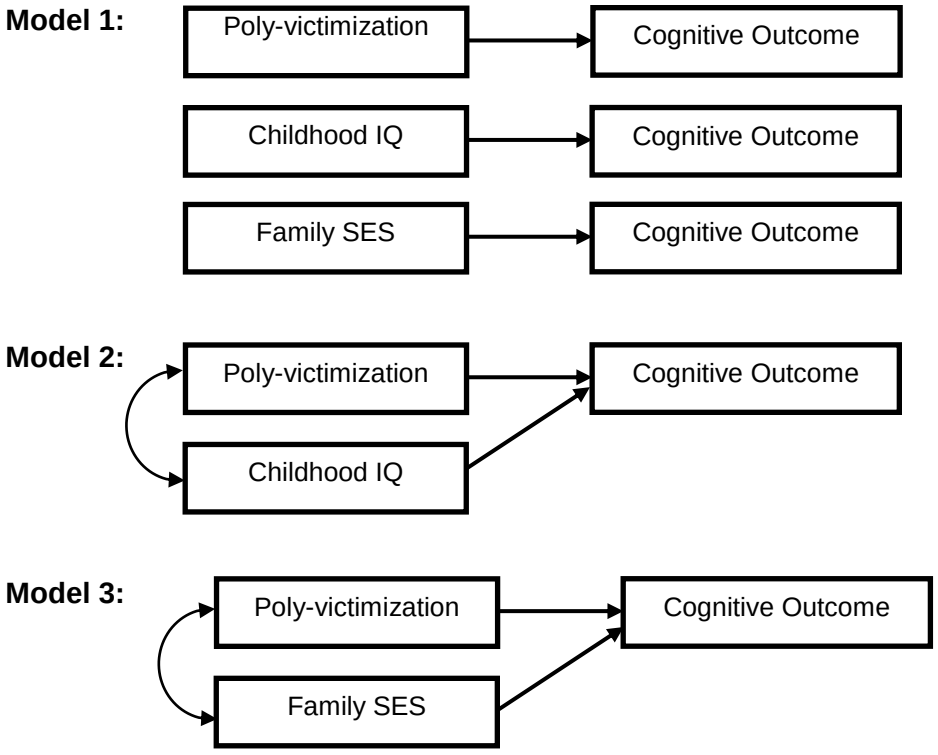
Family socioeconomic disadvantage. The family socioeconomic status was defined through a standardized composite of parental income, education and occupation (22). The three socioeconomic status indicators were highly correlated (r = 0.57–0.67) and loaded significantly onto one latent factor. The population-wide distribution of the resulting factor was divided in tertiles for analyses. Victimized children were more likely to grow up in disadvantaged families ($\chi 2$=77.47, p<0.001) and, in turn, family socio-economic disadvantage was associated with lower IQ at ages 5 (beta=.38, p<0.001), 12 (beta=.45, p<0.001,) and 18 years (beta=.44, p<0.001).

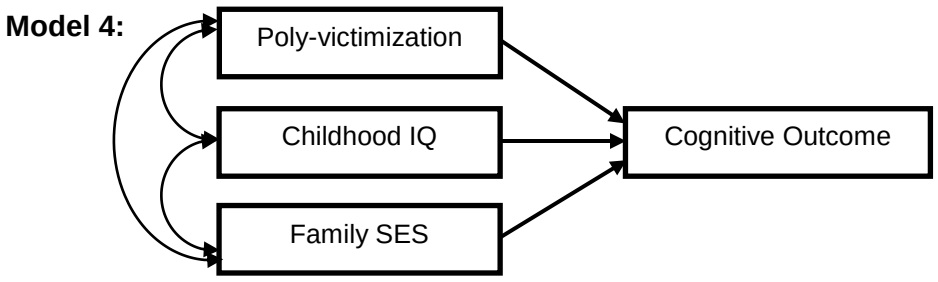
Statistical analyses

To test the associations between childhood poly-victimization between ages 5–12 years (independent variable) and cognitive measures (dependent variable), we ran a series of bivariate Generalized Estimating Equation (GEE) linear regression models accounting for clustering of twins within families in SAS 9.3 for Windows (Table 1, Model 1). To test if observed associations were accounted for by pre-existing cognitive vulnerabilities and non-specific effects of socio-economic disadvantage, we expanded the bivariate GEE models to include covariates for IQ at age 5 years and family socio-economic status, respectively (Table 1, Models 2-4). To test for significant attenuation of the association by the above covariates, we compared

regression coefficients across models. To test whether the results based on the experience of poly-victimization could be generalized to all individual types of victimization, we reran the above analyses using in turn each type of victimization as independent variables. To test if the above results were affected by victimization in infancy of toddlerhood, we ran a sensitivity analysis excluding 307 study members with evidence of victimization before age 5 years. To test whether the association between childhood victimization and cognitive functioning was accounted for by unobserved genetic or environmental heterogeneity, we tested whether differences in cognitive functioning were associated with differences in poly-victimization within pairs of siblings sharing their early family environment and either some (dizygotic twins) or all (monozygotic twins) genes. Finally, to test if the results based on the study-specific, prospectively-collected measure of maltreatment could be generalized to another more commonly used measure of childhood maltreatment, we reran the above analyses using the retrospective Childhood Trauma Questionnaire scores as the independent variable.

The following path models illustrate the tests performed.





The Dunedin Multidisciplinary Health and Development Study

Sample description

Participants were members of the Dunedin Multidisciplinary Health and Development Study, a longitudinal investigation of health and behavior in a representative birth cohort (23). Study members (n = 1,037; 91% of eligible births; 52% male) were all individuals born between April 1972 and March 1973 in Dunedin, New Zealand, who were eligible for the longitudinal study based on residence in the province at 3 years of age and who participated in the first follow-up assessment at 3 years of age. The cohort represented the full range of socioeconomic status on NZ's South Island. On adult health, the cohort matches the NZ National Health and Nutrition Survey (e.g., BMI, smoking, GP visits) (23). Cohort members are primarily white; approximately 7% self-identify as having partial non-Caucasian ancestry, matching the South Island. Assessments were carried out at birth and at ages 3, 5, 7, 9, 11, 13, 15, 18, 21, 26, 32, and 38 years, when 95% of the 1,007 study members still alive took part. Case missingness based on availability of cognitive scores at age 38 years was not associated with childhood maltreatment (OR=0.89; 95%CI=0.67–1.17) but was significantly more likely for those with lower Peabody scores at age 3 years (OR=1.44; 95%CI=1.19–1.74; mean missing=95.1, mean non-missing=100.6) or those living in disadvantage socio-economic conditions in childhood (OR=1.44; 95%CI=1.20–1.72; value range=1–6, mean missing=3.36, mean non-missing=3.80). At each assessment wave, study members were brought to the Dunedin research unit for a full

day of interviews and examinations. The Otago Ethics Committee approved each phase of the study and informed consent was obtained from all study members.

Childhood victimization

As previously described (24,25), the measure of childhood maltreatment includes [1] maternal rejection assessed at age 3 years by observational ratings of mothers' interaction with the study children, [2] harsh discipline assessed at ages 7 and 9 years by parental report of disciplinary behaviours, [3] 2 or more changes in the child's primary caregiver, and [4] physical abuse and [5] sexual abuse reported by study members once they reached adulthood (and were able to give informed consent). For each child, our cumulative index counts the number of maltreatment indicators during the first decade of life; 64.2% of children experienced no maltreatment (n=665); 26.6% experienced 1 indicator of maltreatment (hereafter "probable" maltreatment, n=276); and 9.2% experienced 2 or more indicators of maltreatment ("definite" maltreatment, n=95). There was no mandatory reporting of maltreatment by researchers in the 1970s in New Zealand at the time when most of the above maltreatment indicators where collected. Furthermore, our measure of maltreatment was created in 2001 using archived data. As such there was no responsibility to secure intervention for Study members coded as being maltreated. Although this prospectively-collected measure of maltreatment partly relied on retrospective recall of physical and sexual abuse, this was elicited 12 years prior to the adult IQ assessment, minimizing risk of recall bias affecting the results.

Study members also completed the Childhood Trauma Questionnaire (CTQ) (15) when they were 38 years old. The CTQ inquires about the history of 5 categories of childhood maltreatment: emotional, physical, and sexual abuse and emotional and physical neglect. The validity of the instrument has been previously demonstrated in clinical and community samples. Based on evaluated scoring recommendations, we considered a specific category of maltreatment present if the Study member had a moderate to severe score. Subsequently, we derived a cumulative exposure index for each Study member.

Cognitive testing

IQ at ages 11–13 years. IQ was measured by averaging scores from the Wechsler Intelligence Scale for Children-Revised (WISC-R) (16) (M = 100 and SD = 15), administered at ages 11 and 13 years. The test was individually administered on each occasion according to standard protocol. Psychometrists were blind to the children's performance on previous administrations of the WISC–R. The WISC-R consists of 10 core subtests. Eight core subtests were administered (Information, Similarities, Vocabulary, Arithmetic, Digital symbol coding, Block design, Picture completion, Object assembly). Two core subtests (Comprehension and Picture arrangement) were omitted due to time constraints (26,27). Test-retest reliability=.89.

IQ at age 38 years. Adult Intelligence Quotient (IQ) was measured with the Wechsler Adult Intelligence Scale-IV (WAIS-IV) (18) (M = 100 and SD = 15) at age 38 years. Psychometrists were blind to the study member's earlier performance on the WISC-R. Ten subtests were administered (Information, Similarities, Vocabulary, Arithmetic, Digital symbol coding, Block design, Picture completion, Digit-span, Symbol search, Matrix reasoning). Test-retest reliability=.96.

Neuropsychological functioning at age 38 years. All testing occurred in the morning in two 50-min counterbalanced sessions.

1. We assessed *executive functions* with the following tests:
    1.1. CANTAB Rapid Visual Information Processing: A' (A-prime), is a signal-detection measure that taps sustained attention, often called attentional vigilance. The participant scans for a 3-digit target sequence in a digit stream that is ongoing for 7 minutes, and responds whenever a target sequence is spotted. At the most difficult level, the participant scans simultaneously for two target sequences. Higher scores are better (19); Test-retest reliability=.76;

1.2. CANTAB Rapid Visual Information Processing: Total False Alarms records impulsive jumping to respond too soon before the correct target digit sequence is complete. Because relatively few participants made numerous false alarms, this measure is categorical, coded 0=none, 1=1 false alarm, 2=2 or more false alarms. Lower scores are better (19); Test-retest reliability not available;

1.3. WAIS Working Memory Index was derived from the Arithmetic and Digit-span subtests. The Arithmetic subtest of WAIS requires working memory processes to be applied to orally presented verbal information. It involves numerical knowledge, short-term memory, attention, and concentration. Arithmetic problems are presented in story format. Performance requires holding information in short-term memory, accessing long-term memory to retrieve numerical rules of mathematical operation, and using the rules to manipulate the stored data. Items are arranged according to the level of difficulty and have time limits. The Digit-span subtest of WAIS is a test of memory span, attention/concentration, and ability to mentally manipulate information. The test requires listening to a sequence of digits read aloud and repeating them in forward, backward, and ascending order. Digit sequences range in length from 2 to 9 digits and are presented in order of difficulty. Higher scores on the WAIS Working Memory Index are better (18); Test-retest Reliability=.90;

1.4. Wechsler Memory Scale-III: Months of the Year Backwards Test is a test of attention and tracking. It requires reciting the months of the year in backwards order, starting with December. Responses were scored according to the instructions in the WMS-III manual. Scores ranged from 1 (poor performance) to 5 (good performance) and reflect both accuracy and speed. Higher scores are better (28); Test-retest Reliability= .80; and

1.5. Trails-B test is a test of scanning and tracking, divided attention, and mental flexibility, which involves drawing lines to connect consecutively numbered and lettered circles,

alternating between numbers and letters. Scores represent the time, in seconds, to complete the test. Lower scores are better (29). Test-retest reliability=.73-.89.

