

# Factors Affecting Pregnancy & Birth Outcomes: A Holistic Approach

Winifred Wilkins Thompson, Ph.D., MSW  
Emory University



135<sup>th</sup> American Public Health Association Annual Meeting  
Public Health Education & Health Promotion  
Issues in Maternal & Child Health

November 6, 2007



# Co-Authors

---

- Kathryn Luchok, PhD
- Kristine Calderon, PhD
- Saundra Glover, PhD



# Birth Outcomes

---

## Preterm (<37 weeks gestation) (percent of live births):

### March of Dimes (MOD) (2003):

United States (US)	12.3
South Carolina (SC)	14.5

### March of Dimes (2001-2003) avg.:

	US	SC
African Americans (AA)	17.7	18.6
Whites	11.0	12.1
Hispanic	11.6	11.7



South Carolina ranks **47th** of 51 states



# Birth Outcomes

---

**Low Birth Weight (<2,500 grams or 5lbs, 8oz.):**  
(percent of live births)

**March of Dimes (2003):**

	<u>South Carolina</u>
All	10.1
African American (AA)	<b>14.6</b>
White	7.6
Hispanic	6.6
<u>United States</u>	7.9

**March of Dimes (2003):**

**South Carolina ranks 48th of 51 states**



# Birth Outcomes

---

## Infant Mortality Rate (deaths per 1,000 live births):

March of Dimes (2005):

	2000 – 2002	
	<u>United States</u>	<u>South Carolina</u>
All	6.9	9.0
African American (AA)	13.6	14.9
White	5.7	6.0
Hispanic	5.5	4.6

March of Dimes (2005):

South Carolina ranks 45th of 51 states



# Magnitude of the Problem

---



## Leads to poor health status:

- Respiratory problems
- Developmental delays
- Life long problems
- Neonatal mortality
- Infant mortality

# Disparities in Health

---

## Birth Outcomes

- Prematurity (preterm) <37 weeks gestation
- Low birth weight <2,500 g / 5lbs. 8oz.

## Health Status of Women (ages 15-44)

Pre-pregnancy

Interconceptional

During pregnancy



# Holistic View

---

- **Biophysical (BODY)**
  - Health Conditions
  - Behaviors
- **Psychosocial (MIND)**
  - Perceptions, Thoughts
- **Spiritual (SPIRIT)**
  - Beliefs, Interconnections





# Purpose of the Study

---

To investigate the individual and combined roles of the holistic dimensions:

**Psychosocial/Perceptual**

**Biophysical**

**Spiritual**

1. during pregnancy
2. in birth outcomes



# Study Population

---

## Palmetto Healthy Start:

- through Palmetto Health
- community based program
- funded by U. S. Department of Health & Human Services (DHHS)
- serves at-risk pregnant women and babies
- Richland and Fairfield counties in South Carolina
- Goal: to reduce infant mortality, low birth weight, and preterm infants
- focuses on medical & psychosocial aspects (e.g. Housing, Food, Prenatal Care)



