

Maternal Childhood Adversity and Intergenerational Transmission of Risk during Pregnancy



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Intergenerational transmission of ACEs?

- Although the ACEs framework “counts” adverse events that occur during childhood, there are already considerable disparities at the time of birth.
 - Does it make sense to start at “0” at birth?
- Higher maternal ACEs are associated with:
 - Unintended pregnancies (Dietz et al., 1999)
 - Preterm birth (Christiaens et al., 2015)
 - Lower birth weight and gestation (Smith et al., 2016)
 - Early developmental socioemotional delays (McDonnell & Valentino, 2016)

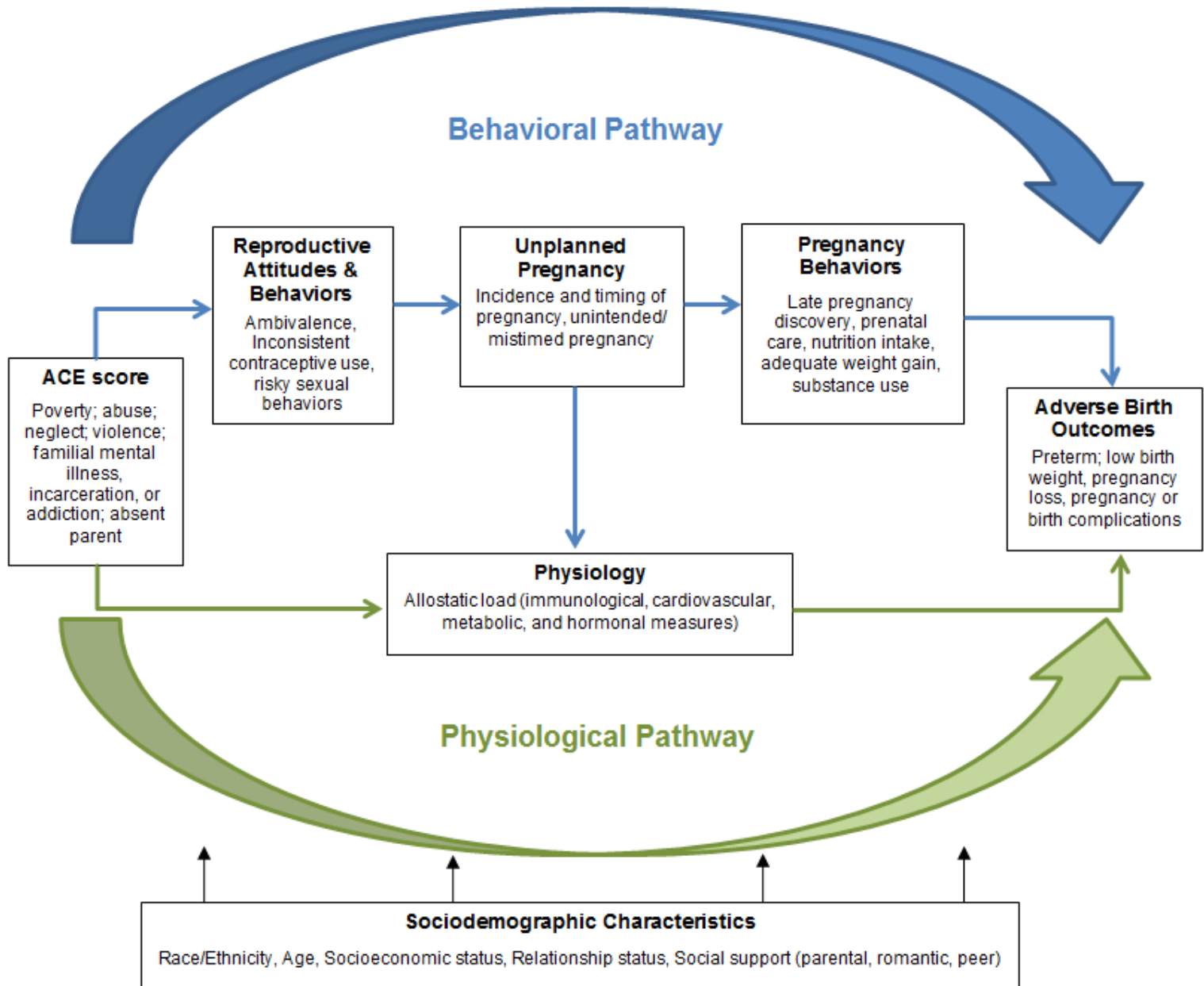


Figure 1. Conceptual model of maternal adverse childhood experiences, rapid repeat pregnancy, and adverse birth outcomes.