2. We assessed *processing speed* with the following tests:
    2.1. CANTAB Rapid Visual Information Processing: Mean Latency measures the latency of response across target signals on the RVP vigilance task, and reflects reaction time to the visual targets. Lower scores are better (faster) (19); Test-retest reliability=.64;
    2.2. CANTAB Choice Reaction Time Index is a test of processing speed. The task is divided into five stages, which require increasingly complex chains of responses. In each case, the subject must react as soon as a yellow dot appears. The subject must respond by lifting their finger from the press-pad and touching the yellow dot on the screen. In some stages the dot may appear in one of five locations. Lower scores are better (19); Test-retest reliability=.67; and
    2.3. WAIS Processing Speed Index is derived from the Digit Symbol Coding and Symbol Search subtests. The Digit Symbol Coding subtest of WAIS is a test of processing speed, psychomotor speed and coordination, and attention/concentration. Better performance also depends on incidental learning. A key that pairs symbols and numbers is presented. The test requires filling in rows containing blank squares (each with a randomly assigned number above it) using the key. The test has time limits. The Symbol Search subtest of WAIS is a test of visual processing speed, psychomotor speed and attention/ concentration. Better performance also depends on incidental learning. The test requires determining whether target symbols appear in a row of symbols. The test has time limits. Higher scores in the WAIS Processing Speed Index are better (18). Test-retest reliability= .87.
3. We assessed *memory* with the following tests:
    3.1. CANTAB Paired Associates Learning: First Trial Memory Score is a test of visual memory and new learning. Boxes are displayed on the screen and are opened in a

random order. One or more of them will contain a pattern. The patterns are then displayed in the middle of the screen, one at a time, and the subject must touch the box where the pattern was originally located. If the subject makes an error, the patterns are re-presented to remind the subject of their locations. The difficulty level increases through the test. The number of patterns increases across eight stages (i.e., two 1-pattern stages, two 2-pattern stages, two 3-pattern stages, one 6-pattern stage, one 8-pattern stage), which challenges even very able subjects. For each stage, up to 10 trials are presented until all the patterns are located correctly. For the First Trial Memory Score, the number of patterns correctly located after the first trial of each stage is summed across the stages completed (range 0–26, with 26 meaning that all the patterns were correctly located for all stages the first time). Higher scores are better (19); Test-retest reliability=.87;

3.2. CANTAB Paired Associates Learning: Total Errors is based on the same protocol as above but considers the total number of errors (with an adjustment for each stage not attempted due to previous failure). Lower scores are better (19); Test-retest reliability=.64;

3.3. Wechsler Memory Scale-III: Verbal Paired Associates Total Recall is a test of verbal learning and memory. Eight pairs of unrelated words (e.g., hat-sofa) are read aloud and followed by a recall task (one of the words from each word pair is given, and the associated word must be recalled). Four trials of the eight word-pairs are presented. Presentation of the word-pairs is randomized across trials. The total recall score represents the total number of words (0–32) recalled across four trials. Higher scores are better (28); Test-retest reliability=.75;

3.4. Wechsler Memory Scale-III: Verbal Paired Associates Delayed Recall is based on the same protocol as above but represents the total number of words (0–8) recalled after a 25–35 minute delay. Higher scores are better (28); Test-retest reliability=.73;

3.5. Rey Auditory Verbal Learning Test: Total Recall is a test of verbal learning and memory that involves a five-trial presentation of a 15-word list and a one- time presentation of an interference list. Four trials of the 15-word list were administered due to time constraints. The Total Recall indexes the total number of words (0–60) recalled over four trials (the sum of words recalled across trials 1–4). Higher scores are better (30); Test-retest reliability=.86 and

3.6. Rey Auditory Verbal Learning Test: Delayed Recall indexes the total number of words from the original list (0–15) recalled after a 25–30 minute delay. Higher scores are better (30). Test-retest reliability=.80.

4. We assessed *perceptual reasoning* with the following test:

4.1. WAIS Perceptual Reasoning Index. This index is derived from the Block Design, Picture Completion, and Matrix Reasoning subtests. The Block Design subtest of WAIS is a test of visual-spatial organization, executive planning, and problem solving skills. The test requires putting together two, four, or nine red and white blocks in a pattern according to specific designs being displayed. Test items are presented with increasing difficulty and have time limits. Higher scores reflect both accuracy and speeded responses. The Picture Completion subtest of WAIS is a test of visual discrimination and reasoning. The test involves looking at an incomplete picture of common objects or scenes and determining which part is missing. Test items are arranged in order of difficulty and have time limits. The test requires looking at the visual whole presented and analyzing its parts to identify what is missing. The Matrix Reasoning subtest of WAIS is a test of visual-perceptual organization and reasoning ability. The test requires viewing design patterns with a missing part and selecting, from a set of five options, the part that completes the design. Test items are presented in order of difficulty. Higher scores of the WAIS Perceptual Reasoning Index are better (18). Test-retest reliability=.86;

5. We assessed *verbal comprehension* with the following test:

5.1. WAIS Verbal Comprehension Index. This index is derived from the Information, Similarities, and Vocabulary subtests. The Information subtest of WAIS is a test of general knowledge. It reflects the ability to acquire and store knowledge in long-term memory, to access it, and to express it verbally. Test items include questions about knowledge in history, geography, and art and are arranged in order of difficulty from the simplest to most difficult. The Similarities subtest of WAIS is a test of verbal concept formation, abstraction, and reasoning. It captures the ability to categorize and conceptualize information available in long-term memory. The test requires stating how a pair of words are related (e.g., that pineapples and bananas are both fruits), with word-pairs ranging in difficulty from concrete relations to abstract ones. The Vocabulary subtest of WAIS is a test of language skills and includes questions about the meaning of words (e.g., What does autumn mean?). It captures language processes such as the ability to acquire word meaning, recall it, and effectively express it. Higher scores of the WAIS Verbal Comprehension Index are better (18). Test-retest reliability=.95;

Covariates

Maternal IQ. Maternal IQ was assessed when the children were age 3 years using the Thurstone SRA Test (31), which yields correlations with other tests of intelligence higher than .80 (32). Because of the high familial clustering and heritability of the IQ (33), we used maternal IQ as an indicator of the child's pre-existing cognitive abilities unbiased by the child's exposure to maltreatment. Maltreated children had mothers with lower IQ ($r=-.14$, $p<0.001$) and, in turn, maternal IQ was correlated with the child's IQ across the life-course (Figure 2, Panel C).

Peabody Test at 3 years. At age 3 years, Study members completed the Peabody Picture Vocabulary Test (34), which prompts children with vocabulary words and asks them to identify the corresponding picture from an array during a roughly 30-minute assessment. Maltreated children had poorer Peabody test scores at age 3 years (beta=-.13, $p<0.001$), prior to the

maltreatment observational period, and, in turn, Peabody test scores at age 3 years were correlated with IQ at later ages (Figure 2, Panel C).

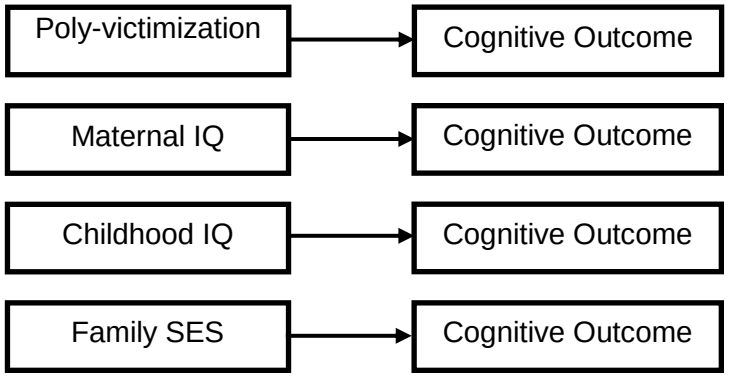
Family socioeconomic disadvantage. As previously described (35), the socioeconomic status of Study members was measured with a 6-point scale assessing parents' occupational status from birth to age 15. The higher of either mother's or father's occupation was averaged across ages. The scale places each occupation into 1 of 6 categories (from 1 = unskilled laborer to 6 = professional) on the basis of educational levels and income associated with that occupation in the New Zealand census. Maltreated children were more likely to grow up in disadvantaged families ($\chi 2$=27.83, p<0.001), and family socio-economic disadvantage was associated with lower maternal IQ scores (beta=.38, p<0.001) and Study members' lower IQ scores at age 3 (beta=.31, p<0.001), 11-13 (beta=.39, p<0.001) and 38 years (beta=.38, p<0.001).

Statistical analyses

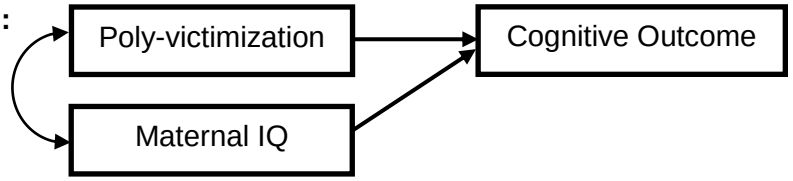
To test the associations between childhood maltreatment between ages 3–11 years (independent variable) and cognitive measures (dependent variable), we ran a series of bivariate Ordinary Least Squares (OLS) regression models in SAS 9.3 for Windows (Table 3, Model 1). To test if observed associations were accounted for by pre-existing cognitive vulnerabilities and non-specific effects of socio-economic disadvantage, we expanded the bivariate OLS models to include covariates for maternal IQ, Peabody test scores at age 3 years, and family socio-economic status, respectively (Table 3, Models 2-5). To test for significant attenuation of the association by the above covariates, we compared regression coefficients across models. To test if the results based on the study-specific, prospectively-collected measure of maltreatment could be generalized to another more commonly used measure of childhood maltreatment, we reran the above analyses using Childhood Trauma Questionnaire scores as the independent variable.

The following path models illustrate the tests performed.

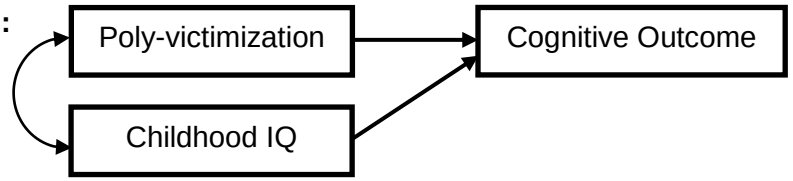
Model 1:



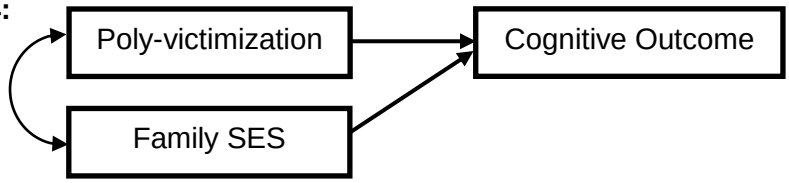
Model 2:



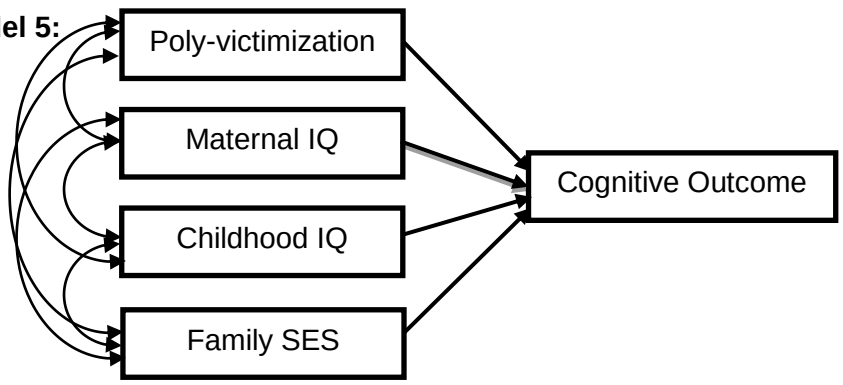
Model 3:



Model 4:



Model 5:



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SUPPLEMENTARY ANALYSES TO DANESE ET AL., THE ORIGINS OF COGNITIVE DEFICITS IN VICTIMIZED CHILDREN

Tables 1–3 in the main article that the association between childhood victimization and neuropsychological test outcomes was significantly attenuated, and often non-significant, after suitable covariates were considered in the analyses. The goal of supplementary Tables S1–S16 is to provide further information with which readers can evaluate the association between childhood victimization and cognitive functions. Here we provide additional information about specific forms of victimization (Tables S1–S6), in which each form of victimization is coded 0 (no exposure), 1 (non-severe exposure), and 2 (severe exposure); we present results about poly-victimization in which poly-victimization is a sum of 6 victimization experiences each coded 0 (no exposure), 1 (non-severe exposure), and 2 (severe exposure) (Table S7); we rule out the possibility that victimization prior to the first, baseline administration of cognitive functions, could explain our results (Table S8); we test differences in means on each of the cognitive tests for twin pairs who are concordant for victimization and twin pairs who are discordant for victimization (Table S9); we evaluate the association between victimization and cognitive functions using the Childhood Trauma Questionnaire (CTQ), a popular retrospective measure of childhood victimization (Tables S10–S12); and we provide comprehensive descriptive statistics for all the cognitive tests in both samples to increase transparency and reproducibility (Tables S13–S16). Across Tables 1–3 of the main article and Tables S1–S8 and S10–S12, childhood victimization no longer significantly predicted neuropsychological test performance in 169 of 196 tests that accounted for background covariates. Childhood victimization predicted cognitive test scores at $p<0.05$ in 27 of the 196 tests after accounting for full covariates. However, these significant findings (i) were not consistent across the different tests and (ii) would not survive correction for multiple testing. We provide results of these multiple tests to ensure that other research groups have access to complete information with which to conduct power analyses for future studies and against which to compare future results.