# Palmetto Healthy Start

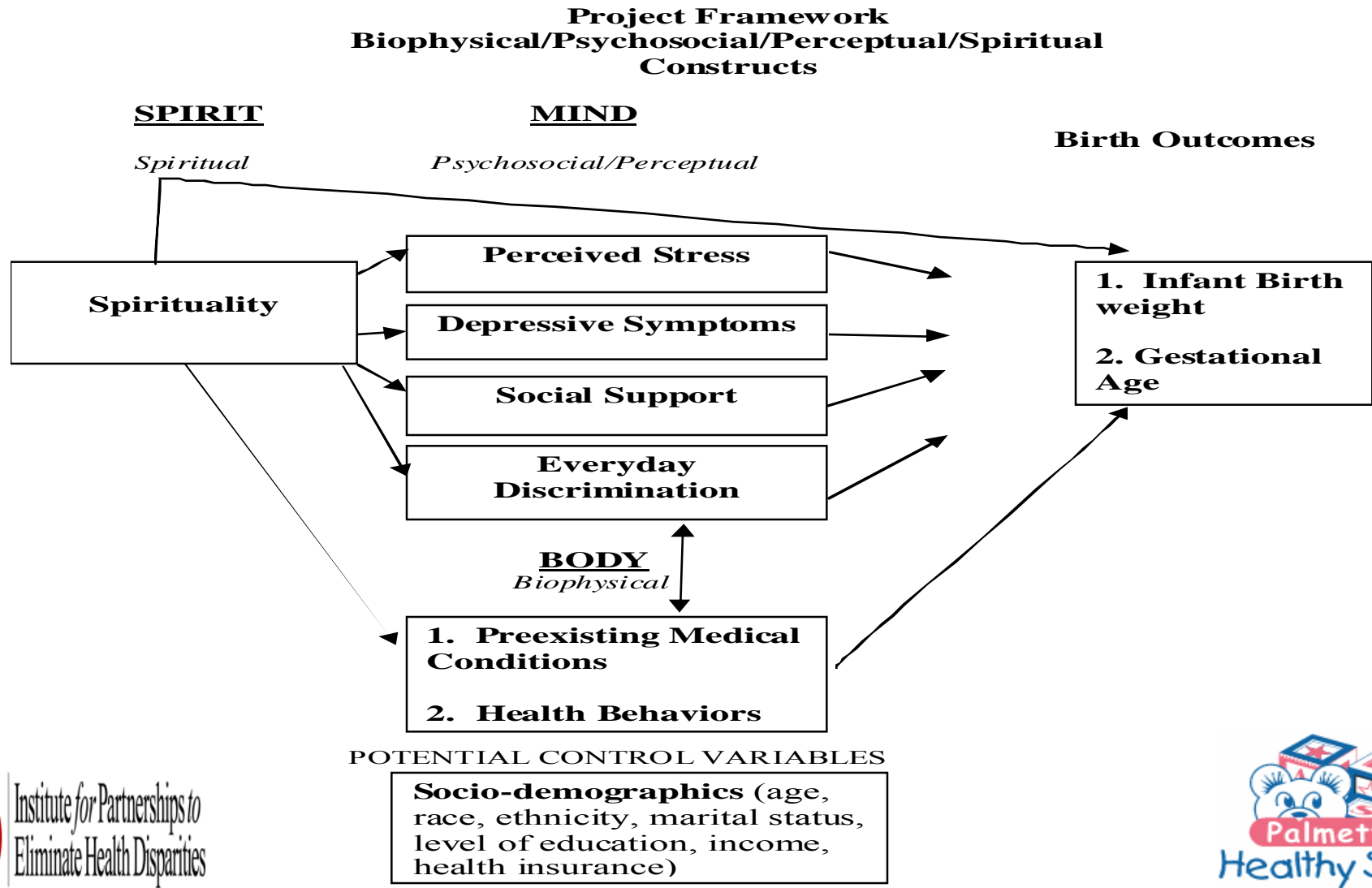
---

## Palmetto Healthy Start 2002 – 2005

- 3,448 participants
- ~ 77% are Medicaid recipients
- Age: average 23 years (13 - 50)
- Income: \$2,790 (\$0 to \$32,000)
- African American: 85%,
- White: 12%
- Other: 3%

