Supplemental File D: Narrative summary of regression analyses

Author, Country, Cohort, Outcome	Participants	PAE level	Covariates	Outcomes of Interest	Key Finding
Alati et al 2008 UK ALSPAC Functional Neuro	Pregnant women follow-up of children at 8 years of age (*n* = 4,332).	<1glass/w (light PAE) = 4g/w; 1-6glasses/w (moderate PAE) = 28g/w; 1+glasses/day (moderate PAE) = 86g/w	Sex, social class, parity, ethnicity, house ownership, crowding, maternal and paternal education.	Weschler Intelligence Scale for Children (WISC-III) – IQ/cognitive	In fully adjusted models there was no statistical association between PAE and IQ.
Alati et al 2013 UK ALSPAC Functional Neuro	Pregnant women follow-up of children at 11 years (*n* = 7,062).	<1glass/w (light PAE) = 4g/w; 1-6glasses/w (moderate PAE) = 28g/w; 1+glasses/day (moderate PAE) = 86g/w	Sex, other parent's alcohol consumption, maternal age, parity, socio-economic position, ethnicity, maternal and paternal education, maternal and paternal smoking, maternal binge drinking 8 months after birth.	National Curriculum Key Stage 2 (KS2) tests – academic	In fully adjusted models consumption of 4 units (32 grams of alcohol) on a single drinking occasion was associated with reduced educational outcomes. Drinking up to 1 unit a day was not associated with lower outcomes.
Bakhireva et al 2018 U.S ENRICH study Functional Neuro	Pregnant women follow-up of children 5-8 months (*n* = 93)	PAE (moderate PAE) = 86.24g/w	Infant sex, birth weight, single vs two-parent household, Beck Depression Inventory, maternal education, maternal age, medication assisted therapy (methadone, buprenorphine), marijuana, tobacco use, Perceived Stress Scale score during pregnancy.	Bayley Scales of Infant Development-III (BSID-III) – cognitive, language and motor Infant behaviour Questionnaire-R Infant/Toddler sensory processing	Adjusted model approached significance for BSID-III Cognitive. Not significant for Language or Motor. Approached significance for IBQ Surgency. Significant for Negative Affect. Non-significant for Sensory Profile.
Bandoli et al 2019 Ukraine CIFASD Physical Size	Pregnant women with assessment of children at birth, 6 months, and 12 months (*n* = 471)	Trajectory B (light PAE) = 9.8g/w; Trajectory C (moderate PAE) = 60.76g/w; Trajectory D (moderate PAE) = 50.96g/w; Trajectory E (very heavy PAE) = 309.68g/w	Maternal age at enrolment, gestational age at pregnancy recognition, cohabitation status (married, single, divorced or separated), maternal prenatal or multivitamin use, maternal smoking	Infant weight, length, and head circumference. Bayley MDI & PDI	Only trajectory E (very heavy PAE level) associated with reduced birth weight and length. No significant association for mean head circumference percentile. Trajectory E (very heavy PAE) associated with reductions in MDI and PDI at 6 and 12

Head Circumference Functional Neuro			status, socioeconomic status, gestational age at enrolment.		months. Trajectory D (moderate PAE) associated with reduced MDI and PDI at 6 and 12 months. Trajectory C (moderate PAE) associated with reduced PDI at 6months and MDI at 12 months. Trajectory C (moderate PAE) not associated with neurodevelopmental deficits.
Bandoli et al 2020 Ukraine CIFASD Dysmorphology & Physical Size	Pregnant women with assessment of children at between 6-12 months (*n* = 415)	Trajectory B (moderate PAE) = 27.39g/w; Trajectory C (moderate PAE) = 66.28g/w; Trajectory D (moderate PAE) = 96.05g/w; Trajectory E (very heavy PAE) = 367.41g/w (very heavy)	Maternal prenatal vitamin use, maternal age, socioeconomic status, pregnancy smoking, infant age at dysmorphology examination.	Dysmorphology score, minor dysmorphic features, height, weight & head circumference	Infants with exposure in the top 3 trajectories (C-E i.e., moderate to very heavy exposure) had increased total dysmorphology scores in a dose-response fashion. Infants in the highest exposure trajectory were at increased risk to fall below the 10th percentile on height, weight, and head circumference.