TABLE S1. Association of witnessing physical domestic violence with the IQ and cognitive functions in the E-Risk Study. The table shows standardized regression coefficients (betas) for the association between physical domestic violence and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association between physical domestic violence and IQ; Panel C-H describe the association between physical domestic violence and executive functions; Panels I-J describe the association between physical domestic violence and processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between physical domestic violence and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between physical domestic violence and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between physical domestic violence and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of physical domestic violence on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years															
Domestic violence	-0.17	0.03	< 0.01	-0.10	0.02	< 0.01	-0.06	0.03	0.02	-0.03	0.02	0.13	-0.14	< 0.001	< 0.01
IQ at age 5 years	0.45	0.02	< 0.01	0.44	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.02	< 0.01				0.42	0.03	< 0.01	0.28	0.02	< 0.01			
B. WAIS-IQ at age 18 years															
Domestic violence	-0.16	0.03	< 0.01	-0.09	0.02	< 0.01	-0.04	0.02	0.08	-0.02	0.02	0.38	-0.14	< 0.001	< 0.01
IQ at age 5 years	0.42	0.02	< 0.01	0.41	0.02	< 0.01				0.33	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.43	0.02	< 0.01	0.31	0.02	< 0.01			
							Executive Function								
C. Rapid Visual Information Processing A' at age 18 years															
Domestic violence	-0.10	0.03	< 0.01	-0.05	0.02	0.05	-0.03	0.03	0.20	-0.02	0.02	0.54	-0.08	0.004	< 0.01
IQ at age 5 years	0.30	0.02	< 0.01	0.30	0.02	< 0.01				0.26	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.24	0.03	< 0.01	0.15	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years															
Domestic violence	0.04	0.02	0.12	0.01	0.02	0.74	0.00	0.02	0.99	-0.01	0.02	0.65	--	--	--
IQ at age 5 years	-0.18	0.02	< 0.01	-0.18	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.14	0.02	< 0.01	-0.09	0.03	< 0.01			

(Table S1, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years															
Domestic violence	0.08	0.03	< 0.01	0.03	0.02	0.17	0.03	0.03	0.25	0.01	0.03	0.58	0.06	0.005	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.25	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.18	0.03	< 0.01	-0.09	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years															
Domestic violence	0.07	0.03	< 0.01	0.03	0.02	0.15	0.03	0.03	0.24	0.02	0.02	0.54	0.06	0.005	< 0.01
IQ at age 5 years	-0.24	0.02	< 0.01	-0.23	0.02	< 0.01				-0.21	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.16	0.03	< 0.01	-0.09	0.03	< 0.01			
G. Spatial Span at age 18 years															
Domestic violence	-0.10	0.03	< 0.01	-0.05	0.02	0.03	-0.04	0.03	0.13	-0.02	0.02	0.38	-0.08	0.004	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.28	0.02	< 0.01				0.24	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.23	0.03	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years															
Domestic violence	-0.12	0.03	< 0.01	-0.08	0.02	< 0.01	-0.07	0.03	0.01	-0.05	0.02	0.04	-0.07	0.005	< 0.01
IQ at age 5 years	0.26	0.02	< 0.01	0.25	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.20	0.03	< 0.01	0.12	0.03	< 0.01			
Processing Speed															
I. Rapid Visual Information Processing - Mean Latency at age 18 years															
Domestic violence	0.04	0.02	0.10	0.02	0.02	0.47	0.01	0.02	0.66	0.00	0.02	0.91	--	--	--
IQ at age 5 years	-0.14	0.02	< 0.01	-0.14	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.11	0.03	< 0.01	-0.07	0.03	< 0.01			
J. Spatial Working Memory - Mean Time at age 18 Years															
Domestic violence	0.10	0.03	< 0.01	0.06	0.02	0.02	0.07	0.03	< 0.01	0.06	0.03	0.03	0.04	0.006	< 0.01
IQ at age 5 years	-0.23	0.02	< 0.01	-0.22	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.09	0.03	< 0.01	-0.01	0.03	0.60			

TABLE S2. Association of bullying victimization by peers with the IQ and cognitive functions in the E-Risk Study. The table shows standardized regression coefficients (betas) for the association between bullying victimization and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association between bullying victimization and IQ; Panel C-H describe the association between bullying victimization and executive functions; Panels I-J describe the association between bullying victimization and processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between bullying victimization and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between bullying victimization and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between bullying victimization and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of bullying victimization on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
<u>Intelligence Quotient</u>															
A. WISC-IQ at age 12 years															
Bullying victimization	-0.09	0.02	< 0.01	-0.05	0.02	< 0.01	-0.06	0.02	< 0.01	-0.03	0.02	0.08	-0.06	0.008	< 0.01
IQ at age 5 years	0.45	0.02	< 0.01	0.45	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.02	< 0.01				0.43	0.02	< 0.01	0.29	0.02	< 0.01			
B. WAIS-IQ at age 18 years															
Bullying victimization	-0.07	0.02	< 0.01	-0.03	0.02	0.13	-0.03	0.02	0.14	0.00	0.02	0.83	-0.06	0.007	< 0.01
IQ at age 5 years	0.42	0.02	< 0.01	0.42	0.02	< 0.01				0.33	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.43	0.02	< 0.01	0.31	0.02	< 0.01			
<u>Executive Function</u>															
C. Rapid Visual Information Processing A' at age 18 years															
Bullying victimization	-0.10	0.02	< 0.01	-0.07	0.02	< 0.01	-0.08	0.02	< 0.01	-0.06	0.02	< 0.01	-0.05	0.005	< 0.01
IQ at age 5 years	0.31	0.02	< 0.01	0.30	0.02	< 0.01				0.25	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.23	0.02	< 0.01	0.14	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years															
Bullying victimization	0.03	0.02	0.12	0.01	0.02	0.62	0.02	0.02	0.50	0.00	0.02	0.90	--	--	--
IQ at age 5 years	-0.18	0.02	< 0.01	-0.18	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.14	0.02	< 0.01	-0.08	0.03	< 0.01			

(Table S2, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years															
Bullying victimization	0.06	0.02	< 0.01	0.03	0.02	0.15	0.04	0.02	0.07	0.02	0.02	0.27	0.04	0.004	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.25	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.18	0.03	< 0.01	-0.09	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years															
Bullying victimization	0.05	0.02	0.02	0.02	0.02	0.30	0.03	0.02	0.18	0.01	0.02	0.50	0.04	0.004	< 0.01
IQ at age 5 years	-0.24	0.02	< 0.01	-0.24	0.02	< 0.01				-0.21	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.17	0.03	< 0.01	-0.09	0.03	< 0.01			
G. Spatial Span at age 18 years															
Bullying victimization	-0.10	0.02	< 0.01	-0.06	0.02	< 0.01	-0.07	0.02	< 0.01	-0.05	0.02	0.03	-0.05	0.004	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.28	0.02	< 0.01				0.24	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.23	0.02	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years															
Bullying victimization	-0.06	0.02	< 0.01	-0.03	0.02	0.16	-0.04	0.02	0.11	-0.02	0.02	0.39	-0.04	0.004	< 0.01
IQ at age 5 years	0.26	0.02	< 0.01	0.26	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.21	0.03	< 0.01	0.13	0.03	< 0.01			
<u>Processing Speed</u>															
I. Rapid Visual Information Processing - Mean Latency at age 18 years															
Bullying victimization	0.06	0.02	< 0.01	0.04	0.02	0.06	0.05	0.02	0.05	0.04	0.02	0.11	0.02	0.004	< 0.01
IQ at age 5 years	-0.14	0.02	< 0.01	-0.13	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.10	0.02	< 0.01	-0.06	0.03	0.02			
J. Spatial Working Memory - Mean Time at age 18 Years															
Bullying victimization	0.01	0.02	0.78	-0.02	0.02	0.34	-0.01	0.02	0.76	-0.02	0.02	0.29	--	--	--
IQ at age 5 years	-0.23	0.02	< 0.01	-0.23	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.11	0.03	< 0.01	-0.03	0.03	0.27			

TABLE S3. Association of physical harm by an adult with the IQ and cognitive functions in the E-Risk Study. The table shows standardized regression coefficients (betas) for the association between physical harm and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association between physical harm and IQ; Panel C-H describe the association between physical harm and executive functions; Panels I-J describe the association between physical harm and processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between physical harm and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between physical harm and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between physical harm and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of physical harm on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years															
Physical abuse	-0.09	0.02	< 0.01	-0.06	0.02	< 0.01	-0.04	0.02	0.05	-0.03	0.02	0.13	-0.06	0.006	< 0.01
IQ at age 5 years	0.45	0.02	< 0.01	0.45	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.02	< 0.01				0.43	0.02	< 0.01	0.29	0.02	< 0.01			
B. WAIS-IQ at age 18 years															
Physical abuse	-0.04	0.02	0.13	0.00	0.02	0.86	0.02	0.02	0.34	0.03	0.02	0.09	--	--	--
IQ at age 5 years	0.42	0.02	< 0.01	0.42	0.02	< 0.01				0.34	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.44	0.02	< 0.01	0.32	0.02	< 0.01			
							Executive Function								
C. Rapid Visual Information Processing A' at age 18 years															
Physical abuse	-0.05	0.02	0.05	-0.02	0.02	0.46	-0.01	0.02	0.68	0.00	0.02	0.94	--	--	--
IQ at age 5 years	0.30	0.02	< 0.01	0.30	0.02	< 0.01				0.26	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.25	0.03	< 0.01	0.15	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years															
Physical abuse	0.01	0.02	0.76	-0.01	0.02	0.61	-0.02	0.02	0.49	-0.02	0.02	0.32	--	--	--
IQ at age 5 years	-0.18	0.02	< 0.01	-0.18	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.14	0.02	< 0.01	-0.09	0.03	< 0.01			

(Table S3, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years															
Physical abuse	0.10	0.02	< 0.01	0.07	0.02	< 0.01	0.07	0.02	< 0.01	0.06	0.02	< 0.01	0.03	0.003	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.25	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.17	0.03	< 0.01	-0.09	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years															
Physical abuse	0.07	0.02	< 0.01	0.05	0.02	0.05	0.04	0.02	0.06	0.03	0.02	0.13	0.03	0.002	< 0.01
IQ at age 5 years	-0.24	0.02	< 0.01	-0.23	0.02	< 0.01				-0.21	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.16	0.03	< 0.01	-0.09	0.03	< 0.01			
G. Spatial Span at age 18 years															
Physical abuse	-0.06	0.02	< 0.01	-0.04	0.02	0.12	-0.03	0.02	0.24	-0.02	0.02	0.45	-0.05	0.002	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.28	0.02	< 0.01				0.24	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.23	0.02	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years															
Physical abuse	-0.05	0.02	0.06	-0.02	0.02	0.37	-0.01	0.02	0.56	0.00	0.02	0.85	--	--	--
IQ at age 5 years	0.26	0.02	< 0.01	0.26	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.22	0.03	< 0.01	0.13	0.03	< 0.01			
<u>Processing Speed</u>															
I. Rapid Visual Information Processing - Mean Latency at age 18 years															
Physical abuse	0.03	0.02	0.18	0.02	0.02	0.45	0.01	0.02	0.56	0.01	0.02	0.70	--	--	--
IQ at age 5 years	-0.14	0.02	< 0.01	-0.14	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.11	0.02	< 0.01	-0.07	0.03	< 0.01			
J. Spatial Working Memory - Mean Time at age 18 Years															
Physical abuse	0.08	0.02	< 0.01	0.06	0.02	0.02	0.06	0.02	0.01	0.05	0.02	0.02	0.02	0.003	< 0.01
IQ at age 5 years	-0.23	0.02	< 0.01	-0.23	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.10	0.03	< 0.01	-0.02	0.03	0.45			

TABLE S4. Association of sexual harm by an adult with the IQ and cognitive functions in the E-Risk Study. The table shows standardized regression coefficients (betas) for the association between sexual harm and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association between sexual harm and IQ; Panel C-H describe the association between sexual harm and executive functions; Panels I-J describe the association between sexual harm and processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between sexual harm and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between sexual harm and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between sexual harm and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of sexual harm on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years															
Sexual abuse	-0.07	0.02	< 0.01	-0.06	0.02	< 0.01	-0.04	0.02	0.03	-0.04	0.02	0.04	-0.03	0.007	< 0.01
IQ at age 5 years	0.45	0.02	< 0.01	0.45	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.02	< 0.01				0.43	0.02	< 0.01	0.29	0.02	< 0.01			
B. WAIS-IQ at age 18 years															
Sexual abuse	-0.06	0.02	< 0.01	-0.05	0.02	0.02	-0.03	0.02	0.14	-0.03	0.02	0.17	-0.03	0.006	< 0.01
IQ at age 5 years	0.42	0.02	< 0.01	0.42	0.02	< 0.01				0.33	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.44	0.02	< 0.01	0.31	0.02	< 0.01			
							Executive Function								
C. Rapid Visual Information Processing A' at age 18 years															
Sexual abuse	-0.07	0.02	< 0.01	-0.06	0.02	< 0.01	-0.06	0.02	0.01	-0.05	0.02	0.02	-0.02	0.003	< 0.01
IQ at age 5 years	0.30	0.02	< 0.01	0.30	0.02	< 0.01				0.26	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.24	0.02	< 0.01	0.15	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years															
Sexual abuse	0.03	0.02	0.23	0.02	0.02	0.40	0.01	0.02	0.52	0.01	0.02	0.58	--	--	--
IQ at age 5 years	-0.18	0.02	< 0.01	-0.18	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.14	0.02	< 0.01	-0.08	0.03	< 0.01			