# Study Framework

## Biophysical/Psychosocial/Perceptual/Spiritual Constructs

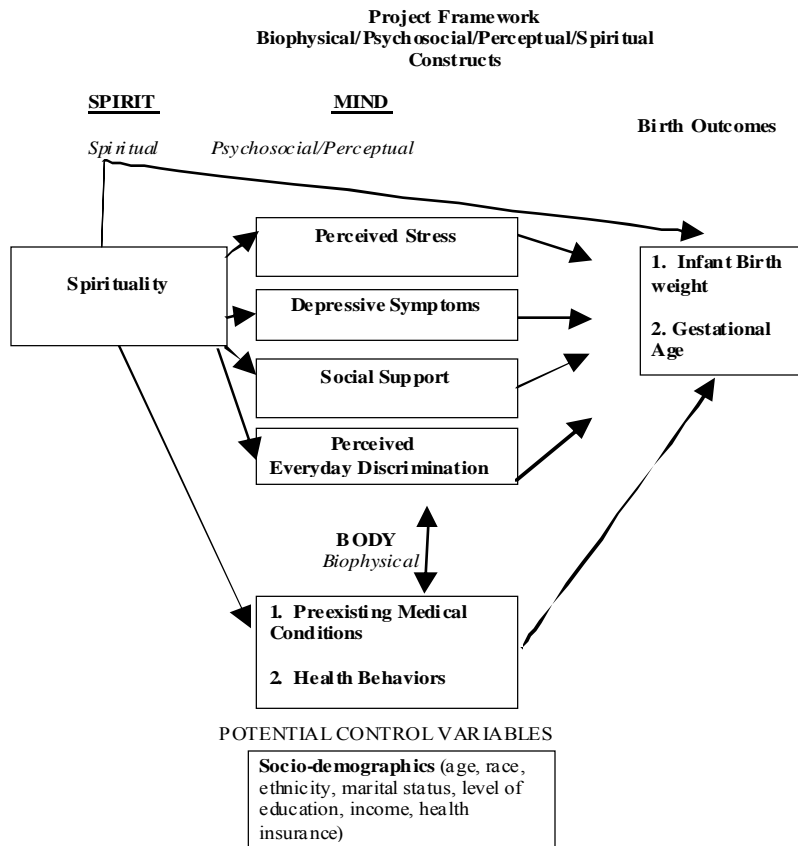


# Methodology

---

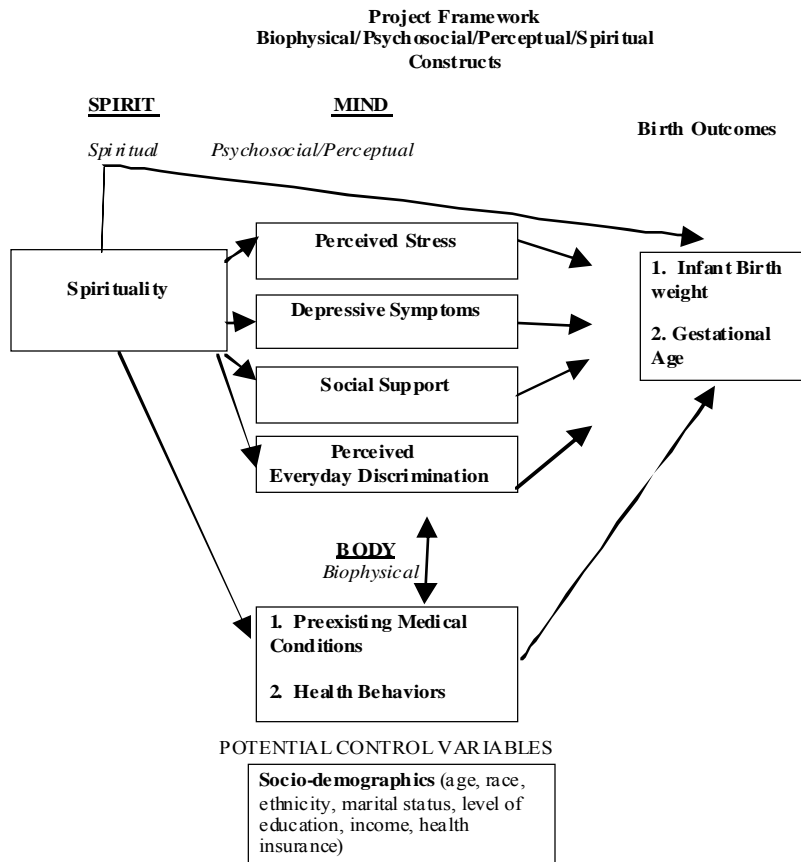
- **DESIGN:** Cohort
- **WHO:**
  - Palmetto Healthy Start (PHS) participants (1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> trimester)
  - Ages 16-42 years
  - Exclusion criterion: multiple pregnancy
  - Convenience sample
- **WHEN:**
  - Accrual: September 2005 through March 2006
  - Follow through to birth outcomes (May 2006)
- **HOW:** 5 questionnaires:
  - ✓ 1 currently in use at Healthy Start:
    - Perceived Stress Survey (PSS)
    - Center for Epidemiological Studies (CES-D)
    - Medical Outcome Social Support Survey (MOS)
    - Everyday Discrimination (EDD)
  - ✓ 1 specific to this study
    - Daily Spiritual Experiences Survey (DSES)