Biffen et al 2017 South Africa Cape Town Longitudinal Cohort Structural Neuro	Pregnant women with children assessed at 9 – 11 years (*n* = 71)	Control (no PAE) = 0g/w; Heavily exposed (moderate PAE) = 96.38g/w; pFAS (very heavy PAE) = 215.45g/w; FAS (very heavy PAE) = 291.71g/w	Total intracranial volume, sex of child, cigarettes/day during pregnancy, lead concentration (ug/dl).	MRI – grey and white matter regions of interest	Fully adjusted model demonstrated associations with PAE in grey matter in the caudate and hippocampus. No association for corpus callosum in fully adjusted model.
Burden Jacobson et al 2005a U.S Functional Neuro	Pregnant women with children assessed at 7.5yrs (*n* = 337).	Continuous measure of average ounces of alcohol per day during pregnancy.	Covariates varied based on outcome: child age, SES, HOME, maternal education, child sex, PPVT, alcohol use 7-yr, opiate/cocaine use 7-yr, children in household, maternal age, parity, opiates pregnancy, cocaine pregnancy, GSI, disruption, examiner effects, cigarette use, lead, Beck, crowded, marital status, marijuana pregnancy, w. marijuana at 7-yrs.	Attention, Executive Function, Working Memory	Following adjustment significant associations between PAE and digit span cancellation omission, digit span, tower of London, arithmetic, working memory composite, category fluency.

Brown et al 2010 U.S ECLS-B Functional Neuro	Children at 9 months (range 6 – 22 months) n not reported.	None = 0g/w; <1 drink/week (light PAE) = 7g/w; 1-3 drinks/week (moderate PAE) = 28g/w; 4+ drinks/week (moderate PAE) = 77g/w	Age at initial assessment, poverty, race/ethnicity.	Mental and motor development, behaviour, sensory regulation.	Lower adjusted mean difference scores for successively higher levels of drinking on mental and motor subscales. Three sensory regulation variables found to be statistically significant at 4 or more drinks per week. Social engagement was significant at 1-3 drinks per week.
Carter et al 2007 South Africa Cape Town Longitudinal Cohort Physical Size Head Circumference	Pregnant women with children assessed at 6.5 and 12 moths of age (n= 96)	Heavy drinkers (heavy PAE) = 196g/w	Covariates varied based on outcome assessed: maternal cigarette smoking, parity, maternal age at delivery, infant gender, socioeconomic status.	Birth weight, birth head circumference, 6.5-month and 12-month weight, growth velocity, length & head circumference.	PAE was associated with reduced birth weight after controlling for maternal smoking. Effect of PAE on birth weight was still significant after controlling for gestational age. Weight at 6.5 and 12 months and length at 12 months showed trends for association (p<.10). Effects of PAE were generally stronger in iron deficient infants. Cannabis was not associated with prenatal or postnatal growth.
Carter et al 2012 South Africa Cape Town Longitudinal Cohort Physical Size Head Circumference	Pregnant women with children assessed at 6.5 months, 12 months, 5 years, and 9 years (*n* = 148)	Heavy exposure (heavy PAE) = 176.40g/w	Covariates varied based on outcome assessed: maternal parity, maternal education, infant sex, child's age at measurement, food security, maternal smoking.	Child weight, length/height, and head circumference	After adjustment weight, height and head circumference were significantly associated with PAE. BMI was not. The effects on weight were substantially diminished when controlling for birth weight and the effect on length/ height remained consistent across the 4 age points. Thus, longitudinal effects of PAE on growth were largely determined at time of birth. PAE may have caused epigenetic changes that resulted in permanent effects.