(Table S4, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years															
Sexual abuse	0.03	0.02	0.18	0.02	0.02	0.34	0.02	0.02	0.46	0.01	0.02	0.52	--	--	--
IQ at age 5 years	-0.26	0.02	< 0.01	-0.26	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.18	0.03	< 0.01	-0.10	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years															
Sexual abuse	0.03	0.02	0.13	0.02	0.02	0.30	0.02	0.02	0.40	0.02	0.02	0.47	--	--	--
IQ at age 5 years	-0.24	0.02	< 0.01	-0.24	0.02	< 0.01				-0.21	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.17	0.02	< 0.01	-0.09	0.03	< 0.01			
G. Spatial Span at age 18 years															
Sexual abuse	-0.06	0.02	< 0.01	-0.05	0.02	0.02	-0.04	0.02	0.05	-0.04	0.02	0.07	-0.02	0.002	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.28	0.02	< 0.01				0.24	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.23	0.02	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years															
Sexual abuse	-0.06	0.02	< 0.01	-0.05	0.02	0.02	-0.04	0.02	0.06	-0.04	0.02	0.07	-0.02	0.003	< 0.01
IQ at age 5 years	0.26	0.02	< 0.01	0.26	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.21	0.02	< 0.01	0.13	0.03	< 0.01			
<u>Processing Speed</u>															
I. Rapid Visual Information Processing - Mean Latency at age 18 years															
Sexual abuse	0.06	0.02	< 0.01	0.05	0.02	0.02	0.05	0.02	0.03	0.05	0.02	0.03	0.01	0.002	< 0.01
IQ at age 5 years	-0.14	0.02	< 0.01	-0.14	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.11	0.02	< 0.01	-0.06	0.03	0.01			
J. Spatial Working Memory - Mean Time at age 18 Years															
Sexual abuse	0.01	0.02	0.59	0.00	0.02	0.93	0.00	0.02	0.90	0.00	0.02	0.99	--	--	--
IQ at age 5 years	-0.23	0.02	< 0.01	-0.23	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.11	0.03	< 0.01	-0.03	0.03	0.28			

TABLE S5. Association of emotional abuse by an adult with the IQ and cognitive functions in the E-Risk Study. The table shows standardized regression coefficients (betas) for the association between emotional abuse and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association between emotional abuse and IQ; Panel C-H describe the association between emotional abuse and executive functions; Panels I-J describe the association between emotional abuse and processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between emotional abuse and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between emotional abuse and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between emotional abuse and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of emotional abuse on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years															
Emotional abuse	-0.13	0.02	< 0.01	-0.08	0.02	< 0.01	-0.06	0.02	0.01	-0.03	0.02	0.13	-0.10	0.004	< 0.01
IQ at age 5 years	0.45	0.02	< 0.01	0.44	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.02	< 0.01				0.42	0.02	< 0.01	0.29	0.02	< 0.01			
B. WAIS-IQ at age 18 years															
Emotional abuse	-0.13	0.03	< 0.01	-0.06	0.02	< 0.01	-0.04	0.02	0.10	-0.01	0.02	0.68	-0.12	0.001	< 0.01
IQ at age 5 years	0.42	0.02	< 0.01	0.41	0.02	< 0.01				0.33	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.43	0.02	< 0.01	0.31	0.02	< 0.01			
							Executive Function								
C. Rapid Visual Information Processing A' at age 18 years															
Emotional abuse	-0.09	0.03	< 0.01	-0.04	0.02	0.08	-0.04	0.02	0.13	-0.02	0.02	0.49	-0.07	0.003	< 0.01
IQ at age 5 years	0.30	0.02	< 0.01	0.30	0.02	< 0.01				0.26	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.24	0.03	< 0.01	0.15	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years															
Emotional abuse	0.07	0.02	< 0.01	0.04	0.02	0.10	0.04	0.02	0.11	0.03	0.02	0.29	0.04	0.005	< 0.01
IQ at age 5 years	-0.18	0.02	< 0.01	-0.17	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.13	0.02	< 0.01	-0.08	0.03	< 0.01			

(Table S5, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years															
Emotional abuse	0.09	0.03	< 0.01	0.05	0.02	0.05	0.05	0.03	0.05	0.03	0.02	0.20	0.05	0.005	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.25	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.17	0.03	< 0.01	-0.09	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years															
Emotional abuse	0.07	0.02	< 0.01	0.03	0.02	0.16	0.04	0.02	0.16	0.02	0.02	0.45	0.05	0.004	< 0.01
IQ at age 5 years	-0.24	0.02	< 0.01	-0.23	0.02	< 0.01				-0.21	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.16	0.03	< 0.01	-0.09	0.03	< 0.01			
G. Spatial Span at age 18 years															
Emotional abuse	-0.10	0.02	< 0.01	-0.05	0.02	0.03	-0.05	0.02	0.05	-0.03	0.02	0.23	-0.07	0.004	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.28	0.02	< 0.01				0.24	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.23	0.03	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years															
Emotional abuse	-0.10	0.03	< 0.01	-0.06	0.02	0.02	-0.05	0.02	0.04	-0.03	0.02	0.16	-0.06	0.004	< 0.01
IQ at age 5 years	0.26	0.02	< 0.01	0.26	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.21	0.03	< 0.01	0.13	0.03	< 0.01			
<u>Processing Speed</u>															
I. Rapid Visual Information Processing - Mean Latency at age 18 years															
Emotional abuse	0.06	0.02	< 0.01	0.04	0.02	0.08	0.04	0.02	0.09	0.03	0.02	0.19	0.03	0.005	< 0.01
IQ at age 5 years	-0.14	0.02	< 0.01	-0.13	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.10	0.02	< 0.01	-0.06	0.03	0.02			
J. Spatial Working Memory - Mean Time at age 18 Years															
Emotional abuse	0.06	0.03	0.01	0.03	0.02	0.25	0.04	0.03	0.10	0.02	0.02	0.33	0.04	0.005	< 0.01
IQ at age 5 years	-0.23	0.02	< 0.01	-0.23	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.10	0.03	< 0.01	-0.02	0.03	0.38			

TABLE S6. Association of physical neglect by an adult with the IQ and cognitive functions in the E-Risk Study. The table shows standardized regression coefficients (betas) for the association between physical neglect and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association between physical neglect and IQ; Panel C-H describe the association between physical neglect and executive functions; Panels I-J describe the association between physical neglect and processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between physical neglect and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between physical neglect and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between physical neglect and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of physical neglect on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years															
Physical neglect	-0.14	0.03	< 0.01	-0.08	0.02	< 0.01	-0.06	0.02	0.01	-0.03	0.02	0.11	-0.11	<0.001	< 0.01
IQ at age 5 years	0.45	0.02	< 0.01	0.44	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.02	< 0.01				0.42	0.03	< 0.01	0.29	0.02	< 0.01			
B. WAIS-IQ at age 18 years															
Physical neglect	-0.12	0.03	< 0.01	-0.05	0.02	0.05	-0.02	0.03	0.45	0.01	0.02	0.60	-0.13	<0.001	< 0.01
IQ at age 5 years	0.42	0.02	< 0.01	0.41	0.02	< 0.01				0.34	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.43	0.02	< 0.01	0.32	0.02	< 0.01			
							Executive Function								
C. Rapid Visual Information Processing A' at age 18 years															
Physical neglect	-0.05	0.03	0.05	0.00	0.02	0.97	0.00	0.03	0.86	0.03	0.02	0.27	--	--	--
IQ at age 5 years	0.30	0.02	< 0.01	0.30	0.02	< 0.01				0.26	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.25	0.03	< 0.01	0.16	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years															
Physical neglect	0.03	0.02	0.29	0.00	0.02	0.85	-0.01	0.03	0.77	-0.02	0.02	0.41	--	--	--
IQ at age 5 years	-0.18	0.02	< 0.01	-0.18	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.14	0.02	< 0.01	-0.09	0.03	< 0.01			

(Table S6, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years															
Physical neglect	0.08	0.03	< 0.01	0.03	0.03	0.18	0.04	0.03	0.16	0.02	0.03	0.50	0.06	0.004	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.25	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.17	0.03	< 0.01	-0.09	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years															
Physical neglect	0.05	0.03	0.04	0.01	0.03	0.58	0.02	0.03	0.56	0.00	0.03	0.91	0.06	0.004	< 0.01
IQ at age 5 years	-0.24	0.02	< 0.01	-0.24	0.02	< 0.01				-0.21	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.17	0.03	< 0.01	-0.09	0.03	< 0.01			
G. Spatial Span at age 18 years															
Physical neglect	-0.08	0.03	< 0.01	-0.03	0.02	0.17	-0.03	0.03	0.25	-0.01	0.02	0.74	-0.07	0.003	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.28	0.02	< 0.01				0.24	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.23	0.03	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years															
Physical neglect	-0.08	0.03	< 0.01	-0.03	0.03	0.18	-0.03	0.03	0.27	-0.01	0.03	0.70	-0.07	0.003	< 0.01
IQ at age 5 years	0.26	0.02	< 0.01	0.26	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.21	0.03	< 0.01	0.13	0.03	< 0.01			
<u>Processing Speed</u>															
I. Rapid Visual Information Processing - Mean Latency at age 18 years															
Physical neglect	0.04	0.03	0.14	0.01	0.03	0.58	0.01	0.03	0.65	0.00	0.03	0.95	--	--	--
IQ at age 5 years	-0.14	0.02	< 0.01	-0.14	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.11	0.02	< 0.01	-0.07	0.03	0.01			
J. Spatial Working Memory - Mean Time at age 18 Years															
Physical neglect	0.07	0.03	< 0.01	0.03	0.03	0.20	0.05	0.03	0.07	0.03	0.03	0.27	0.04	0.005	< 0.01
IQ at age 5 years	-0.23	0.02	< 0.01	-0.23	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.10	0.03	< 0.01	-0.02	0.03	0.39			

TABLE S7. Association of childhood poly-victimization with the IQ and cognitive functions in the E-Risk Study. Table S7 complements Table 1 in the main article, but here we present results about poly-victimization in which poly-victimization is a sum of 6 victimization experiences each coded as 0 (no exposure), 1 (non-severe exposure), and 2 (severe exposure) (see Tables S1–S6). The table shows standardized regression coefficients (betas) for the association between childhood poly-victimization and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association between poly-victimization and IQ; Panel C-H describe the association between poly-victimization and executive functions; Panels I-J describe the association between poly-victimization and processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between childhood poly-victimization and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between childhood poly-victimization and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between childhood poly-victimization and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of poly-victimization on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years															
Poly-victimization (coded 0, 1, 2)	-0.21	0.02	< 0.01	-0.13	0.02	< 0.01	-0.11	0.02	< 0.01	-0.06	0.02	< 0.01	-0.15	0.007	< 0.01
IQ at age 5 years	0.45	0.02	< 0.01	0.43	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.02	< 0.01				0.40	0.03	< 0.01	0.28	0.02	< 0.01			
B. WAIS-IQ at age 18 years															
Poly-victimization (coded 0, 1, 2)	-0.17	0.03	< 0.01	-0.08	0.02	< 0.01	-0.04	0.02	0.07	0.00	0.02	0.95	-0.17	0.006	< 0.01
IQ at age 5 years	0.42	0.02	< 0.01	0.40	0.02	< 0.01				0.33	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.42	0.03	< 0.01	0.31	0.02	< 0.01			

(Table S7, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
<u>Executive Function</u>															
C. Rapid Visual Information Processing A' at age 18 years															
Poly-victimization (coded 0, 1, 2)	-0.14	0.02	< 0.01	-0.07	0.02	< 0.01	-0.07	0.03	< 0.01	-0.04	0.02	0.13	-0.10	0.007	< 0.01
IQ at age 5 years	0.30	0.02	< 0.01	0.29	0.02	< 0.01				0.25	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.23	0.03	< 0.01	0.14	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years															
Poly-victimization (coded 0, 1, 2)	0.06	0.02	0.02	0.01	0.02	0.54	0.01	0.02	0.67	-0.01	0.02	0.74	0.06	0.008	< 0.01
IQ at age 5 years	-0.18	0.02	< 0.01	-0.18	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.14	0.03	< 0.01	-0.09	0.03	< 0.01			
E. Spatial Working Memory - Total Errors at age 18 years															
Poly-victimization (coded 0, 1, 2)	0.13	0.02	< 0.01	0.07	0.02	< 0.01	0.08	0.03	< 0.01	0.05	0.03	0.04	0.08	0.008	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.24	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.16	0.03	< 0.01	-0.08	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years															
Poly-victimization (coded 0, 1, 2)	0.11	0.02	< 0.01	0.05	0.02	0.03	0.06	0.03	0.03	0.03	0.03	0.21	0.07	0.008	< 0.01
IQ at age 5 years	-0.24	0.02	< 0.01	-0.23	0.02	< 0.01				-0.20	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.15	0.03	< 0.01	-0.08	0.03	< 0.01			
G. Spatial Span at age 18 years															
Poly-victimization (coded 0, 1, 2)	-0.15	0.02	< 0.01	-0.09	0.02	< 0.01	-0.08	0.03	< 0.01	-0.05	0.02	0.03	-0.10	0.008	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.27	0.02	< 0.01				0.23	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.21	0.03	< 0.01	0.13	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years															
Poly-victimization (coded 0, 1, 2)	-0.14	0.02	< 0.01	-0.08	0.02	< 0.01	-0.07	0.03	< 0.01	-0.05	0.02	0.05	-0.09	0.008	< 0.01
IQ at age 5 years	0.26	0.02	< 0.01	0.25	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.19	0.03	< 0.01	0.12	0.03	< 0.01			

