

# Prenatal Maternal Positive Psychological Well-being Predicts Length of Gestation

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## Introduction

- During the prenatal period, the developing fetus is exposed to a range of maternal signals that vary in intensity and duration. Previous research has shown that signals such as maternal psychological ill-being (e.g., perceived stress and depression) are predictive of various birth outcomes (length of gestation and birth weight) and of child development (e.g., cognitive development, emotional development, behavioral development, and HPA axis regulation).
- Positive psychological well-being (PPWB) has been linked to a range of positive health outcomes, including reduced risk of all-cause mortality, increased longevity, reduced risk of coronary heart disease, better physical health, less disability and fatigue, and reduced risk of diabetes. In addition, PPWB may buffer stress responses and is associated with improved neuroendocrine, autonomic, and immune functions.
- To date, very little is known about the effects of maternal prenatal positive psychological well-being on birth outcomes.

## Methods

- 166 pregnant women were followed from early pregnancy through childbirth.
- The mothers were 44% Non-Hispanic White, 29% Latina, 10% Asian, and 17% other. 52% of the infants were male.
- Average birth weight was 3,301 grams ( $SD = 653g$ ), and average length of gestation was 38.8 weeks ( $SD = 2.6$ ).
- Maternal prenatal psychological well-being was assessed at 19 weeks' gestation using the Oxford Happiness Questionnaire (OHQ; Hills & Argyle, 2002).
- Maternal prenatal psychological ill-being was assessed at 19 weeks' gestation using the CES-D (Santor & Coyne, 1997), Perceived Stress Scale Cohen et.al., 1983), and a Pregnancy Specific Anxiety Scale (Dunkel Schetter & Tanner, 2012).
- Gestational age at birth (GAB), in weeks, was determined by maternal report of LMP and early pregnancy ultrasound based on ACOG guidelines.
- Hierarchical linear regression was used to examine the association between maternal PPWB and length of gestation.
- A binary logistic regression was performed to determine the effects of maternal prenatal PPWB on the likelihood of preterm delivery.
- Covariates included maternal age, race/ethnicity, education, household income, cohabitation with child's father, obstetric risk, birth order, prenatal maternal ill-being (stress, anxiety, and depressive symptoms).