Carter et al 2022 South Africa Physical size	Pregnant women with children assessed at 2 weeks and 5 years (*n* = 158)	Heavy exposure (heavy PAE) = 178.60g/w	Maternal age, gravidity, maternal education, cigarettes/day, marijuana use, methamphetamine use, gestation, infant sex, age at assessment	Birth weight, 2 week and 5-year length/height, weight and head circumference	PAE and maternal and infant iron measures had separate and overlapping associations with growth and neurobehavioural outcomes.

Head Circumference Functional neuro					
Chiodo et al 2009 U.S Functional Neuro	African American pregnant women with children assessed at 4yrs (*n* = 75)	Continuous measure of average ounces of alcohol per day during pregnancy - M = 63.49g/w (moderate PAE); Range from 0g/w (no PAE – 660.8g/w (very heavy PAE).	Child's age, child's sex, caregiver education, caregiver marital status, SES, the HOME total score, mother's age at initial prenatal screen, caregiver performance IQ, maternal custody, maternal prenatal smoking (cigarettes/day).	WPPSI, attention, VMI, Fine motor (Pegboard), Working memory (digit span), Personal Behaviour Checklist	Following adjustment many WPPSI subtests, Digit span, Pegboard, Finger Tapping, VMI, Divided attention, Academic and Communication skills were associated with PAE.
Chiodo et al 2010 U.S Functional Neuro	African American pregnant women with children assessed at 7 years (*n* = 462)	Continuous measure of average ounces of alcohol per day during pregnancy	Covariates varied based on the outcome being assessed: prenatal cocaine, 7-year-old blood lead levels, caregiver education, HOME score, PPVT, child gender, caregiver marital status, prenatal marijuana, 7-year caregiver marijuana, prenatal nicotine, child age, SES.	Continuous performance test; ADHD Score – sum of T scores for different measures) and Teacher Report Form (TRF).	Pregnancy drinking per drinking day was better predictor than the average across pregnancy. Following adjustment CPT errors of omission, d prime change score were significantly associated with PAE.
Coles et al 2019 Ukraine Functional Neuro	Pregnant women with children assessed at 6 months (*n* = 441)	Alcohol-exposed - full-term (moderate PAE) = 44.30g/w; Alcohol-exposed - pre-term (moderate PAE) = 49.98g/w	Data collection site, multivitamin status, gestational age, SES, child's sex, study site, number of cigarettes smoked, parity.	Bayley Mental Development Index (MDI) and Psychomotor Development Index (PDI)	Following adjustment PAE was associated with MDI and PDI. PAE had both a direct and indirect effect on MDI and PDI. Smoking was not associated Gestational age was a mediating factor and SES was not. While PAE had a direct effect some of the impact was mediated through preterm birth.
Day et al 2013 U.S Functional Neuro	Pregnant women with children assessed at 22yrs (*n* =237)	Average daily volume (ADV) of alcohol (No PAE) = 0g/w; 0< ADV <1 (moderate PAE) = 49g; ADV ≥1 (heavy PAE) = 150.5g/w	Covariates varied based on outcome: Race, maternal depression, offspring age, offspring illicit drug use, offspring tobacco use, offspring alcohol use, maternal hostility, gender, 1st trimester PAE, 2nd trimester PAE, 3rd trimester PAE.	Total behaviour, externalising and internalising behaviour and attention problems.	After controlling for covariates PAE significantly predicted adult behaviour. Effects were dose-response and significant at each trimester. Duration across pregnancy was a better predictor than drinking during first trimester only. Binge drinking was not a better predictor compared to average daily volume.