(Table S7, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Processing Speed								
I. Rapid Visual Information Processing - Mean Latency at age 18 years															
Poly-victimization (coded 0, 1, 2)	0.08	0.02	< 0.01	0.05	0.02	0.04	0.05	0.03	0.06	0.04	0.03	0.17	0.04	0.009	< 0.01
IQ at age 5 years	-0.14	0.02	< 0.01	-0.13	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.10	0.03	< 0.01	-0.06	0.03	0.03			
J. Spatial Working Memory - Mean Time at age 18 Years															
Poly-victimization (coded 0, 1, 2)	0.10	0.02	< 0.01	0.05	0.02	0.06	0.07	0.03	< 0.01	0.04	0.03	0.09	0.05	0.008	< 0.01
IQ at age 5 years	-0.23	0.02	< 0.01	-0.22	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.09	0.03	< 0.01	-0.02	0.03	0.57			

TABLE S8. Association of childhood poly-victimization with the IQ and cognitive functions in E-Risk Study members with no history of victimization before age 5 years. The table shows standardized regression coefficients (betas) for the association between childhood poly-victimization and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association of poly-victimization with IQ; Panel C-H describe the association of poly-victimization with executive functions; Panels I-J describe the association of poly-victimization with processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between childhood poly-victimization and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between childhood poly-victimization and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between childhood poly-victimization and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of poly-victimization on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years (N = 1819)															
Poly-victimization	-0.20	0.03	< 0.01	-0.11	0.03	< 0.01	-0.12	0.03	< 0.01	-0.06	0.03	0.03	-0.15	0.007	< 0.01
IQ at age 5 years	0.46	0.02	< 0.01	0.45	0.02	< 0.01				0.39	0.02	< 0.01			
Family socio-economic status (SES)	0.43	0.03	< 0.01				0.41	0.03	< 0.01	0.28	0.02	< 0.01			
B. WAIS-IQ at age 18 years (N = 1766)															
Poly-victimization	-0.16	0.03	< 0.01	-0.07	0.03	0.01	-0.07	0.03	0.02	-0.01	0.03	0.67	-0.15	0.006	< 0.01
IQ at age 5 years	0.43	0.02	< 0.01	0.42	0.02	< 0.01				0.34	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.03	< 0.01				0.43	0.03	< 0.01	0.31	0.02	< 0.01			
							Executive Function								
C. Rapid Visual Information Processing A' at age 18 years (N = 1765)															
Poly-victimization	-0.12	0.03	< 0.01	-0.04	0.03	0.15	-0.06	0.03	0.06	-0.02	0.03	0.57	-0.10	0.006	< 0.01
IQ at age 5 years	0.31	0.02	< 0.01	0.30	0.02	< 0.01				0.26	0.03	< 0.01			
Family socio-economic status (SES)	0.24	0.03	< 0.01				0.23	0.03	< 0.01	0.14	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years (N = 1767)															
Poly-victimization	0.04	0.03	0.24	-0.01	0.03	0.68	0.00	0.03	0.93	-0.03	0.03	0.34	--	--	--
IQ at age 5 years	-0.19	0.02	< 0.01	-0.19	0.02	< 0.01				-0.16	0.03	< 0.01			
Family socio-economic status (SES)	-0.14	0.03	< 0.01				-0.14	0.03	< 0.01	-0.09	0.03	< 0.01			

(Table S8, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years (N = 1766)															
Poly-victimization	0.08	0.03	0.01	0.02	0.03	0.55	0.04	0.03	0.20	0.00	0.03	0.90	0.07	0.007	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.26	0.02	< 0.01				-0.23	0.03	< 0.01			
Family socio-economic status (SES)	-0.17	0.03	< 0.01				-0.16	0.03	< 0.01	-0.08	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years (N = 1766)															
Poly-victimization	0.06	0.03	0.06	0.00	0.03	0.97	0.02	0.03	0.54	-0.02	0.03	0.61	--	--	--
IQ at age 5 years	-0.25	0.02	< 0.01	-0.25	0.03	< 0.01				-0.23	0.03	< 0.01			
Family socio-economic status (SES)	-0.16	0.03	< 0.01				-0.16	0.03	< 0.01	-0.08	0.03	< 0.01			
G. Spatial Span at age 18 years (N = 1764)															
Poly-victimization	-0.13	0.03	< 0.01	-0.06	0.03	0.06	-0.07	0.03	0.02	-0.03	0.03	0.30	-0.10	0.007	< 0.01
IQ at age 5 years	0.30	0.02	< 0.01	0.29	0.02	< 0.01				0.25	0.03	< 0.01			
Family socio-economic status (SES)	0.24	0.03	< 0.01				0.22	0.03	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years (N = 1759)															
Poly-victimization	-0.15	0.03	< 0.01	-0.09	0.03	< 0.01	-0.10	0.03	< 0.01	-0.07	0.03	0.02	-0.08	0.007	< 0.01
IQ at age 5 years	0.27	0.02	< 0.01	0.25	0.02	< 0.01				0.22	0.03	< 0.01			
Family socio-economic status (SES)	0.22	0.03	< 0.01				0.20	0.03	< 0.01	0.13	0.03	< 0.01			
<u>Processing Speed</u>															
I. Rapid Visual Information Processing - Mean Latency at age 18 years (N = 1765)															
Poly-victimization	0.07	0.03	0.03	0.03	0.03	0.32	0.04	0.03	0.22	0.02	0.03	0.55	0.05	0.008	< 0.01
IQ at age 5 years	-0.15	0.02	< 0.01	-0.15	0.03	< 0.01				-0.13	0.03	< 0.01			
Family socio-economic status (SES)	-0.12	0.03	< 0.01				-0.11	0.03	< 0.01	-0.07	0.03	0.02			
J. Spatial Working Memory - Mean Time at age 18 Years (N = 1766)															
Poly-victimization	0.07	0.03	0.02	0.02	0.03	0.53	0.05	0.03	0.13	0.01	0.03	0.64	0.06	0.007	< 0.01
IQ at age 5 years	-0.23	0.02	< 0.01	-0.22	0.02	< 0.01				-0.22	0.03	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.10	0.03	< 0.01	-0.02	0.03	0.39			

TABLE S9. Mean twin differences on cognitive measures as a function of victimization status in E-Risk. The table shows the means on each of the cognitive tests for twin pairs who are concordant for victimization and twin pairs who are discordant for victimization. This table of means corresponds to the first column of Table 2, but rather than showing the data in terms of correlations between differences in continuous variables, it shows the data in terms of means (and mean differences). The first group contains twin pairs who have experienced equal levels of victimization (0,0; 1,1; 2,2). Here we also show results of paired t-tests comparing one (randomly) selected twin within a pair to the other. The second group contains twin pairs where one twin has greater victimization exposure than the co-twin (1,0; 2,1; 2,0). Here we also show results of paired t-tests comparing the less victimized twin to the more victimized co-twin.

		Equal Twin Victimization					
		Twin 1		Twin 2		Paired t-test	
	N pairs	M	SD	M	SD	t	p
WISC-IQ at age 12 years	919	100.24	14.79	101.01	14.98	-1.87	0.06
WAIS-IQ at age 18 years	879	100.23	15.01	100.71	14.59	-1.04	0.30
Rapid Visual Information Processing A' at age 18 years	876	0.88	0.05	0.88	0.05	0.53	0.60
Rapid Visual Information Processing - False Alarms at age 18 years	876	0.46	0.67	0.47	0.70	-0.15	0.88
Spatial Working Memory - Total Errors at age 18 years	878	21.63	17.09	21.26	16.64	0.60	0.55
Spatial Working Memory - Strategy at age 18 years	878	30.89	6.15	30.57	6.04	1.28	0.20
Spatial Span at age 18 years	876	6.69	1.37	6.69	1.41	-0.11	0.92
Spatial Span - Reversed at age 18 years	870	5.83	1.45	5.83	1.42	0.02	0.98
Rapid Visual Information Processing - Mean Latency at age 18 years	876	417.92	110.26	413.42	107.48	0.99	0.32
Spatial Working Memory - Mean Time at age 18 Years	878	21186.16	3927.79	21166.55	4133.81	0.13	0.90

(Table S9, continued)

		Unequal Twin Victimization					
		Less Victimized Twin		More Victimized Twin		Paired t-test	
	N pairs	M	SD	M	SD	t	p
WISC-IQ at age 12 years	142	97.31	14.42	95.19	15.71	2.21	0.03
WAIS-IQ at age 18 years	135	97.28	15.30	96.52	16.65	0.59	0.56
Rapid Visual Information Processing A' at age 18 years	134	0.88	0.05	0.87	0.05	1.63	0.11
Rapid Visual Information Processing - False Alarms at age 18 years	135	0.52	0.69	0.47	0.68	0.75	0.46
Spatial Working Memory - Total Errors at age 18 years	135	25.59	18.07	25.47	17.90	0.06	0.95
Spatial Working Memory - Strategy at age 18 years	135	32.24	6.40	31.96	6.27	0.47	0.64
Spatial Span at age 18 years	135	6.43	1.34	6.46	1.49	-0.21	0.83
Spatial Span - Reversed at age 18 years	133	5.69	1.47	5.59	1.41	0.69	0.49
Rapid Visual Information Processing - Mean Latency at age 18 years	134	429.92	112.73	441.13	113.78	-0.87	0.39
Spatial Working Memory - Mean Time at age 18 Years	135	21817.78	3877.56	21569.36	14447.17	0.63	0.53

TABLE S10. Association of Childhood Trauma Questionnaire (CTQ) scores with the IQ and cognitive functions in the E-Risk Study. The table shows standardized regression coefficients (betas) for the association between CTQ scores and cognitive measures using Generalized Estimating Equation (GEE) linear models and accounting for clustering within family. Panels A-B describe the association of CTQ scores with IQ; Panel C-H describe the association of CTQ scores with executive functions; Panels I-J describe the association of CTQ scores with processing speed. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between CTQ scores and cognitive measures adjusted for the effect of IQ at age 5 years. Model 3 shows the association between CTQ scores and cognitive measures adjusted for the effect of family socio-economic status. Model 4 shows the association between CTQ scores and cognitive measures adjusted for the effect of both IQ at age 5 years and family socio-economic status. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of poly-victimization on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
							Intelligence Quotient								
A. WISC-IQ at age 12 years (N = 1991)															
CTQ score	-0.03	0.02	0.12	0.00	0.02	0.89	0.00	0.02	0.94	0.02	0.02	0.33	--	--	--
IQ at age 5 years	0.45	0.02	< 0.01	0.45	0.02	< 0.01				0.38	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.44	0.02	< 0.01	0.30	0.02	< 0.01			
B. WAIS-IQ at age 18 years (N = 2043)															
CTQ score	-0.02	0.02	0.40	0.02	0.02	0.45	0.02	0.02	0.26	0.04	0.02	0.03	--	--	--
IQ at age 5 years	0.42	0.02	< 0.01	0.42	0.02	< 0.01				0.34	0.02	< 0.01			
Family socio-economic status (SES)	0.44	0.02	< 0.01				0.44	0.02	< 0.01	0.32	0.02	< 0.01			
							Executive Function								
C. Rapid Visual Information Processing A' at age 18 years (N = 2039)															
CTQ score	-0.04	0.02	0.09	-0.01	0.02	0.57	-0.01	0.02	0.57	0.00	0.02	0.98	--	--	--
IQ at age 5 years	0.30	0.02	< 0.01	0.30	0.02	< 0.01				0.26	0.02	< 0.01			
Family socio-economic status (SES)	0.25	0.02	< 0.01				0.25	0.03	< 0.01	0.15	0.03	< 0.01			
D. Rapid Visual Information Processing - False Alarms at age 18 years (N = 2041)															
CTQ score	0.01	0.02	0.55	0.00	0.02	0.87	0.00	0.02	0.86	-0.01	0.02	0.60	--	--	--
IQ at age 5 years	-0.18	0.02	< 0.01	-0.18	0.02	< 0.01				-0.15	0.02	< 0.01			
Family socio-economic status (SES)	-0.14	0.02	< 0.01				-0.14	0.02	< 0.01	-0.09	0.03	< 0.01			

(Table S10, continued)