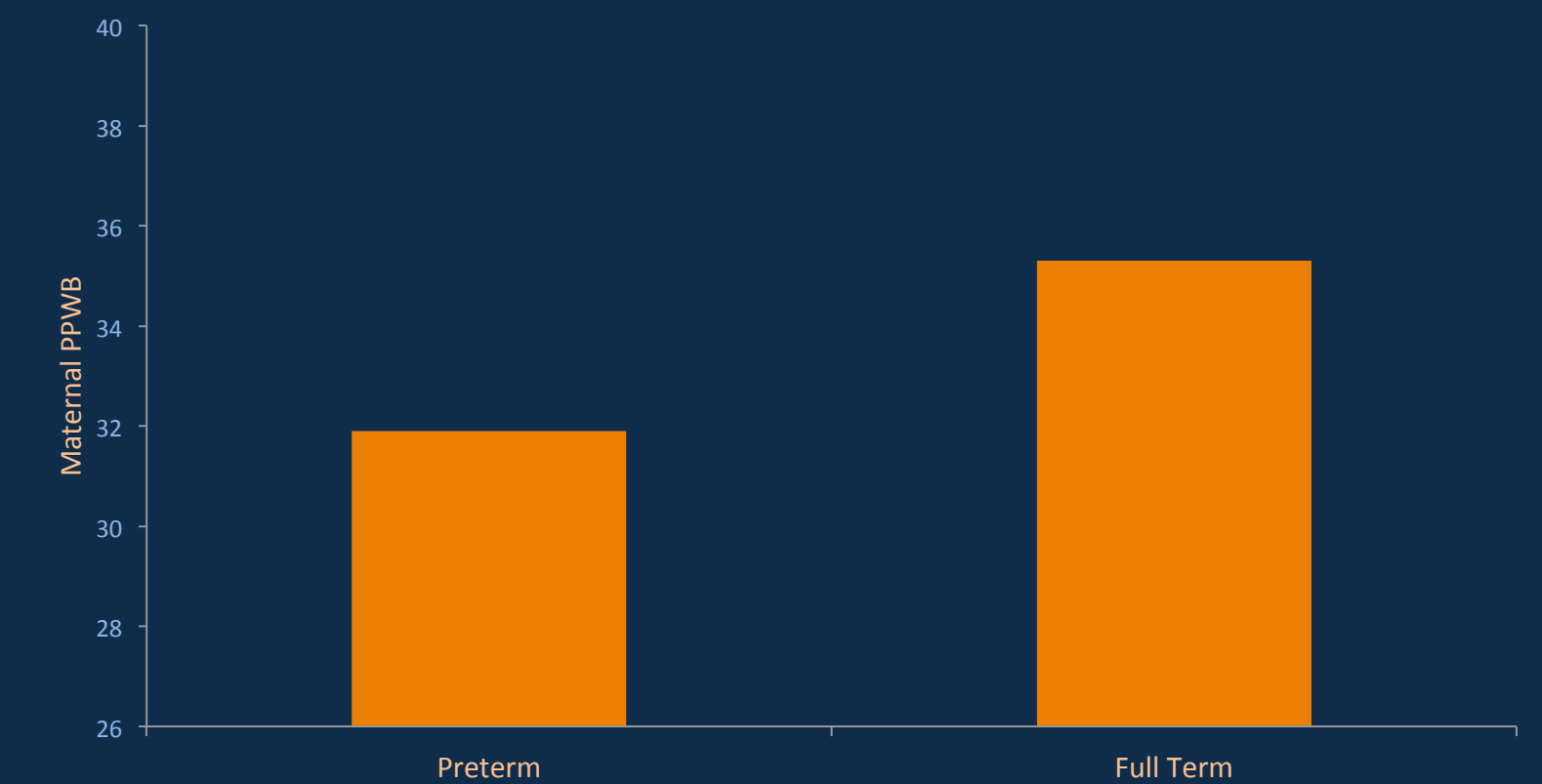
## Results

- Higher levels of maternal PPWB at 19 weeks' gestation predicted longer length of gestation.
- Higher levels of prenatal maternal PPWB also predicted risk for preterm delivery with an odds ratio of .85 and a 95% CI of .74 to .98 (Figure 1).
- This finding persisted after adjusting for relevant maternal and infant characteristics and pre and prenatal maternal ill-being (Table 1).

**Table 1.** Hierarchical linear regression of maternal prenatal PPWB and GAB adjusting for maternal demographics, obstetric risk, birth order, and prenatal maternal ill-being (N=166)

	$\beta$	p
Maternal age at delivery	-.136	.173
Cohabitation with baby's father	-.214	.011
Obstetric risk	-.122	.117
Maternal education	-.027	.788
Annual household income	.245	.010
Race/Ethnicity		
Non-Hispanic White	.040	.674
Latina	.039	.711
Parity	-.089	.323
Prenatal maternal perceived stress	.059	.613
Prenatal maternal depressive symptoms	-.149	.137
Pregnancy Specific Anxiety	.053	.558
Prenatal maternal PPWB	.224	.029

Figure 1. Maternal prenatal PPWB predicts preterm birth



## Conclusions

- Maternal prenatal PPWB positively predicted length of gestation. Importantly, this effect persisted after adjusting for prenatal maternal psychological ill-being.
- This finding suggests that examining only prenatal maternal ill-being as a predictor of length of gestation may not be sufficient, and the presence of prenatal maternal PPWB should also be considered.
- Further research should be conducted to investigate the multiple pathways through which positive maternal well-being during the prenatal period may affect birth outcomes.

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