

# NDARC

National Drug &  
Alcohol Research Centre

The Difference is Research



## The Triple B Pregnancy Cohort Study: Alcohol use during pregnancy and developmental outcomes in infants at 12-months of age

Medicine

National Drug and Alcohol Research Centre

# Current project team

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

# Prevalence of alcohol use in pregnancy

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- 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	<i>Testa 2003</i>	✓	✓	✓	✓
	<i>Flak 2014</i>	✓	✓	✓	✓
	<i>McCormack, submitted</i>	✓	✓	✓	✓
Gross Motor	<i>Lucas 2014</i>	✓		✓	
Fine Motor	<i>Doney, 2014</i>	✓	✓	✓	
Expressive Language	NA	✓	✓	✓	
Receptive Language	NA	✓	✓	✓	
Socio-emotional	NA	✓		✓	✓

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Receptive Language	NA	✓	✓	✓	
Socio-emotional	NA	✓		✓	✓

# Aims

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- 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

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# Method and sample

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

# Alcohol assessment

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- **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"**:  $\leq 7$  standard drinks per week, up to 2 standard drinks per occasion



# The Bayley Scales of Infant Development III



- BSID domains: Cognition, language, motor, social-emotional development
- Babies tested ~1<sup>st</sup> 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



# Potential confounders

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## 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

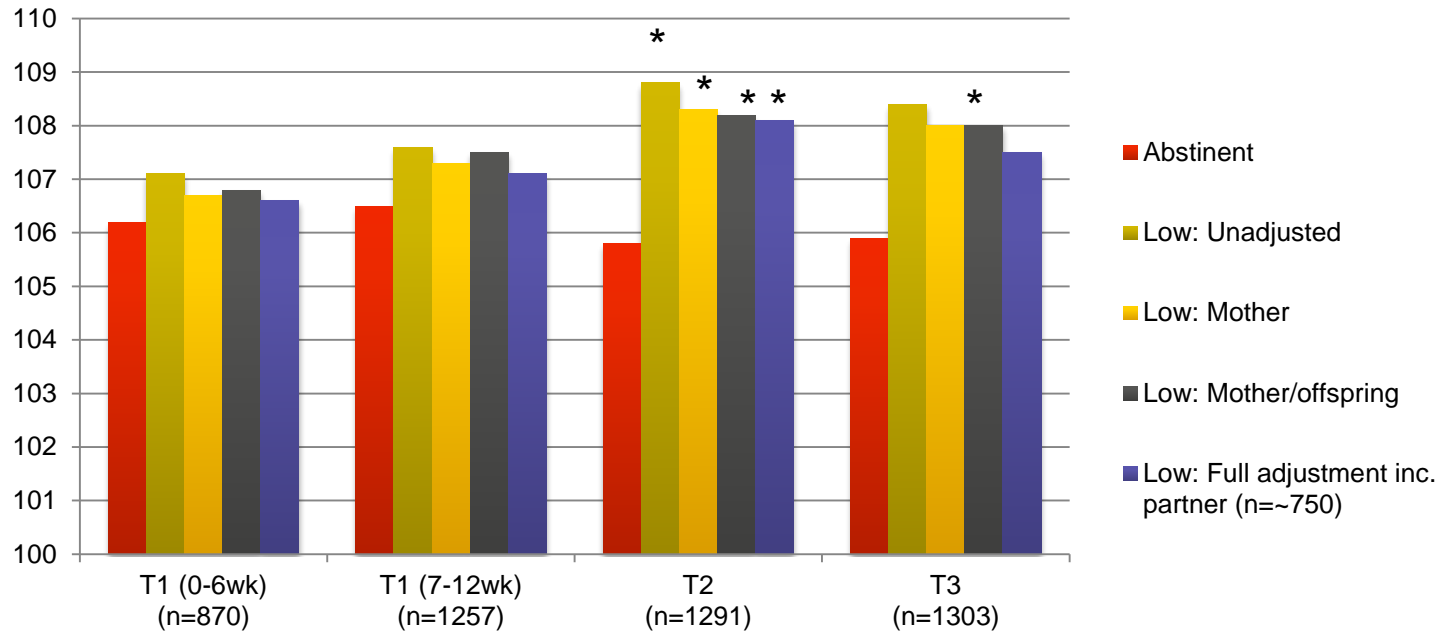
# Alcohol use patterns through pregnancy