Falgreen Eriksen et al 2012 Denmark LDPS Functional Neuro	Birth cohort follow-up at 5 years (*n* = 1628)	1-4 drinks/w (light PAE) = 12g/w; 5-8 drinks/w (moderate PAE) = 60g/w; ≥9 drinks/w (heavy PAE) = 120g/w	Parental education, maternal IQ, prenatal maternal smoking and binge drinking, maternal age, parity, prenatal and postnatal marital status, postnatal parental smoking, maternal pre-pregnancy BMI, child's gender and age, health status, hearing and vision status on the day of testing, family/home environment, tester.	Wechsler Primary and Preschool Scales of Intelligence-Revised (WPPSI-R) to determine verbal IQ (VIQ), performance IQ (PIQ) and full-scale IQ (FSIQ) scores. Visual and hearing	No difference in test performance at 1 or 4 or between 5 to 8 drinks per week at any point in pregnancy. Was a significant association for 9 or more drinks per week on FSIQ and verbal IQ but not performance IQ.
Fan et al 2016 South Africa Cape Town Longitudinal Cohort Structural Neuro MRI	Pregnant women with children assessed at 10.1yrs (*n* = 54)	Diagnosed study (NR). Continuous measure of average ounces of alcohol per day during pregnancy	Maternal education, lead exposure, maternal smoking, maternal age. Included values for analysis after omitting 3 children whose mothers used marijuana and one who used cocaine.	Diffusion tensor imaging (DTI) to determine fractional anisotropy (FA) and higher mean diffusivity (MD)	Following adjustment all brain areas still significantly associated with PAE.
Foroud et al 2012 South Africa Cape Town Longitudinal Cohort Dysmorphology	Pregnant women with children assessed at 5 and 9 years old (n=125)	Diagnosed study (IOM 2005). Continuous measure of average ounces of alcohol per day during pregnancy	Covariates varied based on outcome being assessed: age at visit, maternal smoking.	Ear length, lower facial depth, minimal frontal, and palpebral fissure.	All measures, except palpebral fissure width, were negatively correlated with the amount of alcohol consumed by the mother both around the time of conception and across pregnancy.
Forrest et al 1991 Scotland Functional Neuro	Pregnant women with children assessed at 18 months (*n* = 592)	1-49g/w (moderate PAE) = 25g/w; 50-99g/w (moderate PAE) = 74.5g/w; ≥100g/w (heavy PAE) = 136.75g/w	Maternal cigarette consumption, maternal age, social class, child's sex, birth weight, gestational age.	Mental development index and psychomotor development index.	PAE was not related to any outcome.
Fraser et al 2012 Canada	Pregnant Inuit women with children assessed at 6 months (*n* = 180)	Continuous measure of average ounces of alcohol per day during pregnancy	Covariates varied on the outcome being assessed: gestational age, number of life births, maternal weight before delivery, gestational	Visual acuity, Fagan Test of Infant Intelligence (FTII) novelty preference	After controlling for confounding variables birth weight and visual acuity was associated with AA per day. Birth

Functional & Structural Neuro			hypertension, maternal SES, infant gender, average number of cigarettes smoked during pregnancy, Maternal Raven Matrices.	and FTII fixation duration.	weight, head circumference and visual acuity associated with binge exposure.
Greene Ernhart et al 1990 U.S Functional Neuro	Pregnant women with children assessed at 1, 2 & 3yrs (*n* = 359)	Continuous measure of average ounces of alcohol per day during pregnancy – M = 13.86g/w (light PAE); Range – 0g/w to 414.75g/w (very heavy PAE)	Covariates varied on the outcome being assessed: sex, race, parental education, maternal age, maternal drug use, day of first antenatal visit, HOME score, precise age at testing, psychosocial stress, maternal IQ, cigarette smoking, maternal parity, medical problems.	Language (Sequenced Inventory of Communication Development [SICD], Mean Length of Utterance [MLU]).	After controlling for confounding variables no significant relationships found between PAE and language indices.