	Model 1			Model 2			Model 3			Model 4			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_1–b_4	s.e.	p
E. Spatial Working Memory - Total Errors at age 18 years (N = 2041)															
CTQ score	0.06	0.02	0.01	0.03	0.02	0.13	0.04	0.02	0.09	0.03	0.02	0.25	0.03	0.004	< 0.01
IQ at age 5 years	-0.26	0.02	< 0.01	-0.26	0.02	< 0.01				-0.23	0.02	< 0.01			
Family socio-economic status (SES)	-0.18	0.03	< 0.01				-0.18	0.03	< 0.01	-0.09	0.03	< 0.01			
F. Spatial Working Memory - Strategy at age 18 years (N = 2041)															
CTQ score	0.03	0.02	0.13	0.01	0.02	0.63	0.01	0.02	0.54	0.00	0.02	0.92	--	--	--
IQ at age 5 years	-0.24	0.02	< 0.01	-0.24	0.02	< 0.01				-0.21	0.02	< 0.01			
Family socio-economic status (SES)	-0.17	0.02	< 0.01				-0.17	0.03	< 0.01	-0.09	0.03	< 0.01			
G. Spatial Span at age 18 years (N = 2038)															
CTQ score	-0.08	0.02	< 0.01	-0.05	0.02	0.02	-0.06	0.02	0.02	-0.04	0.02	0.07	-0.04	0.003	< 0.01
IQ at age 5 years	0.29	0.02	< 0.01	0.28	0.02	< 0.01				0.24	0.02	< 0.01			
Family socio-economic status (SES)	0.24	0.02	< 0.01				0.23	0.02	< 0.01	0.14	0.03	< 0.01			
H. Spatial Span - Reversed at age 18 years (N = 2032)															
CTQ score	-0.05	0.02	0.04	-0.02	0.02	0.31	-0.02	0.02	0.31	-0.01	0.02	0.63	-0.04	0.003	< 0.01
IQ at age 5 years	0.27	0.02	< 0.01	0.26	0.02	< 0.01				0.22	0.02	< 0.01			
Family socio-economic status (SES)	0.22	0.02	< 0.01				0.22	0.03	< 0.01	0.13	0.03	< 0.01			
<u>Processing Speed</u>															
I. Rapid Visual Information Processing - Mean Latency at age 18 years (N = 2039)															
CTQ score	0.05	0.02	0.03	0.04	0.02	0.10	0.04	0.02	0.10	0.03	0.02	0.17	0.02	0.003	< 0.01
IQ at age 5 years	-0.14	0.02	< 0.01	-0.14	0.02	< 0.01				-0.11	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.02	< 0.01				-0.11	0.02	< 0.01	-0.07	0.03	0.01			
J. Spatial Working Memory - Mean Time at age 18 Years (N = 2041)															
CTQ score	0.04	0.02	0.06	0.02	0.02	0.36	0.03	0.02	0.18	0.02	0.02	0.42	--	--	--
IQ at age 5 years	-0.23	0.02	< 0.01	-0.23	0.02	< 0.01				-0.22	0.02	< 0.01			
Family socio-economic status (SES)	-0.11	0.03	< 0.01				-0.11	0.03	< 0.01	-0.03	0.03	0.33			

TABLE S11. Association of Childhood Trauma Questionnaire (CTQ) with the IQ and cognitive functions within twin pairs.
The table shows Pearson correlations between differences in Childhood Trauma Questionnaire reports and differences in cognitive measures within twin-pairs.

	Dizygotic and monozygotic twin pairs (N_{pairs} = 987 to 1012)		Monozygotic twin pairs (N_{pairs} = 546 to 562)		Dizygotic twin pairs (N_{pairs} = 441 to 450)	
	r	p-value	r	p-value	r	p-value
Intelligence Quotient						
WISC-IQ at age 12 years	0.002	0.953	0.003	0.939	-0.001	0.991
WAIS-IQ at age 18 years	0.014	0.646	0.047	0.266	-0.016	0.728
Executive Function						
Rapid Visual Information Processing A' at age 18 years	0.007	0.834	-0.001	0.985	0.012	0.801
Rapid Visual Information Processing - False Alarms at age 18 years	-0.024	0.448	0.016	0.702	-0.065	0.167
Spatial Working Memory - Total Errors at age 18 years	0.057	0.068	0.030	0.478	0.085	0.070
Spatial Working Memory - Strategy at age 18 years	0.025	0.421	0.014	0.734	0.037	0.434
Spatial Span at age 18 years	-0.059	0.063	-0.022	0.609	-0.099	0.037
Spatial Span - Reversed at age 18 years	-0.039	0.214	-0.048	0.262	-0.031	0.516
Processing Speed						
Rapid Visual Information Processing - Mean Latency at age 18 years	0.029	0.356	0.061	0.147	-0.005	0.910
Spatial Working Memory - Mean Time at age 18 Years	0.056	0.074	0.052	0.220	0.058	0.217

TABLE S12. Association between Childhood Trauma Questionnaire (CTQ) scores and the IQ and cognitive functions in the Dunedin Study. The table shows standardized regression coefficients (betas) for the association between childhood maltreatment and cognitive measures from Ordinary Least-Squares (linear) regression models. Panels A-B describe the association of poly-victimization with IQ; Panel C-G describe the association of poly-victimization with executive functions; Panels H-J describe the association of poly-victimization with processing speed; Panels K-P describe the association of poly-victimization with memory; Panel Q describes the association of poly-victimization with perceptual reasoning; Panel R describes the association of poly-victimization with verbal comprehension. Model 1 shows bivariate (unadjusted) associations between all predictors and the cognitive measures. Model 2 shows the association between CTQ scores and cognitive measures adjusted for the effect of maternal IQ. Model 3 shows the association between CTQ scores and cognitive measures adjusted for the effect of IQ at age 3 years. Model 4 shows the association between CTQ scores and cognitive measures adjusted for the effect of family socio-economic status. Model 5 shows the association between CTQ scores and cognitive measures adjusted for the effect of all covariates. "Omitted Variable Bias" shows the difference between the unadjusted and fully adjusted effect of CTQ on the cognitive measures.

	Model 1			Model 2			Model 3			Model 4			Model 5			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_5	s.e.	p	b_1–b_5	s.e.	p
								Intelligence Quotient										
A. WISC-IQ at ages 11-13 years (N = 848)																		
CTQ score	-0.12	0.03	< 0.01	-0.08	0.03	< 0.01	-0.05	0.03	0.10	-0.05	0.03	0.10	-0.01	0.03	0.66	-0.10	0.006	< 0.01
Maternal IQ	0.40	0.03	< 0.01	0.40	0.03	< 0.01							0.24	0.03	< 0.01			
IQ at age 3 years	0.45	0.03	< 0.01				0.44	0.03	< 0.01				0.32	0.03	< 0.01			
Family SES	0.40	0.03	< 0.01							0.39	0.03	< 0.01	0.21	0.03	< 0.01			
B. WAIS-IQ at age 38 years (N = 912)																		
CTQ score	-0.17	0.03	< 0.01	-0.14	0.03	< 0.01	-0.10	0.03	< 0.01	-0.11	0.03	< 0.01	-0.07	0.03	0.01	-0.10	0.005	< 0.01
Maternal IQ	0.44	0.03	< 0.01	0.43	0.03	< 0.01							0.30	0.03	< 0.01			
IQ at age 3 years	0.43	0.03	< 0.01				0.42	0.03	< 0.01				0.29	0.03	< 0.01			
Family SES	0.38	0.03	< 0.01							0.36	0.03	< 0.01	0.17	0.03	< 0.01			

(Table S12, continued)

	Model 1			Model 2			Model 3			Model 4			Model 5			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_5	s.e.	p	b_1–b_5	s.e.	p
								Executive Function										
C. Rapid Visual Information Processing - A' at age 38 years (N = 889)																		
CTQ score	-0.03	0.03	0.31	-0.01	0.03	0.65	0.00	0.03	1.00	-0.01	0.03	0.83	0.01	0.03	0.68	--	--	--
Maternal IQ	0.24	0.03	< 0.01	0.24	0.03	< 0.01							0.18	0.04	< 0.01			
IQ at age 3 years	0.22	0.03	< 0.01				0.22	0.03	< 0.01				0.16	0.04	< 0.01			
Family SES	0.17	0.03	< 0.01							0.17	0.03	< 0.01	0.06	0.04	0.12			
D. Rapid Visual Information Processing - False Alarms at age 18 years (N = 894)																		
CTQ score	0.03	0.03	0.34	0.02	0.03	0.46	0.01	0.03	0.79	0.02	0.03	0.48	0.01	0.03	0.82	--	--	--
Maternal IQ	-0.09	0.03	< 0.01	-0.09	0.03	< 0.01							-0.06	0.04	0.10			
IQ at age 3 years	-0.15	0.03	< 0.01				-0.15	0.03	< 0.01				-0.13	0.04	< 0.01			
Family SES	-0.06	0.03	0.10							-0.05	0.03	0.13	0.01	0.04	0.79			
E. WAIS - Working Memory Index at age 38 years (N = 909)																		
CTQ score	-0.11	0.03	< 0.01	-0.08	0.03	< 0.01	-0.06	0.03	0.06	-0.07	0.03	0.04	-0.04	0.03	0.23	-0.07	0.006	< 0.01
Maternal IQ	0.34	0.03	< 0.01	0.33	0.03	< 0.01							0.23	0.03	< 0.01			
IQ at age 3 years	0.31	0.03	< 0.01				0.30	0.03	< 0.01				0.21	0.03	< 0.01			
Family SES	0.29	0.03	< 0.01							0.28	0.03	< 0.01	0.13	0.03	< 0.01			
F. Wechsler Memory Scale - Months Backwards Test at age 38 years (N = 910)																		
CTQ score	-0.14	0.03	< 0.01	-0.12	0.03	< 0.01	-0.12	0.03	< 0.01	-0.11	0.03	< 0.01	-0.10	0.03	< 0.01	-0.03	0.007	< 0.01
Maternal IQ	0.19	0.03	< 0.01	0.18	0.03	< 0.01							0.13	0.04	< 0.01			
IQ at age 3 years	0.12	0.03	< 0.01				0.10	0.03	< 0.01				0.04	0.04	0.27			
Family SES	0.18	0.03	< 0.01							0.16	0.03	< 0.01	0.10	0.04	< 0.01			
G. Trails - B Test at age 38 years (N = 908)																		
CTQ score	0.12	0.03	< 0.01	0.10	0.03	< 0.01	0.08	0.03	0.02	0.09	0.03	< 0.01	0.07	0.03	0.03	0.05	0.006	< 0.01
Maternal IQ	-0.24	0.03	< 0.01	-0.23	0.03	< 0.01							-0.17	0.03	< 0.01			
IQ at age 3 years	-0.26	0.03	< 0.01				-0.25	0.03	< 0.01				-0.19	0.03	< 0.01			
Family SES	-0.18	0.03	< 0.01							-0.16	0.03	< 0.01	-0.05	0.04	0.19			

(Table S12, continued)

	Model 1			Model 2			Model 3			Model 4			Model 5			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_5	s.e.	p	b_1–b_5	s.e.	p
Processing Speed																		
H. Rapid Visual Information Processing - Mean Latency at age 38 (N = 889)																		
CTQ score	0.04	0.03	0.25	0.03	0.03	0.33	0.02	0.03	0.53	0.03	0.03	0.31	0.02	0.03	0.52	--	--	--
Maternal IQ	-0.08	0.03	0.02	-0.07	0.03	0.03							-0.06	0.04	0.13			
IQ at age 3 years	-0.12	0.03	< 0.01				-0.11	0.03	< 0.01				-0.11	0.04	< 0.01			
Family SES	-0.03	0.03	0.36							-0.03	0.03	0.45	0.03	0.04	0.48			
I. Reaction Time Index at age 38 years (N = 894)																		
CTQ score	0.09	0.03	< 0.01	0.08	0.03	0.02	0.07	0.03	0.05	0.07	0.03	0.03	0.06	0.03	0.07	0.03	0.007	< 0.01
Maternal IQ	-0.08	0.03	0.02	-0.07	0.03	0.04							-0.03	0.04	0.44			
IQ at age 3 years	-0.13	0.03	< 0.01				-0.12	0.03	< 0.01				-0.10	0.04	< 0.01			
Family SES	-0.10	0.03	< 0.01							-0.09	0.03	0.01	-0.05	0.04	0.22			
J. WAIS - Processing Speed Index at age 38 years (N = 911)																		
CTQ score	-0.13	0.03	< 0.01	-0.11	0.03	< 0.01	-0.09	0.03	< 0.01	-0.11	0.03	< 0.01	-0.08	0.03	0.01	-0.05	0.006	< 0.01
Maternal IQ	0.25	0.03	< 0.01	0.24	0.03	< 0.01							0.18	0.03	< 0.01			
IQ at age 3 years	0.27	0.03	< 0.01				0.25	0.03	< 0.01				0.20	0.03	< 0.01			
Family SES	0.18	0.03	< 0.01							0.16	0.03	< 0.01	0.04	0.04	0.22			
Memory																		
K. Paired Associates Learning - First Trial at age 38 years (N = 896)																		
CTQ score	-0.08	0.03	0.02	-0.07	0.03	0.04	-0.06	0.03	0.10	-0.07	0.03	0.05	-0.05	0.03	0.15	-0.03	0.007	< 0.01
Maternal IQ	0.14	0.03	< 0.01	0.14	0.03	< 0.01							0.10	0.04	< 0.01			
IQ at age 3 years	0.17	0.03	< 0.01				0.16	0.03	< 0.01				0.13	0.04	< 0.01			
Family SES	0.10	0.03	< 0.01							0.09	0.03	< 0.01	0.02	0.04	0.61			
L. Paired Associates Learning - Total Errors at age 38 years (N = 896)																		
CTQ score	0.08	0.03	0.02	0.06	0.03	0.05	0.05	0.03	0.11	0.06	0.03	0.06	0.05	0.03	0.17	0.03	0.006	< 0.01
Maternal IQ	-0.17	0.03	< 0.01	-0.17	0.03	< 0.01							-0.13	0.04	< 0.01			
IQ at age 3 years	-0.16	0.03	< 0.01				-0.15	0.03	< 0.01				-0.12	0.03	< 0.01			
Family SES	-0.10	0.03	< 0.01							-0.09	0.03	< 0.01	-0.01	0.04	0.77			