# Research Questions #1-3



1. What is the relationship among the SPIRIT and the MIND factors during pregnancy?
2. What is the relationship among the SPIRIT and the BODY factors during pregnancy?
3. Do spiritual factors have effects on birth outcomes (infant birth weight / gestational age) after controlling for confounders?

# Research Questions #4-6



4. What is the relationship among the MIND factors and the BODY factors during pregnancy?
5. Do the MIND factors have effects on birth outcomes (infant birth weight/gestational age) after controlling for confounders?
6. Do the BODY factors have effects on birth outcomes (infant birth weight/gestational age) after controlling for confounders?

# Results

Sample Size N=163

---

**Age** - Avg. 22.8 (16-42)

**Race**

~89.6% African American

~7.1% White

~2.6% Hispanic

~.65% Other

**Marital Status**

~86% Single

~10% Married

~2.0% Separated

~1.3% Divorced

**Education**

~51.2% completed less than 12<sup>th</sup> grade

~38.3% completed 12<sup>th</sup> grade

~10.3% completed college or some college

**Medicaid Recipients**

~62.5%

**Income** - Avg. \$2,679.76 Annual  
(\$0 – 31,000)



# Descriptive Statistics

## N=163

Variable sample (range score)	Mean (actual range)	SD
<b>Depressive Symptoms</b> n=136 (0-60)	16.4 (0-44)	10.9
<b>Perceived Stress</b> n=138 (0-40)	14.7 (0-35)	7.5
<b>Social Support</b> n=118 (19-95)	81.1 (28-95)	15.1
<b>Everyday Discrimination</b> n=121 (9-54)	47.1 (21-54)	7.4
<b>Daily Spiritual Experiences</b> n=142 (15-90)	34.3 (15-90)	14.0

Lower scores=lower depressive symptoms

Lower scores=lower perceptions of stress

Higher scores=higher social support

Higher scores=lower perceptions of everyday discrimination

Lower scores=higher daily spiritual experiences

# Correlations

Rho $\rho$ p-value n	Daily Spiritual Experiences (DSES)	Social Support (MOS)	Everyday Discrimination (EDD)	Perceived Stress (PSS)
<b>Depressive Symptoms (CESD)</b>	0.07701 0.3895 127	<b>-0.42007</b> <b>&lt;.0001</b> 102	<b>-0.42692</b> <b>&lt;.0001</b> 105	<b>0.76690</b> <b>&lt;.0001</b> 136
<b>Perceived Stress (PSS)</b>	0.06695 0.4527 128	<b>-0.44171</b> <b>&lt;.0001</b> 103	<b>-0.44452</b> <b>&lt;.0001</b> 106	
<b>Everyday Discrimination (EDD)</b>	-0.13220 0.1746 107	<b>0.24945</b> <b>0.0064</b> 118		
<b>Social Support (MOS)</b>	<b>-0.21391</b> <b>0.0292</b> <b>104</b>			

# Biophysical Dimension

Preexisting Health Conditions	N	%
<b>High Risk*</b>	55	35.2
Sickle Cell*	1	.64
<b>High Blood Pressure*</b>	10	6.4
<b>Diabetes*</b>	8	5.1
Heart Disease*	3	1.9
Sexually Transmitted Disease*	7	4.4
HIV Positive*	1	.64
Vaginitis*	5	3.2
Preeclampsia*	4	2.5
Incompetent Cervix*	2	1.2
<b>Previous Premature Labor*</b>	10	6.4
Age factor (<18 or >34)*	4	2.5