Greene Ernhart et al 1991a U.S Physical Size Head Circumference	Pregnant women with children assessed at birth (*n* = 359)	Continuous measure of average ounces of alcohol per day during pregnancy – M = 13.86g/w (light PAE); Range – 0g/w to 414.75g/w (very heavy PAE)	Covariates included: race, sex of child, maternal parity, parental education, maternal age, gestational age at birth (Ballard estimate), date of first antenatal visit, duration of gestation at first antenatal visit, cumulative HOME scores at ages 1, 2, 3, and 4-10, exact age at testing, maternal substance use (cigarettes/day, marijuana use), parental size (maternal pre-pregnancy weight, maternal height, maternal head circumference, paternal size)	Birth weight, length, and head circumference.	After covariate adjustment birth weight was significant, trend for birth length and non-significant association for head circumference.
Goldschmidt et al 1996 U.S Maternal Health Practices and Child Development Project Functional Neuro	Pregnant women with children assessed at 6.5yrs (*n* = 522)	Continuous measure of average ounces of alcohol per day during pregnancy	Covariates varied based on outcome being assessed: Current maternal sociodemographic characteristics (education, marital status, work/school status, Income, race), current maternal psychosocial characteristics (depression, hostility, life events, self-esteem, social support, perception of child), family configuration and environment (Home Screening Questionnaire [HSQ], number of siblings, age spread of siblings), child characteristics (grade in	Academic achievement (WRAT-R) and intelligence (Stanford-Binet Intelligence Scale	After adjustment for significant covariates teacher ratings of performance were related to PAE during 1st and 2nd trimester, WRAT and PIAT-R were not. 2nd trimester binge was a significant predictor of WRAT-R reading subscale, PIAT-R reading comprehension and teacher ratings. 1st and 3rd trimester binge were not associated with any outcomes.

			school, gender, IQ, Illnesses), current maternal substance abuse (alcohol, tobacco, marijuana, other illicit drugs), prenatal substance uses for each trimester (alcohol, tobacco, marijuana, other illicit drugs)		
Halliday et al 2017 Australia AQUA Functional Neuro	Pregnant women with children assessed at 2 years (*n* = 554)	Low in T1-abstinent in T2&T3 (moderate PAE) = 35.5g/w; Moderate/High in T1-abstinent in T2&T3 (moderate PAE) = 76.13g/w	Covariates varied based on outcome assessed: parity, exercise in T1, smoking in pregnancy, healthy diet in pregnancy, child sex, breastfeeding, maternal mental health (depression, anxiety), folate supplements in T1, household income, healthy diet in pregnancy, maternal age, pre-pregnancy BMI, folate supplements in T2/T3.	BSID-III, ITSP, BITSEA	Positive association with low level PAE was attenuated following adjustment for environmental factors. Early binge and low level PAE were associated with increased risk for sensory dysregulation.
Hannigan et al 2010 U.S Detroit Cohort Physical Size Functional Neuro Head Circumference	Pregnant women with children assessed at 14 years (*n* = 288)	Continuous measure of average ounces of alcohol per day during pregnancy – M = 5.95-77.35g/w (antenatal – retrospective report)	Pregnancy marijuana use, mother/caregiver education, SES, HOME Total Score, number of children in the home, maternal IQ, 7-year-old blood lead levels, maternal age at conception, teen gender, teen age at testing.	WISC-III and TRF Birth weight, length, and head circumference.	Following adjustment, no significant association for IQ and head circumference, was an association with TRF subscales, birth weight and length.
Ichikawa et al 2018 Japan J-SHINE Functional Neuro	Children between 2-18 years (*n* = 1,600)	Unable to quantify to grams/week.	Covariates varied based on outcome being assessed: child's sex, child's age, parent age, parent education level, parent working status, family income, family number, domestic violence, prenatal smoking, baseline prenatal drinking status among siblings, parent's age.	Child behaviour checklist (CBCL) – total behaviour, internalizing and externalizing.	Following adjustment anxiety subscale, internalising and total behaviour associated with PAE.