(Table S12, continued)

	Model 1			Model 2			Model 3			Model 4			Model 5			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_5	s.e.	p	b_1–b_5	s.e.	p
M. Wechsler Memory Scale - Verbal Paired Associates, Total Recall at age 38 years (N = 910)																		
CTQ score	-0.07	0.03	0.05	-0.05	0.03	0.11	-0.03	0.03	0.31	-0.03	0.03	0.31	-0.01	0.03	0.65	-0.05	0.006	< 0.01
Maternal IQ	0.20	0.03	< 0.01	0.20	0.03	< 0.01							0.11	0.04	< 0.01			
IQ at age 3 years	0.22	0.03	< 0.01				0.21	0.03	< 0.01				0.15	0.04	< 0.01			
Family SES	0.21	0.03	< 0.01							0.21	0.03	< 0.01	0.12	0.04	< 0.01			
N. Wechsler Memory Scale - Verbal Paired Associates, Delayed Recall at age 38 years (N = 907)																		
CTQ score	-0.04	0.03	0.22	-0.03	0.03	0.40	-0.01	0.03	0.77	-0.01	0.03	0.77	0.01	0.03	0.82	--	--	--
Maternal IQ	0.19	0.03	< 0.01	0.19	0.03	< 0.01							0.11	0.04	< 0.01			
IQ at age 3 years	0.20	0.03	< 0.01				0.20	0.03	< 0.01				0.14	0.04	< 0.01			
Family SES	0.20	0.03	< 0.01							0.20	0.03	< 0.01	0.11	0.04	< 0.01			
O. Rey Auditory Verbal Learning Test - Total Recall at age 38 years (N = 910)																		
CTQ score	-0.15	0.03	< 0.01	-0.13	0.03	< 0.01	-0.11	0.03	< 0.01	-0.12	0.03	< 0.01	-0.09	0.03	< 0.01	-0.06	0.006	< 0.01
Maternal IQ	0.25	0.03	< 0.01	0.24	0.03	< 0.01							0.16	0.03	< 0.01			
IQ at age 3 years	0.27	0.03	< 0.01				0.25	0.03	< 0.01				0.18	0.03	< 0.01			
Family SES	0.25	0.03	< 0.01							0.23	0.03	< 0.01	0.12	0.04	< 0.01			
P. Rey Auditory Verbal Learning Test - Delayed Recall at age 38 years (N = 910)																		
CTQ score	-0.12	0.03	< 0.01	-0.11	0.03	< 0.01	-0.09	0.03	< 0.01	-0.09	0.03	< 0.01	-0.08	0.03	0.02	-0.04	0.007	< 0.01
Maternal IQ	0.16	0.03	< 0.01	0.16	0.03	< 0.01							0.09	0.04	0.01			
IQ at age 3 years	0.16	0.03	< 0.01				0.15	0.03	< 0.01				0.09	0.04	< 0.01			
Family SES	0.19	0.03	< 0.01							0.18	0.03	< 0.01	0.12	0.04	< 0.01			
								<u>Perceptual Reasoning</u>										
Q. WAIS - Perceptual Reasoning Index at age 38 years (N = 910)																		
CTQ score	-0.12	0.03	< 0.01	-0.09	0.03	< 0.01	-0.07	0.03	0.03	-0.08	0.03	0.02	-0.05	0.03	0.10	-0.06	0.006	< 0.01
Maternal IQ	0.33	0.03	< 0.01	0.32	0.03	< 0.01							0.24	0.03	< 0.01			
IQ at age 3 years	0.29	0.03	< 0.01				0.28	0.03	< 0.01				0.20	0.03	< 0.01			
Family SES	0.24	0.03	< 0.01							0.23	0.03	< 0.01	0.08	0.03	0.01			

(Table S12, continued)

	Model 1			Model 2			Model 3			Model 4			Model 5			Omitted Variable Bias		
	b_1	s.e.	p	b_2	s.e.	p	b_3	s.e.	p	b_4	s.e.	p	b_5	s.e.	p	b_1–b_5	s.e.	p
								Verbal Comprehension										
R. WAIS - Verbal Comprehension Index at age 38 years (N = 912)																		
CTQ score	-0.16	0.03	< 0.01	-0.13	0.03	< 0.01	-0.09	0.03	< 0.01	-0.10	0.03	< 0.01	-0.06	0.03	0.03	-0.10	0.005	< 0.01
Maternal IQ	0.42	0.03	< 0.01	0.41	0.03	< 0.01							0.26	0.03	< 0.01			
IQ at age 3 years	0.44	0.03	< 0.01				0.42	0.03	< 0.01				0.30	0.03	< 0.01			
Family SES	0.41	0.03	< 0.01							0.39	0.03	< 0.01	0.21	0.03	< 0.01			

TABLE S13. Correlations among cognitive functions in the E-Risk Study.

		1	2	3	4	5	6	7	8	9	10
1	WPPSI-IQ at age 5 years	--									
2	WISC-IQ at age 12 years	0.55	--								
3	WAIS-IQ at age 18 years	0.49	0.70	--							
4	Rapid Visual Information Processing A' at age 18 years	0.33	0.46	0.46	--						
5	Rapid Visual Information Processing - False Alarms at age 18 years	-0.18	-0.26	-0.26	-0.41	--					
6	Spatial Working Memory - Total Errors at age 18 years	-0.28	-0.40	-0.38	-0.44	0.28	--				
7	Spatial Working Memory - Strategy at age 18 years	-0.26	-0.36	-0.34	-0.36	0.20	0.71	--			
8	Spatial Span at age 18 years	0.30	0.40	0.40	0.36	-0.22	-0.43	-0.34	--		
9	Spatial Span - Reversed at age 18 years	0.29	0.39	0.37	0.41	-0.25	-0.42	-0.34	0.50	--	
10	Rapid Visual Information Processing - Mean Latency at age 18 years	-0.14	-0.22	-0.22	-0.45	0.32	0.23	0.18	-0.19	-0.21	--
11	Spatial Working Memory - Mean Time at age 18 Years	-0.25	-0.32	-0.27	-0.34	0.17	0.63	0.44	-0.34	-0.33	0.20

All correlations, $p < 0.001$.

TABLE S14. Correlations among cognitive functions in the Dunedin Study.

		1	2	3	4	5	6	7	8	9
1	Maternal IQ using Thurstone SRA Test when SM's were 3 years	--								
2	PPVT-IQ at age 3 years	0.26	--							
3	WISC-IQ at ages 11-13 years	0.40	0.48	--						
4	WAIS-IQ at age 38 years	0.44	0.44	0.80	--					
5	Rapid Visual Information Processing - A' at age 38 years	0.25	0.23	0.46	0.56	--				
6	Rapid Visual Information Processing - False Alarms at age 18 years	-0.10	-0.16	-0.26	-0.30	-0.41	--			
7	WAIS - Working Memory Index at age 38 years	0.34	0.32	0.62	0.77	0.55	-0.27	--		
8	Wechsler Memory Scale - Months Backwards Test at age 38 years	0.20	0.13	0.31	0.40	0.39	-0.14	0.40	--	
9	Trails - B Test at age 38 years	-0.25	-0.27	-0.49	-0.58	-0.51	0.26	-0.51	-0.33	--
10	Rapid Visual Information Processing - Mean Latency at age 38	-0.08	-0.13	-0.22	-0.31	-0.47	0.33	-0.30	-0.15	0.30
11	Reaction Time Index at age 38 years	-0.07	-0.14	-0.16	-0.23	-0.24	0.18	-0.17	-0.08	0.25
12	WAIS - Processing Speed Index at age 38 years	0.26	0.27	0.47	0.68	0.50	-0.26	0.44	0.35	-0.58
13	Paired Associates Learning - First Trial at age 38 years	0.15	0.18	0.34	0.44	0.30	-0.16	0.33	0.17	-0.36
14	Paired Associates Learning - Total Errors at age 38 years	-0.17	-0.17	-0.34	-0.42	-0.29	0.16	-0.30	-0.21	0.39
15	Wechsler Memory Scale - Verbal Paired Associates, Total Recall at age 38 years	0.20	0.23	0.41	0.48	0.23	-0.11	0.34	0.21	-0.33
16	Wechsler Memory Scale - Verbal Paired Associates, Delayed Recall at age 38 years	0.20	0.22	0.40	0.48	0.27	-0.15	0.34	0.22	-0.37
17	Rey Auditory Verbal Learning Test - Total Recall at age 38 years	0.26	0.29	0.42	0.53	0.34	-0.14	0.41	0.36	-0.42
18	Rey Auditory Verbal Learning Test - Delayed Recall at age 38 years	0.17	0.17	0.32	0.42	0.29	-0.09	0.30	0.29	-0.37
19	WAIS - Perceptual Reasoning Index at age 38 years	0.33	0.30	0.62	0.81	0.39	-0.21	0.50	0.23	-0.44
20	WAIS - Verbal Comprehension Index at age 38 years	0.42	0.45	0.74	0.83	0.39	-0.22	0.53	0.31	-0.37

All correlations, $p < 0.05$.

(Table S14, continued)

		10	11	12	13	14	15	16	17	18	19
1	Maternal IQ using Thurstone SRA Test when SM's were 3 years										
2	PPVT-IQ at age 3 years										
3	WISC-IQ at ages 11-13 years										
4	WAIS-IQ at age 38 years										
5	Rapid Visual Information Processing - A' at age 38 years										
6	Rapid Visual Information Processing - False Alarms at age 18 years										
7	WAIS - Working Memory Index at age 38 years										
8	Wechsler Memory Scale - Months Backwards Test at age 38 years										
9	Trails - B Test at age 38 years										
10	Rapid Visual Information Processing - Mean Latency at age 38	--									
11	Reaction Time Index at age 38 years	0.28	--								
12	WAIS - Processing Speed Index at age 38 years	-0.32	-0.26	--							
13	Paired Associates Learning - First Trial at age 38 years	-0.17	-0.14	0.34	--						
14	Paired Associates Learning - Total Errors at age 38 years	0.16	0.14	-0.35	-0.73	--					
15	Wechsler Memory Scale - Verbal Paired Associates, Total Recall at age 38 years	-0.12	-0.10	0.30	0.37	-0.37	--				
16	Wechsler Memory Scale - Verbal Paired Associates, Delayed Recall at age 38 years	-0.14	-0.12	0.32	0.39	-0.41	0.90	--			
17	Rey Auditory Verbal Learning Test - Total Recall at age 38 years	-0.15	-0.13	0.42	0.36	-0.37	0.53	0.55	--		
18	Rey Auditory Verbal Learning Test - Delayed Recall at age 38 years	-0.13	-0.10	0.34	0.38	-0.39	0.54	0.55	0.79	--	
19	WAIS - Perceptual Reasoning Index at age 38 years	-0.24	-0.16	0.45	0.40	-0.37	0.38	0.39	0.38	0.32	--
20	WAIS - Verbal Comprehension Index at age 38 years	-0.17	-0.14	0.38	0.31	-0.31	0.43	0.43	0.44	0.33	0.52

All correlations, $p < 0.05$.

TABLE S15. Descriptive statistics for cognitive functions in E-Risk sample. Results are presented for the full sample, and for 3 subsamples characterized by no evidence of victimization; one form of victimization; and 2 or more forms of victimization.