\*denotes 7 missing



# Birth Outcomes

## N=106

Birth Outcomes	n	Mean	%	MOD Low Birth Weight	MOD Preterm
<b>Birth Weight: All</b>		2673 / 5lbs. 14oz.			
<2500 g	9	2120 / 4lbs. 11oz.	7.7	7.9 US	
>2500 g	96	3225 / 7lbs. 1oz.	92.3	10.1 SC 14.6 AA 7.6 White 6.6 Hispanic	
<b>Gestational Age: All</b>		35.2			12.3 US
9-36 weeks*	9	32.0	13.3		14.5 SC
37-41 weeks	96	38.4	86.6		18.6 AA 12.1 White 11.7 Hispanic

\*1 missing due to spontaneous abortion/miscarriage

# Research Findings

---

## **What was the relationship among the SPIRIT & MIND factors?**

Higher social support scores were weakly associated with lower spirituality scores.

$\rho$  (rho)= -0.2139

p=0.0292

*Women who had higher Social Support also had Higher Spirituality*

# Research Findings

---

## Did the MIND factors have effects on birth outcomes?

There was an association between social support and infant birth weight.

Model (F=5.02, p=0.0034)

Social support (p=0.0073)

Marital Status (p=0.0285)

Medicaid (p=0.0203)

***Women who had higher social support, were single, and/or were on Medicaid were more likely to have infants of higher birth weight.***



# Research Findings

---

## **Did the MIND factors vary by sociodemographics?**

Depression (p=0.0029)

Education  $\beta=-5.744$ , (p=0.0029)

Perceived Stress (p=0.0345)

Education  $\beta= -2.634$ , (p=0.0473)

Perceived Everyday Discrimination (p=0.0207)

Age  $\beta= -0.2779$ , (p=0.0307)

Other Insurance  $\beta=6.972$ , (p=0.0282)

**Higher education was predictive of lower stress and lower depressive symptoms.**

**Younger women and/or insurance status were predictive of less perceptions of everyday discrimination.**

# Research Findings

---

## Did the SPIRIT factors vary by sociodemographics?

Age, Income, & Medicaid status were more likely to be predictive of spirituality

Spirituality (p=.0012)

Age $\beta$ = -.4688, (p=0.039)

Income  $\beta$ = -0.000442, (p=0.0150)

Medicaid  $\beta$ =5.542, (p=0.0242)

**Women who were of older age, higher income and/or non Medicaid status had higher spirituality.**



# Limitations

---

- Sample size
- Administration of surveys
- Self-reported survey data
- Non-reported health risk behaviors
- Use of a higher level statistical analyses