Jacobson et al 1993b	African American pregnant women with children	Continuous measure of average ounces of alcohol per day during pregnancy.	Covariates varied on outcome being assessed: maternal age, maternal education, welfare, number of	Visual recognition memory (VRM), Cross-modal transfer, Bayley	Following control for potential confounding variables PAE associated

U.S Functional Neuro	assessed at 6.5, 12 & 13 months (*n* = 403)		prenatal visits, maternal parity, sex of infant, maternal PPVT-R, maternal ISS, maternal HOME score, maternal cocaine/marijuana/ opiate/cigarette use during pregnancy, age at visit, examiner.	Scales of Infant Development (BSID).	with fixation duration and elicited play.
Jacobson et al 1994a U.S Physical size	African American pregnant women with children assessed at 6.5 months (*n* = 412)	Continuous measure of average ounces of alcohol per day during pregnancy.	Covariates varied based on outcome: maternal age, pre-pregnancy weight, parity, number of prenatal visits, child sex, birth weight, birth head circumference, age at assessment, exposure to other substances	6.5-month weight, height & head circumference	Regression analysis controlling for birth size found PAE was associated with a slower rate of growth. Smoking was associated with a faster weight gain. When pregnancy weight gain was added coefficients for PAE remained unchanged. Effects of PAE were seen primarily in infants exposed to at least 57 grams AA/day. Analyses indicated a persistent deficit in physical stature associated with PAE but not smoking.
Jacobson et al 1998 U.S Physical Size Functional Neuro	African American pregnant women with children assessed at 6.5, 12 & 13 months (*n* = 480)	Continuous measure of average ounces of alcohol per day during pregnancy	Maternal age, parity, welfare status, number of prenatal clinic visits, infant sex and age at assessment, maternal smoking and drug use (days/month), examiner, measures of intellectual stimulation (maternal performance on HOME, PPVT-R and Sentence Completion Test of Ego development).	Infant gross motor development and language (Bayley Mental Development Index), psychomotor index (walking and balance), elicited play (IQ/cognition), cognitive processing speed (Fagan Test of Infant Intelligence at 6.5 and 12 months and Cross-modal Transfer Test at 12 months), birthweight.	After controlling for potential confounders PAE was associated with all outcomes. Lower dose-response threshold found for Bayley MDI (11.3 grams/day) compared to Motor (42.5grams/day). Birthweight and play threshold were 14.17 grams/day and processing speed was 22.7 grams/day).
Jacobson et al 2004 U.S	Pregnant women with children assessed at 7.5 years (*n* = 337)	Continuous measure of average ounces of alcohol per day during pregnancy	Demographics (SES, marital and welfare status, parity, education, and age of child's primary caregiver, crowded living conditions in child's home, child's gender, Number of	WISC-III	Arithmetic and Digit Span were the only 2 subtests associated with PAE after controlling for confounding variables. Each additional ounce of AA/day was associated with a 2.9

Functional Neuro			children in the household),other prenatal exposures (maternal cocaine and marijuana use, smoking during pregnancy), child-rearing environment (HOME inventory, caregiver's verbal IQ, depression, psychopathology, perceived life stress for the caregiver and child, Family Environment Scale, Quality of social support, disruption in caregiving [separation from the mother ≥ 4 months]), current use of alcohol, hard drugs and marijuana and smoking by the primary caregiver, postnatal lead exposure, situational variables (examiner, child's age at the laboratory visit).		decrease in FSIQ and 5.6-point decrease on FD after adjustment for confounders. Cocaine and tobacco were not associated. Cannabis use was associated with picture completion and backwards digit span.
Jacobson et al 2017 South Africa Structural Neuro	Cape coloured pregnant women with children assessed at birth (*n* = 43)	PAE (moderate PAE) = 46.78g/w	Total intracranial volume, maternal education, prenatal exposure to smoking, marijuana, and methamphetamine.	Corpus callosum area measured by volumetric structural MRI	Corpus callosum was smaller in alcohol exposed infants compared to controls. Was unrelated to sex, gestational age, age at scan, smoking, cannabis, or methamphetamine use during pregnancy.
