Current project team

triple b study

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**Triple B Consortium: Past NDARC and NDRI staff, students, Associate Investigators*

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Prevalence of alcohol use in pregnancy

- NHMRC Guidelines: "*For women who are pregnant or planning a pregnancy, not drinking is the safest option*" (NHMRC, 2009)

- Around half of all pregnant women report some alcohol in pregnancy.
  - 2013 National Drug Strategy Household Survey (NDSHS):
    - 47% of pregnant women drank alcohol whilst pregnant
  - Longitudinal Study of Australian Children (LSAC; Hutchinson et al., 2013):
    - 37% of mothers of infants age 0-1 years drank whilst pregnancy

Effects of PAE on infant development

Developmental domain	Reviews	*Heavy exposure harmful*	*Low exposure harmful*	*Low exposure no effect*	*Low exposure positive*
Cognition	*Testa 2003*	✔	✔	✔	✔
	Flak 2014	✔	✔	✔	✔
	McCormack, submitted	✔	✔	✔	✔
Gross Motor	*Lucas 2014*	✔		✔	
Fine Motor	*Doney, 2014*	✔	✔	✔	
Expressive Language	*NA*	✔	✔	✔	
Receptive Language	*NA*	✔	✔	✔	
Socio-emotional	*NA*	✔		✔	✔

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Fine Motor	*Bay & Kesmodel, 2011*	✔	✔	✔	
Expressive Language	*NA*	✔	✔	✔	
Receptive Language	*NA*	✔	✔	✔	
Socio-emotional	*NA*	✔		✔	✔

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Expressive Language	*NA*	✔	✔	✔	
Receptive Language	*NA*	✔	✔	✔	
Socio-emotional	*NA*	✔		✔	✔

Aims

- Assess the impact of low-level prenatal alcohol exposure (PAE) on infant development, taking into account timing and frequency of exposure.
- To examine the impact of low-level PAE on infant development after increasing levels of adjustment for potential maternal, infant and paternal factors.

The Triple B Study of Pregnancy

Hutchinson et al, Int J Epi, under revision

Method and sample

- Recruited from antenatal clinics at public hospitals in NSW and WA
- Total sample at 12-months: 1,359
- Retention rate: 82.4%

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Alcohol assessment

- **Alcohol use:** Trimester 1 (0-6wks and 7-12wks); Trimester 2 (T2); Trimester 3 (T3)
- Typical frequency and quantity
- **The composite method of prenatal alcohol classification** (O'Leary et. al., 2009)
- Maternal consumption categorised separately for each timepoint
- **"Low":** ≤7 standard drinks per week, up to 2 standard drinks per occasion

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The Bayley Scales of Infant Development III

- BSID domains: Cognition, language, motor, social-emotional development
- Babies tested ~1st birthday (mean=12.23 months; SD=.84)
- Adjusted for child's age and prematurity
- Scaled scores were used for cognition and socio-emotional development: mean of 100, SD of 15
- Language and motor subscales: mean of 10, SD of 3

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Potential confounders

Maternal
- Age
- Education
- SEIFA
- Country of birth
- Single parent household
- ATSI
- Parity
- Native language
- IQ (TOPF)
- Pregnancy planned
- Pregnancy smoking
- Pregnancy IDU
- Depression, Anxiety, Stress
- BMI
- Spousal abuse

Infant offspring
- Sex
- Prematurity
- Birthweight
- Head circumference
- 5 min APGAR

Partner
- Age
- Education
- ATSI
- Country of birth
- Native language
- IQ (TOPF)
- BMI
- Alcohol use
- Smoking
- IDU
- Depression, Anxiety, Stress
- Spousal abuse

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Alcohol use patterns through pregnancy

	T1 (0-6 weeks)		T1 (7-12 weeks)		T2		T3	
	Abstinent (n=537)	Low (n=308)	Abstinent (n=980)	Low (n=241)	Abstinent (n=934)	Low (n=351)	Abstinent (n=926)	Low (n=347)
Frequency of alcohol use (per week)	0	1.1 (0-5.8)	0	0.6 (0-3.5)	0	0.7 (0-3.5)	0	0.9 (0.1-7.0)
Standard drinks (per week)	0	1.7 (0-7.0)	0	0.8 (0-7.0)	0	0.9 (0-5.3)	0	1.2 (0-5.3)

McCormack et al, Alcohol: Clin Exp Res, accepted.