# Strengths

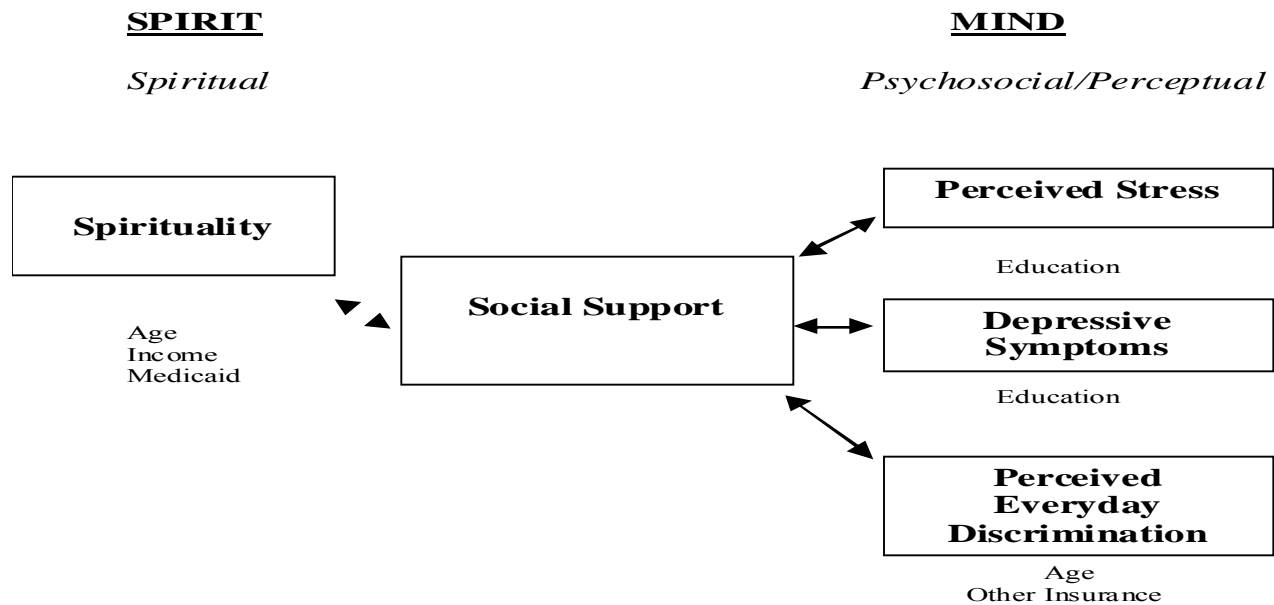
---

- Add to the current literature in understanding the factors both individually and collectively that affect women during pregnancy
- Lead to other methods of research
- Enhance Palmetto Healthy Start program services

# Final Study Model

## Pregnancy

### Project Framework Biophysical/Psychosocial/Perceptual/Spiritual Constructs



# Final Study Model

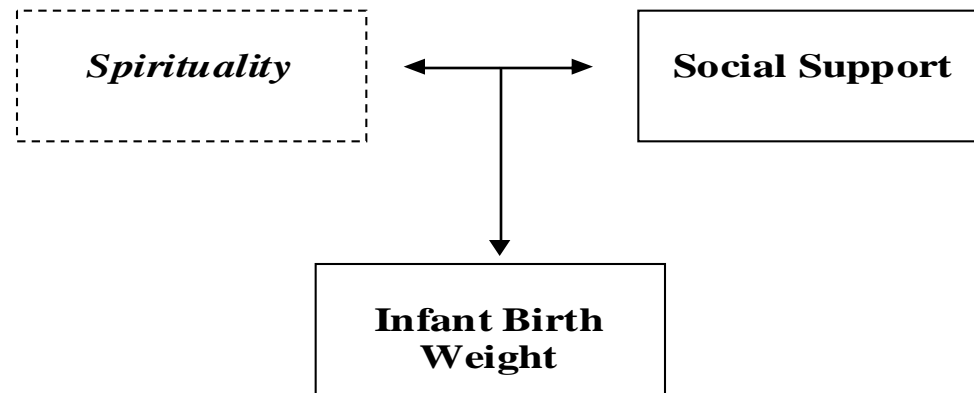
## Birth Outcomes

**Project Framework**  
**Biophysical/Psychosocial/Perceptual/Spiritual**  
**Constructs**

**Birth Outcome Model**

**SPIRIT**  
*Spiritual*

**MIND**  
*Psychosocial/Perceptua*



**Socio-demographics**  
Single  
Medicaid

# Research Implications

---

- Additional research is needed with a larger sample size to include a mixed method research design
- Additional research is needed in investigating the health status and use of holistic health among a diverse group of African American women

# Practical Implications

---

- Focus prenatal health on assessing and addressing holistic factors (MIND, BODY, & SPIRIT)
- Potential partnering with community (e.g., pregnancy and parenting supportive services, faith based organizations)

# Conclusion

---

Identifying multiple factors influencing pregnancy and birth outcomes should bring us a step closer to reducing the number of low birth weight and preterm infants, which may in turn lead to eliminating health disparities among a population that has historically been adversely affected.





ROLLINS  
SCHOOL OF  
PUBLIC  
HEALTH

Department of Behavioral Sciences  
and Health Education

EMORY

## **Contact Information:**

Winifred Wilkins Thompson, Ph.D., MSW

Research Assistant Professor

Behavioral Sciences & Health Education

49 Jesse Hill Jr. Drive SE, Office 110

Atlanta, GA 30303

404-778-1349

[wthomp3@sph.emory.edu](mailto:wthomp3@sph.emory.edu)