Lees et al 2020 ABCD Study U.S Functional Neuro	9,719 children (9-10.9 years)	No PAE = 0g; Light-reducer = 32.48g/w (moderate); Stable-light = 15.4g/w (light); Heavy-reducer = 74.48g/w (moderate)	Birth weight, prematurity, child sex, race, age at assessment, maternal age at birth, maternal depression, other substances during pregnancy, parental education used as an indicator of SES.	Wide range of psychological, behavioural and cognitive variables.	Covariate-adjusted models found that all exposure groups had greater psychopathology and behavioural problems, increased mental disorder diagnoses. When youths were demographically matched results generally remained consistent, expect positive effect of PAE on cognition were no longer found.
Lewis et al 2015 South Africa & U.S Functional Neuro	Cape Coloured pregnant women with children assessed at 10.3 years (*n* = 151) African American	Diagnosed study (IOM 2005). Continuous measure of average ounces of alcohol per day during pregnancy	Weschler Intelligence Scale for Children IQ (WISC-IV), total learning.	CVLT-C	*Cape Town:* After controlling for IQ Total learning, short delay recall and recognition discriminated were significant and immediate and long delay approached significance. After

	pregnant women with children assessed at 14.4 years (*n* = 291).				controlling for total learning none of the measures remained significant. *Detroit:* After controlling for IQ long and recognition remained significant. After controlling for total learning recognition remained significant and long delay approached significance.
Maher et al 2022 New Zealand, Ireland, Australia, U.K SCOPE-BASELINE Functional Neuro	Pregnant women with children assessed at 2 and 5 years *(n* = 1507)	Abstinent (No PAE) = 0g/w; Occasional-Low (moderate PAE) = 32g/w; Moderate-Heavy (heavy PAE) = 167g/w	Maternal age, maternal education, marital status, family income, maternal body mass index, maternal smoking status at 15 weeks gestation and infant sex.	K-BIT & CBCL	Adjusted regression found that first trimester moderate-high PAE was associated with lower verbal intelligence scores and lower internalising scores on the CBCL.
McCormack et al 2018 Australia Triple B Study Functional Neuro	Pregnant women with children assessed at 1 year (*n* = 1,331)	No PAE (0g); Low (moderate = 40g); Moderate (moderate = 50g); Heavy (heavy = 110g)	SEIFA category, maternal age, BMI, ATSI origin, single parent household, education, country of origin, native language, smoking, illicit substance use, anxiety, IQ, parity, child gestational age at birth.	Bayley Scales of Infant Development-III (BSID-III)	After controlling for confounding variables no association found for low exposure on development.
Noland 2003 U.S Functional Neuro	Rural pregnant women with children assessed at 4 years (*n* = 316)	Exposed (confirmed-unquantifiable) = NR	Maternal age, current cocaine use, current alcohol use, current marijuana use, gestational marijuana use, gestational tobacco, gestational cocaine, concurrent verbal IQ.	Executive function (tapping inhibition)	Children with PAE had worse inhibition and this effect persisted following control of confounding environmental, other prenatal drugs and verbal intelligence were controlled for.
Robertson et al 2016 South Africa Structural Neuro	Cape coloured pregnant women with children assessed at 10.5-11yrs (*n* = 78)	Diagnosed study (IOM 2005). Continuous measure of average ounces of alcohol per day during pregnancy	Maternal education, socioeconomic status, and cigarettes/day.	Cortical thickness in occipitotemporal, parietal and occipital regions.	After controlling for confounding variables significant association between PAE and cortical thickness in all areas assessed.
Roussotte et al 2012	*n* = 99 across 3 sites 8-16yrs Los Angeles	FASD vs Control	Site, age, intracranial volume.	Regional brain volumes	After controlling for covariates significant differences between FASD

U.S CIFASD Structural Neuro	10-14yrs San Diego 13-15yrs Cape Town				and control in total grey matter left and right hemispheres, putamen, pallidum.