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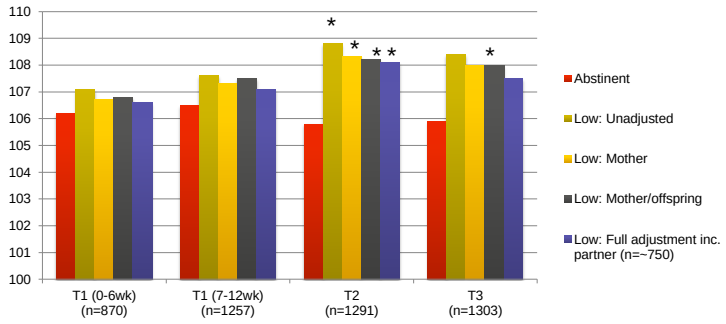
Maternal characteristics

	Baseline maternal characteristics		
	Abstinent (n=926)	Low (n=347)	Whole sample (n=1359)
SES category (%, SE)			
Low	6.1 (0.8) n=56	**0.9* (.5) n=3**	4.6 (0.6) n=62
Med	34.1 (1.6) n=316	**21.6* (2.2) n = 75**	30.6 (1.3) n=416
High	59.8 (1.6) n=554	**77.5* (2.2) n=269**	64.8 (1.3) n=881
Maternal age – mean (SD)	32.2 (5.1) n=925	**34* (4.2) n=347**	32.8 (4.9) n=1357
Years of education – mean (SD)	16.3 (2.3) n=589	**16.9* (2.7) n=211**	16.5 (2.9) n=852
Native language English – (%, SE)	71.6 (1.8) n=425	**82.8*(2.3) n=179**	75.4 (1.5) n=640
Estimated IQ – mean (SD)	99.1 (13.4) n=601	**105* (12.2) n=105**	100.5 (13.4) n=871
Living With Partner - (%, SE)	91.7 (.9) n=847	**97.9* (.7) n=340**	93.5 (.6) n=1245
Pre Pregnancy drinking (Freq per week; %, SE)	1.7 (1.7) n=664	**2.7* (1.8) n=334**	2.1 (1.9) n=1068
Pre Pregnancy drinking (SD per week; %, SE)	3.9 (6.5) n=922	**8.8* (8.6) n=347**	5.5 (7.8) n=1353
Tobacco use in pregnancy – (%, SE)	14.4 (1.1) n=133	12.4 (1.7) n=43	14.7 (1.0) n=196
Illicit substance use - (%, SE)	3.2 (.5) n=30	**8.7* (1.5) n=30**	5.2 (.6) n= 70

Cognition



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McCormack et al, BJOG, under review

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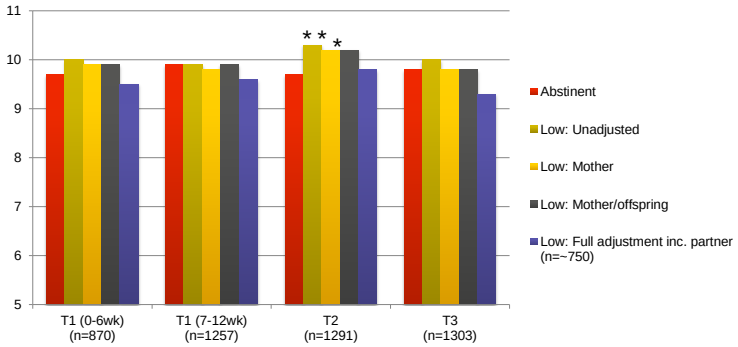
Receptive language