The HATCH Project

- **HATCH: Holistic Assessment of Tulsa Children's Health**
 - CIRCA project; additional funding by OSU Endowed Chair funds and Research Fellow Award
 - Recruited 177 pregnant women; following through 6 month post-birth
 - Recruitment through OU and OSU OBGYN clinics; partnerships with clinical faculty members
 - Data from survey assessments, biomarkers, and EMR data from prenatal care and birth records
 - Pilot studies embedded within larger study
 - Environmental toxicants (lead and cadmium)
 - Father early involvement and caregiving
 - Prenatal attachment experiment (BLOOM)
 - Maternal and infant sleep (Ciciolla study)



Sample Descriptives

	Low ACEs (54%)	Mid ACEs (32%)	High ACEs (15%)	Total (n=177)
	M/%	M/%	M/%	M/%
Age	25.16	25.24	24.71	25.11
White	34%	42%	59%	40%
Black	39%	22%	8%	29%
Hispanic	10%	24%	4%	14%
Native American	17%	12%	29%	17%
Married	24%	24%	24%	24%
Cohabiting	28%	36%	47%	33%
Single	48%	39%	29%	42%
Welfare receipt	64%	66%	78%	67%

*Note: Low = 0-2 ACEs, Mid= 3-6 ACEs, High = 7-10 ACEs

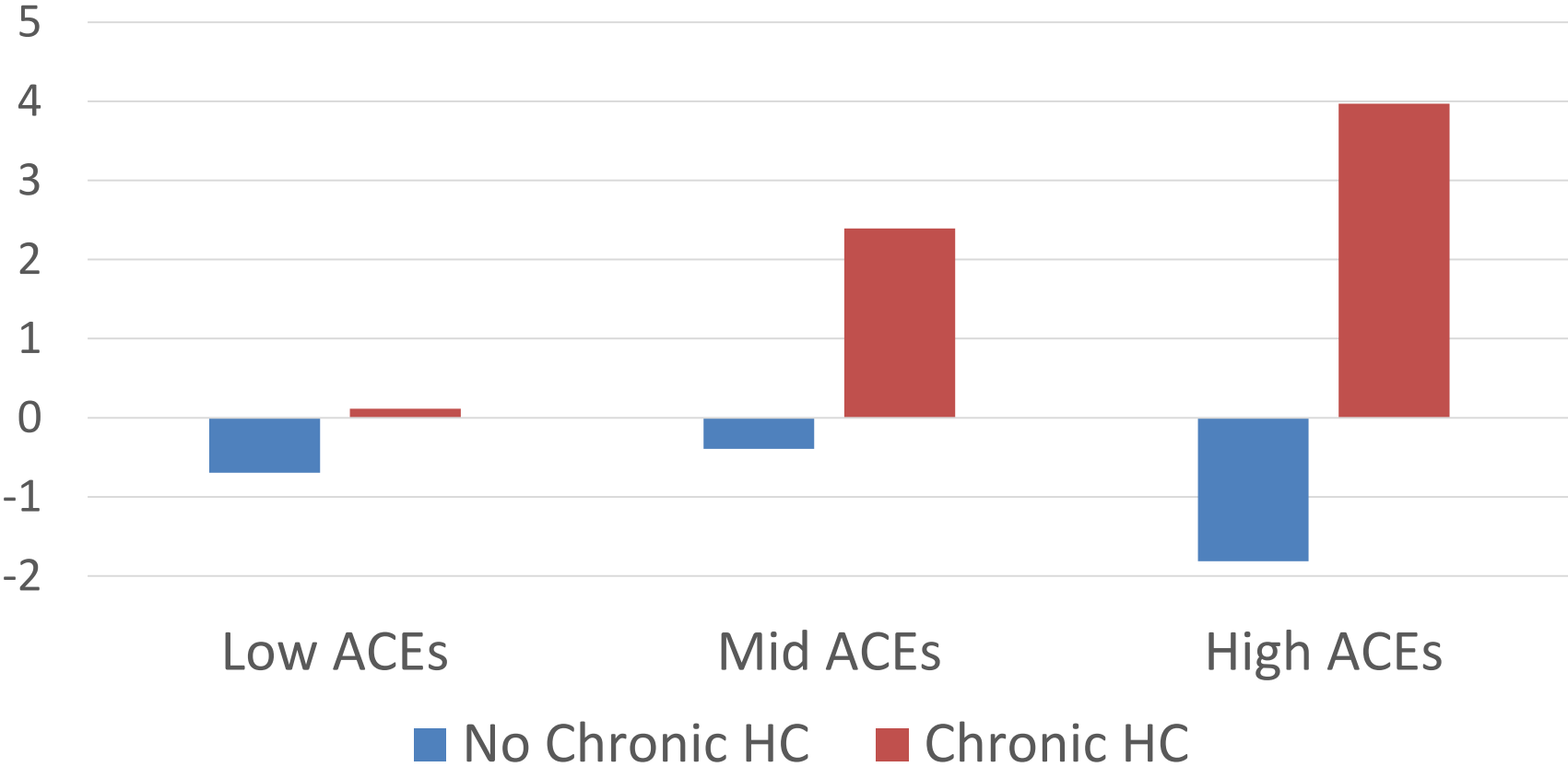
Physical and Mental Health by ACEs Status