	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)

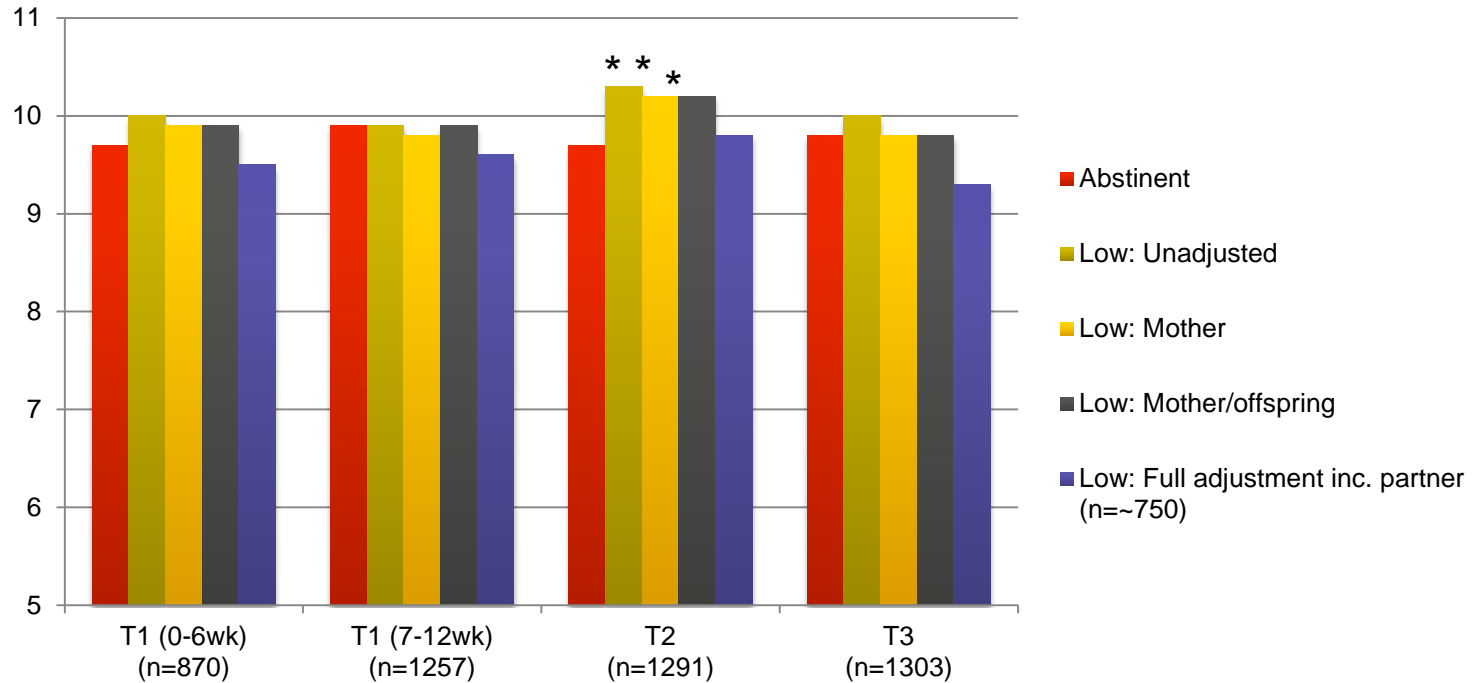
# Maternal characteristics

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