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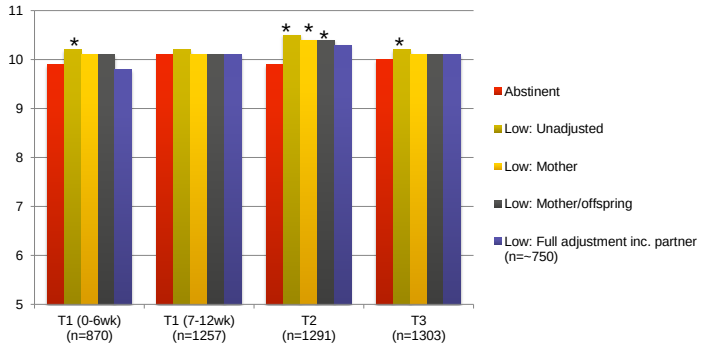
Expressive language



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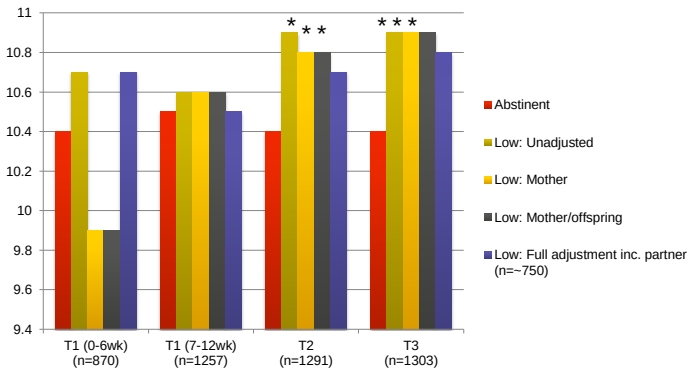
Fine motor



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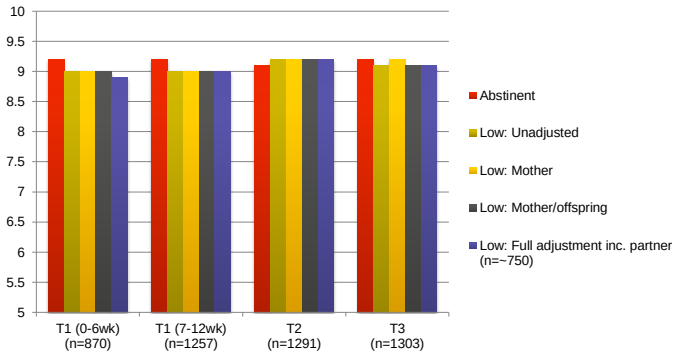
Gross motor



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Hutchinson et al, JAMA Pediatrics, under review

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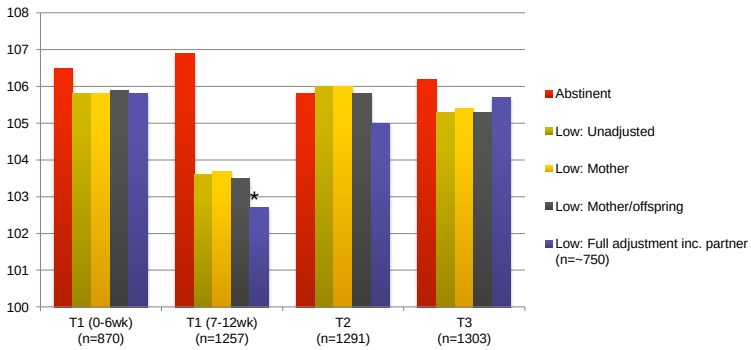
Socio-emotional



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Discussion

Implications:

- Low level alcohol exposure is inconsistently related to infant ability?
- Confounding – may explain the positive effects identified
- There may still be a small detrimental effect of low exposure, obscured by associated confounders
- May alleviate anxiety among women who have consumed alcohol in pregnancy at low levels

Implications

For women who are pregnant or planning a pregnancy, the safest option is not to drink alcohol