Sood et al 2001 U.S Functional Neuro	Pregnant women with children assessed at 6.9 years (*n* = 501)	Low (moderate PAE) = 29.4g/w; Moderate/Heavy (moderate PAE) = 98.84g/w	Covariates included: maternal psychopathology, custody status, current lead, gender, prenatal cigarettes, HOME inventory, maternal education.	CBCL (parent questionnaire - assessed externalising behaviour, aggressive behaviour, delinquent behaviour, internalizing behaviour, withdrawn behaviour, attention problems, total behaviour score)	PAE remained a significant predictor of behaviour after adjusting for covariates.
Streissguth et al 1980 U.S Functional Neuro	Pregnant women infants examined at 8 months (*n* = 462)	Continuous measure of average ounces of alcohol per day during pregnancy	Nicotine exposure, caffeine exposure, gestational age, maternal parity, maternal education.	Bayley Scales of Infant Mental (Mental Development Index; MDI) and Motor Development (Psycho Motor Development Index; PSI).	Following adjustment significant association between PAE and MDI and PDI.
Streissguth et al 1984 U.S Functional Neuro	Pregnant women with children assessed at ~4yrs (*n* = 452)	Continuous measure of average ounces of alcohol per day during pregnancy	Maternal caffeine intake, maternal nutrition, maternal education, birth order, rates of errors commission.	Vigilance task	After control for covariates PAE associated with attention challenges (increased errors of omission and commission) and longer reaction times.
Taylor et al 2015 U.S Structural Neuro	Children assessed as Newborns (*n* = 20)	Heavy drinkers (very heavy PAE) = 329.28g/w	Age, sex, maternal cigarette smoking, maternal age at delivery.	White matter	After controlling for covariates PAE was associated with lower axial diffusivity in all networks.
Verkerk et al 1993 Netherlands	Pregnant women with children assessed at birth (*n* = 3447)	Abstainer = 0g/week; 1-50g/week = 25.5g/week (moderate); 51-120g/week = 85.5g/week (moderate);	Maternal smoking, paternal smoking, education, employment, maternal age, marital status.	Birth weight	No significant association with birth weight.

Physical Size		>120g/week = 171.75g/week (heavy)			
Virji et al 1991 U.S Physical size	Pregnant women with children assessed at birth (*n* = 5,400)	Light (light PAE) = 8.5g/w; Moderate = (heavy PAE) = 119g/w; Heavy (very heavy PAE) = 391g/w	Maternal age, maternal education, gestational age, parity, weight gain, smoking	Birth weight	Significant differences between heavy exposure and no exposure remained after controlling for confounding variables.
Walthall et al 2008 U.S Functional Neuro	Children assessed at 6-12yrs (*n* = 130)	Diagnosed study (4-digit code). Continuous measure of average ounces of alcohol per day during pregnancy	Child ethnicity, child age, child full scale IQ, socialization standard score, caregiver marital status, education, home placement.	National Institute for Mental Health computerized Diagnostic Interview Schedule for Children (NIMH C-DISC-IV)	After controlling for covariates PAE was associated with anxiety (separation and GAD), ADHD, ODD, Conduct, MDD, mania, hypomania,
Willford et al 2006 U.S Functional Neuro	Pregnant women with offspring assessed at 10yrs (*n* = 636)	Continuous measure of average ounces of alcohol per day during pregnancy	Maternal intellectual ability, birth weight, child injuries/illnesses, current maternal depression, current maternal alcohol use, child depression, tobacco use during relevant trimester, current maternal substance use (cocaine, marijuana), home environment, life events, parity.	Stanford-Binet Intelligence Scale (IQ/cognitive ability)	After controlling for covariates there was a significant association between PAE and IQ for African American children but not for Caucasian children.