# Cognition

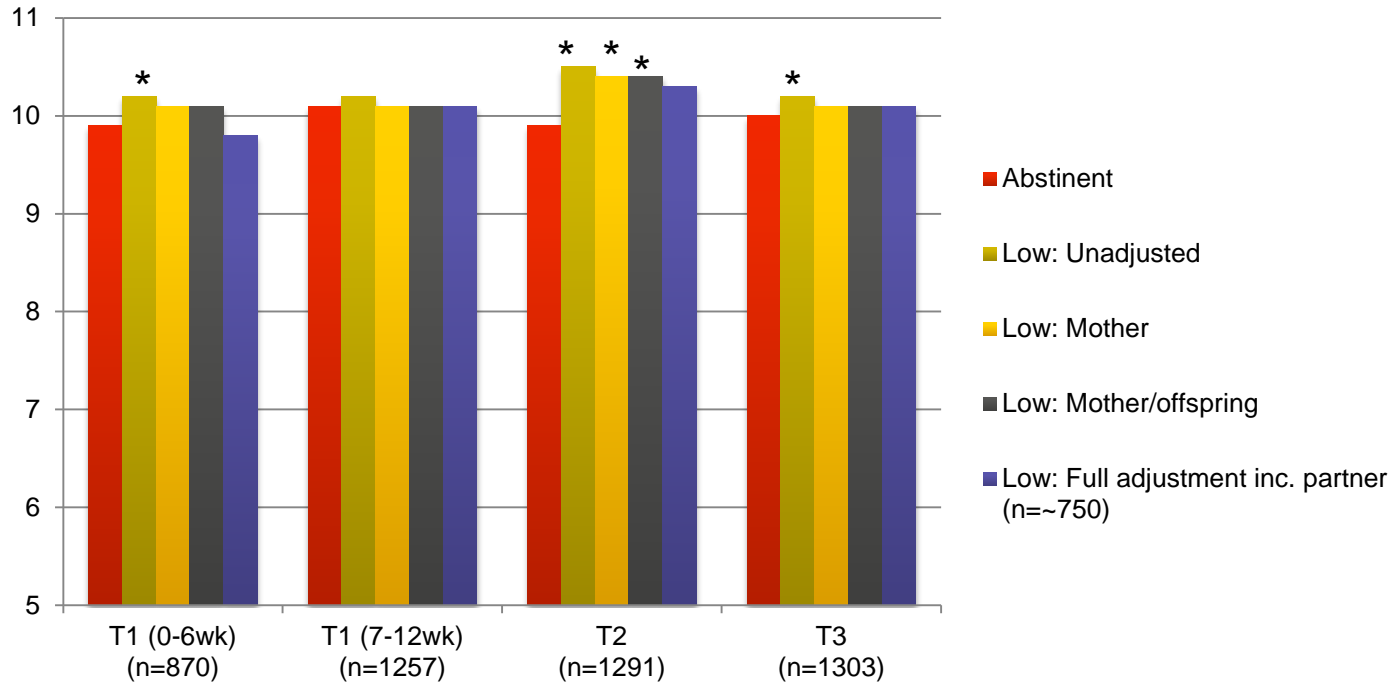


# Receptive language

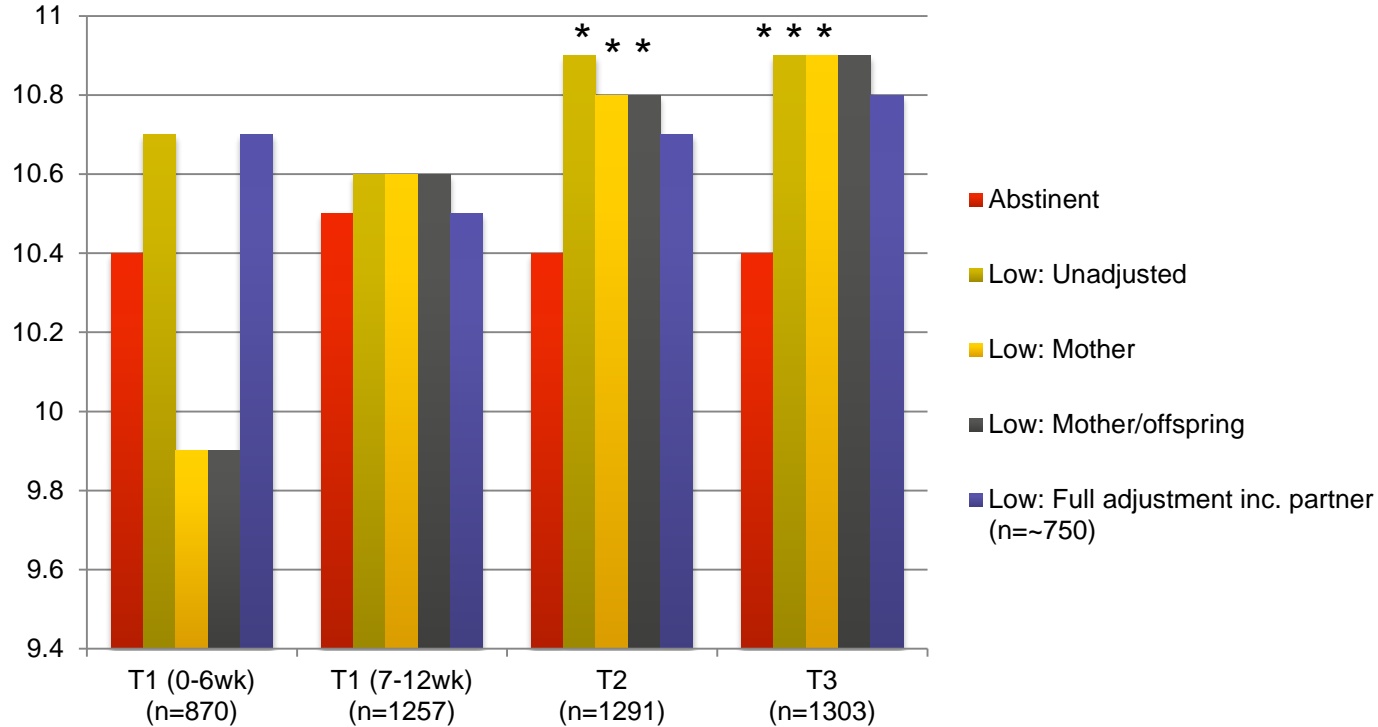