	Full Sample						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at age 12 years	2128	100.0	15	100.75	100.75	-0.07	0.13
WAIS-IQ at age 18 years	2056	100.0	15	101.00	103.76	-0.04	-0.32
Executive Function							
Rapid Visual Information Processing A' at age 18 years	2053	0.88	0.05	0.89	0.94	-0.39	0.04
Rapid Visual Information Processing - False Alarms at age 18 years	2055	0.47	0.68	0	0	1.13	-0.03
Spatial Working Memory - Total Errors at age 18 years	2056	22.03	17.13	18	0	0.80	0.04
Spatial Working Memory - Strategy at age 18 years	2056	30.92	6.15	32	32	-0.29	-0.72
Spatial Span at age 18 years	2053	6.66	1.39	7	6	-0.11	-0.74
Spatial Span - Reversed at age 18 years	2044	5.80	1.44	5	5	0.48	-0.27
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 18 years	2053	419	110	390	350	1.70	3.94
Spatial Working Memory - Mean Time at age 18 Years	2056	21272	4073	20570	16303	1.62	5.67

(Table S15, continued)

	No Victimization						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at age 12 years	1551	101.7	14.7	100.75	100.75	-0.11	0.31
WAIS-IQ at age 18 years	1499	101.2	14.9	103.76	103.76	-0.07	-0.32
Executive Function							
Rapid Visual Information Processing A' at age 18 years	1499	0.89	0.05	0.89	0.94	-0.49	0.25
Rapid Visual Information Processing - False Alarms at age 18 years	1500	0.45	0.67	0	0	1.18	0.11
Spatial Working Memory - Total Errors at age 18 years	1500	21.05	16.94	17	0	0.87	0.24
Spatial Working Memory - Strategy at age 18 years	1500	30.62	6.21	32	32	-0.22	-0.75
Spatial Span at age 18 years	1499	6.74	1.41	7	8	-0.17	-0.79
Spatial Span - Reversed at age 18 years	1493	5.91	1.45	6	5	0.44	-0.40
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 18 years	1499	414	109	387	365	1.88	5.08
Spatial Working Memory - Mean Time at age 18 Years	1500	21018	3947	20344	17971	1.78	7.06

(Table S15, continued)

	Victimization = 1						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at age 12 years	437	96.6	14.9	94.75	91.74	0.07	-0.03
WAIS-IQ at age 18 years	426	97.6	14.8	98.25	103.76	0.07	-0.26
Executive Function							
Rapid Visual Information Processing A' at age 18 years	424	0.87	0.06	0.87	0.85	-0.17	-0.22
Rapid Visual Information Processing - False Alarms at age 18 years	425	0.53	0.72	0	0	0.98	-0.42
Spatial Working Memory - Total Errors at age 18 years	426	24.22	17.76	20	0	0.67	-0.30
Spatial Working Memory - Strategy at age 18 years	426	31.57	6.04	33	34	-0.43	-0.66
Spatial Span at age 18 years	424	6.45	1.32	6	6	0.12	-0.49
Spatial Span - Reversed at age 18 years	422	5.49	1.38	5	5	0.60	0.16
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 18 years	424	429	109	400	324	1.34	1.96
Spatial Working Memory - Mean Time at age 18 Years	426	21916	4330	21250	16676	1.21	2.73

(Table S15, continued)

	Victimization = 2						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at age 12 years	83	92.0	14.1	91.74	91.74	0.26	-0.23
WAIS-IQ at age 18 years	79	92.5	15.5	89.99	89.99	-0.01	-0.41
Executive Function							
Rapid Visual Information Processing A' at age 18 years	78	0.87	0.04	0.87	0.87	0.00	-0.24
Rapid Visual Information Processing - False Alarms at age 18 years	78	0.37	0.63	0	0	1.48	1.06
Spatial Working Memory - Total Errors at age 18 years	78	26.31	16.34	24	14	0.61	-0.27
Spatial Working Memory - Strategy at age 18 years	78	32.23	5.34	33	34	-0.41	-0.26
Spatial Span at age 18 years	78	6.37	1.44	6	7	-0.23	-0.53
Spatial Span - Reversed at age 18 years	77	5.61	1.23	5	5	0.57	0.41
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 18 years	78	453	131	414	.	1.05	0.49
Spatial Working Memory - Mean Time at age 18 Years	78	22397	4059	21304	.	0.78	0.18

(Table S15, continued)

	Victimization = 3+						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at age 12 years	57	91.6	13.8	91.74	91.74	-0.20	-0.26
WAIS-IQ at age 18 years	52	95.0	13.6	92.74	92.74	-0.21	-0.68
Executive Function							
Rapid Visual Information Processing A' at age 18 years	52	0.87	0.06	0.88	0.76	-0.21	-0.37
Rapid Visual Information Processing - False Alarms at age 18 years	52	0.63	0.77	0	0	0.74	-0.89
Spatial Working Memory - Total Errors at age 18 years	52	25.94	15.64	21	19	0.40	-0.93
Spatial Working Memory - Strategy at age 18 years	52	32.15	5.54	33	36	-0.76	0.12
Spatial Span at age 18 years	52	6.27	1.25	6	7	-0.29	-0.56
Spatial Span - Reversed at age 18 years	52	5.40	1.32	5	5	0.70	0.35
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 18 years	52	429	110	406	.	0.80	0.33
Spatial Working Memory - Mean Time at age 18 Years	52	21624	4703	20816	.	2.48	11.27

TABLE S16. Descriptive statistics for cognitive function in Dunedin sample. Results are presented for the full sample, and for 3 subsamples characterized by no evidence of maltreatment; evidence of probable maltreatment; and evidence of severe maltreatment.

	Full Sample						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at ages 11-13 years	922	99.9	14.5	99.81	100.77	-0.36	0.91
WAIS-IQ at age 38 years	942	100.0	15.0	100.73	102.71	-0.06	-0.03
Executive Function							
Rapid Visual Information Processing - A' at age 38 years	918	0.91	0.05	0.92	0.92	-0.62	0.10
Rapid Visual Information Processing - False Alarms at age 18 years	924	0.28	0.56	0	0	1.90	2.58
WAIS - Working Memory Index at age 38 years	939	100.0	15.0	98.84	98.84	0.24	-0.03
Wechsler Memory Scale - Months Backwards Test at age 38 years	940	3.08	1.37	3	3	-0.05	-1.08
Trails - B Test at age 38 years	938	64.47	20.89	60	120	0.96	0.60
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 38	918	423.71	88.10	406.31	713.78	1.24	1.76
Reaction Time Index at age 38 years	923	327.83	47.21	321.13	484.62	0.83	0.87
WAIS - Processing Speed Index at age 38 years	941	100.0	15.0	100.36	94.07	0.01	-0.04
Memory							
Paired Associates Learning - First Trial at age 38 years	926	20.12	3.48	21	21	-0.57	0.10
Paired Associates Learning - Total Errors at age 38 years	926	11.95	14.24	8	5	2.77	8.17
Wechsler Memory Scale - Verbal Paired Associates, Total Recall at age 38 years	940	16.15	8.55	16	8	0.07	-1.01
Wechsler Memory Scale - Verbal Paired Associates, Delayed Recall at age 38 years	937	5.24	2.55	6	8	-0.48	-1.03
Rey Auditory Verbal Learning Test - Total Recall at age 38 years	939	37.49	8.07	38	38	-0.21	-0.15
Rey Auditory Verbal Learning Test - Delayed Recall at age 38 years	940	9.17	3.20	9	9	-0.32	-0.34
Perceptual Reasoning							
WAIS - Perceptual Reasoning Index at age 38 years	940	100.0	15.0	99.47	107.95	-0.09	-0.28
Verbal Comprehension							
WAIS - Verbal Comprehension Index at age 38 years	942	100.0	15.0	99.92	95.70	0.19	-0.22

(Table S16, continued)

	No Victimization						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at ages 11-13 years	590	101.3	13.7	101.28	105.62	-0.38	1.07
WAIS-IQ at age 38 years	603	101.4	14.4	101.72	102.71	-0.08	0.07
Executive Function							
Rapid Visual Information Processing - A' at age 38 years	586	0.91	0.05	0.92	0.96	-0.59	0.10
Rapid Visual Information Processing - False Alarms at age 18 years	591	0.25	0.53	0	0	2.08	3.37
WAIS - Working Memory Index at age 38 years	602	101	15	98.84	98.84	0.26	0.07
Wechsler Memory Scale - Months Backwards Test at age 38 years	601	3.20	1.36	3	3	-0.09	-1.16
Trails - B Test at age 38 years	600	63.19	19.97	60	58	0.99	0.77
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 38	586	422.48	85.44	405.60	713.78	1.27	1.99
Reaction Time Index at age 38 years	589	326.22	46.66	319.25	484.62	0.88	0.97
WAIS - Processing Speed Index at age 38 years	602	100.87	14.74	100.36	94.07	0.00	0.01
Memory							
Paired Associates Learning - First Trial at age 38 years	592	20.28	3.39	21	21	-0.49	-0.15
Paired Associates Learning - Total Errors at age 38 years	592	11.32	12.98	7	5	2.88	9.70
Wechsler Memory Scale - Verbal Paired Associates, Total Recall at age 38 years	603	16.39	8.61	16	22	0.01	-1.03
Wechsler Memory Scale - Verbal Paired Associates, Delayed Recall at age 38 years	601	5.31	2.53	6	8	-0.54	-0.95
Rey Auditory Verbal Learning Test - Total Recall at age 38 years	601	38.14	7.57	38	38	-0.13	-0.24
Rey Auditory Verbal Learning Test - Delayed Recall at age 38 years	602	9.29	3.12	10	11	-0.35	-0.26
Perceptual Reasoning							
WAIS - Perceptual Reasoning Index at age 38 years	602	101	15	101.59	107.95	-0.11	-0.29
Verbal Comprehension							
WAIS - Verbal Comprehension Index at age 38 years	603	101	15	99.92	99.92	0.18	-0.35

(Table S16, continued)

	Victimization = Probable						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at ages 11-13 years	249	97.7	15.7	97.38	100.77	-0.11	0.82
WAIS-IQ at age 38 years	254	98.2	15.9	97.76	100.73	0.09	-0.10
Executive Function							
Rapid Visual Information Processing - A' at age 38 years	248	0.91	0.05	0.92	0.92	-0.69	0.22
Rapid Visual Information Processing - False Alarms at age 18 years	249	0.31	0.59	0	0	1.74	1.91
WAIS - Working Memory Index at age 38 years	252	99	16	96.88	98.84	0.18	-0.21
Wechsler Memory Scale - Months Backwards Test at age 38 years	254	2.92	1.32	3	3	0.01	-0.86
Trails - B Test at age 38 years	254	66.98	22.04	65	120	0.92	0.40
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 38	248	424.34	95.75	403.53	713.78	1.24	1.49
Reaction Time Index at age 38 years	250	328.47	45.56	323.56	321.50	0.77	0.82
WAIS - Processing Speed Index at age 38 years	254	98.31	14.97	97.21	97.21	0.08	0.07
Memory							
Paired Associates Learning - First Trial at age 38 years	249	19.87	3.57	20	21	-0.78	0.59
Paired Associates Learning - Total Errors at age 38 years	249	13.24	16.56	8	5	2.50	5.74
Wechsler Memory Scale - Verbal Paired Associates, Total Recall at age 38 years	253	15.52	8.42	15	8	0.19	-0.98
Wechsler Memory Scale - Verbal Paired Associates, Delayed Recall at age 38 years	252	5.04	2.63	5	8	-0.34	-1.20
Rey Auditory Verbal Learning Test - Total Recall at age 38 years	253	36.41	8.75	37	31	-0.21	-0.14
Rey Auditory Verbal Learning Test - Delayed Recall at age 38 years	253	9.04	3.21	9	10	-0.14	-0.53
Perceptual Reasoning							
WAIS - Perceptual Reasoning Index at age 38 years	253	98	15	98.41	85.70	0.02	-0.28
Verbal Comprehension							
WAIS - Verbal Comprehension Index at age 38 years	254	99	15	96.54	95.70	0.30	0.08

(Table S16, continued)

	Victimization = Severe						
	N	M	SD	Median	Mode	Skew	Kurtosis
Intelligence Quotient							
WISC-IQ at ages 11-13 years	83	97.3	15.6	99.80	82.88	-0.68	0.37
WAIS-IQ at age 38 years	85	95.2	15.3	95.78	107.66	-0.15	-0.32
Executive Function							
Rapid Visual Information Processing - A' at age 38 years	84	0.91	0.05	0.92	0.92	-0.53	-0.31
Rapid Visual Information Processing - False Alarms at age 18 years	84	0.38	0.62	0	0	1.40	0.89
WAIS - Working Memory Index at age 38 years	85	97	15	96.88	110.63	0.53	0.12
Wechsler Memory Scale - Months Backwards Test at age 38 years	85	2.76	1.50	3	1	0.07	-1.23
Trails - B Test at age 38 years	84	66.05	23.09	60	39	0.80	0.02
Processing Speed							
Rapid Visual Information Processing - Mean Latency at age 38	84	430.44	83.40	413.64	.	0.97	1.09
Reaction Time Index at age 38 years	84	337.30	54.75	329.50	327.75	0.62	0.37
WAIS - Processing Speed Index at age 38 years	85	98.87	16.53	100.36	100.36	0.00	-0.42
Memory							
Paired Associates Learning - First Trial at age 38 years	85	19.77	3.72	20	19	-0.36	-0.12
Paired Associates Learning - Total Errors at age 38 years	85	12.56	15.13	8	6	2.67	7.43
Wechsler Memory Scale - Verbal Paired Associates, Total Recall at age 38 years	84	16.30	8.52	16	18	0.14	-0.88
Wechsler Memory Scale - Verbal Paired Associates, Delayed Recall at age 38 years	84	5.38	2.45	6	8	-0.53	-0.91
Rey Auditory Verbal Learning Test - Total Recall at age 38 years	85	36.11	8.88	37	40	-0.16	-0.52
Rey Auditory Verbal Learning Test - Delayed Recall at age 38 years	85	8.65	3.64	9	8	-0.38	-0.43
Perceptual Reasoning							
WAIS - Perceptual Reasoning Index at age 38 years	85	96	15	96.30	96.30	-0.33	-0.38
Verbal Comprehension							
WAIS - Verbal Comprehension Index at age 38 years	85	95	15	94.01	94.01	0.03	-0.45