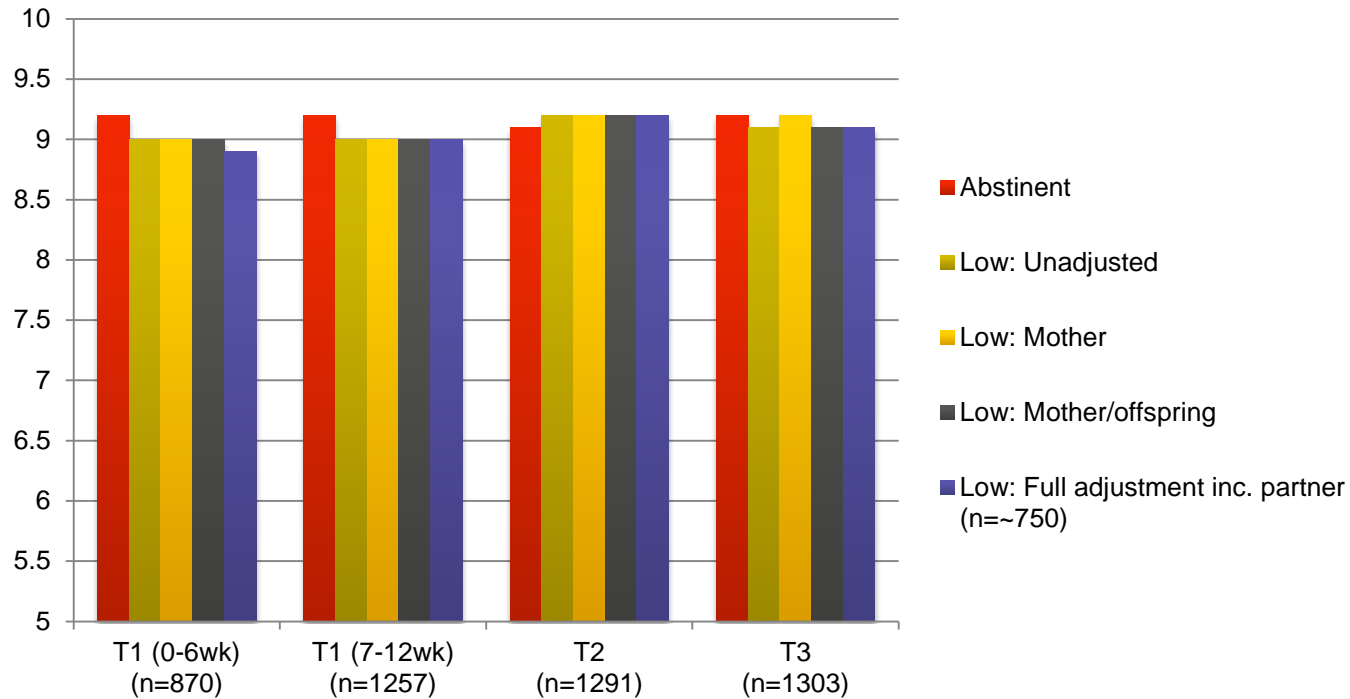
# Expressive language



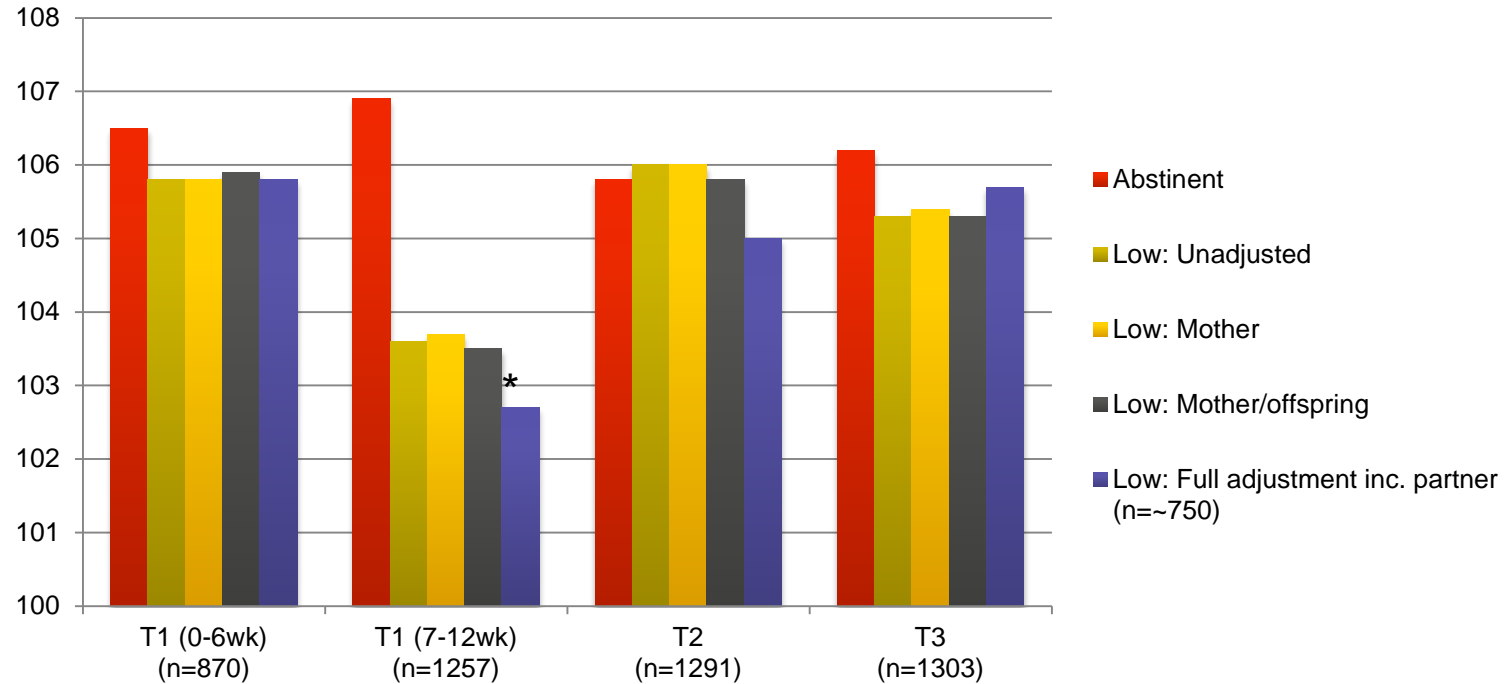
# Fine motor



# Gross motor



# Socio-emotional



# Discussion

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## 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

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