	Low ACEs (54%)	Mid ACEs (32%)	High ACEs (15%)	Total (n=177)
Pregnancy Specific Stress Scale	29.18	31.56	34.47	30.72
Global Stress Scale	2.08	2.25	2.42	2.18
Mental Health Problems	.15	.31	.52	.26
CES-D	13.18	18.13	19.33	15.66
Asthma	.21	.19	.34	.22
High Blood Pressure	.09	.11	.27	.12
Diabetes	.05	.00	.08	.04
Chronic Health Condition	.30	.28	.57	.34
Smoked before Pregnancy	.40	.48	.57	.45
Smoked during Pregnancy	.27	.33	.37	.30
Drink before Pregnancy	.47	.57	.46	.50
Drink during Pregnancy	.12	.19	.17	.15
Household Members Smoke Indoors	.16	.27	.18	.20
Self-Rated Health	3.26	2.83	2.81	3.06
Total Hours of Sleep per Night	7.53	7.10	7.61	7.40
Mistimed Pregnancy	.25	.42	.40	.53
Fetal Loss	.04	.07	.09	.06
Cortisol- Variation from normal range	-.01	.04	-.01	.01
CRP- Variation from normal range	-.51	.17	1.59	.01

*Note: Low = 0-2 ACEs, Mid= 3-6 ACEs, High = 7-10 ACEs

Preliminary Biomarker Results

Adjusted Values of CRP Variation by ACEs and Chronic Health Condition



BLOOM Intervention

- BLOOM: **B**abies and **M**oms, connected by **L**ove, **O**penness, and **O**ppportunity
- Intervention designed to increase prenatal attachment among pregnant women in HATCH
- Secondary goal of increased collaboration (Shreffler, Tiemeyer, Ciciolla, Croff)



BLOOM Intervention

- Common issues we were seeing in HATCH:
 - High levels of unintended pregnancy
 - Low levels of prenatal attachment
 - Risky maternal health behaviors during pregnancy (drinking and smoking before and during pregnancy, lack of nutritional intake)
 - High rates of adverse birth outcomes (pregnancy and birth complications, preterm birth, etc.)

BLOOM Intervention

- What did we know from prior research?
 - Unintended pregnancies are high nationally (45%) despite decades of effort to reduce
 - Unintended pregnancies can lead to poor birth outcomes due to:
 - Delayed pregnancy awareness
 - Delayed/inadequate prenatal care
 - More exposure to substances during pregnancy
 - Social circumstances/stress
 - Inadequate nutritional intake

BLOOM Intervention

- What did we know from prior research?
 - Women with higher prenatal attachment engage in healthier behaviors during pregnancy
 - Unintended pregnancy is associated with lower levels of prenatal attachment
 - Prenatal attachment develops throughout pregnancy, but women are already attached to pregnancies that are planned

BLOOM Intervention

- Question: Can we increase prenatal attachment quickly?

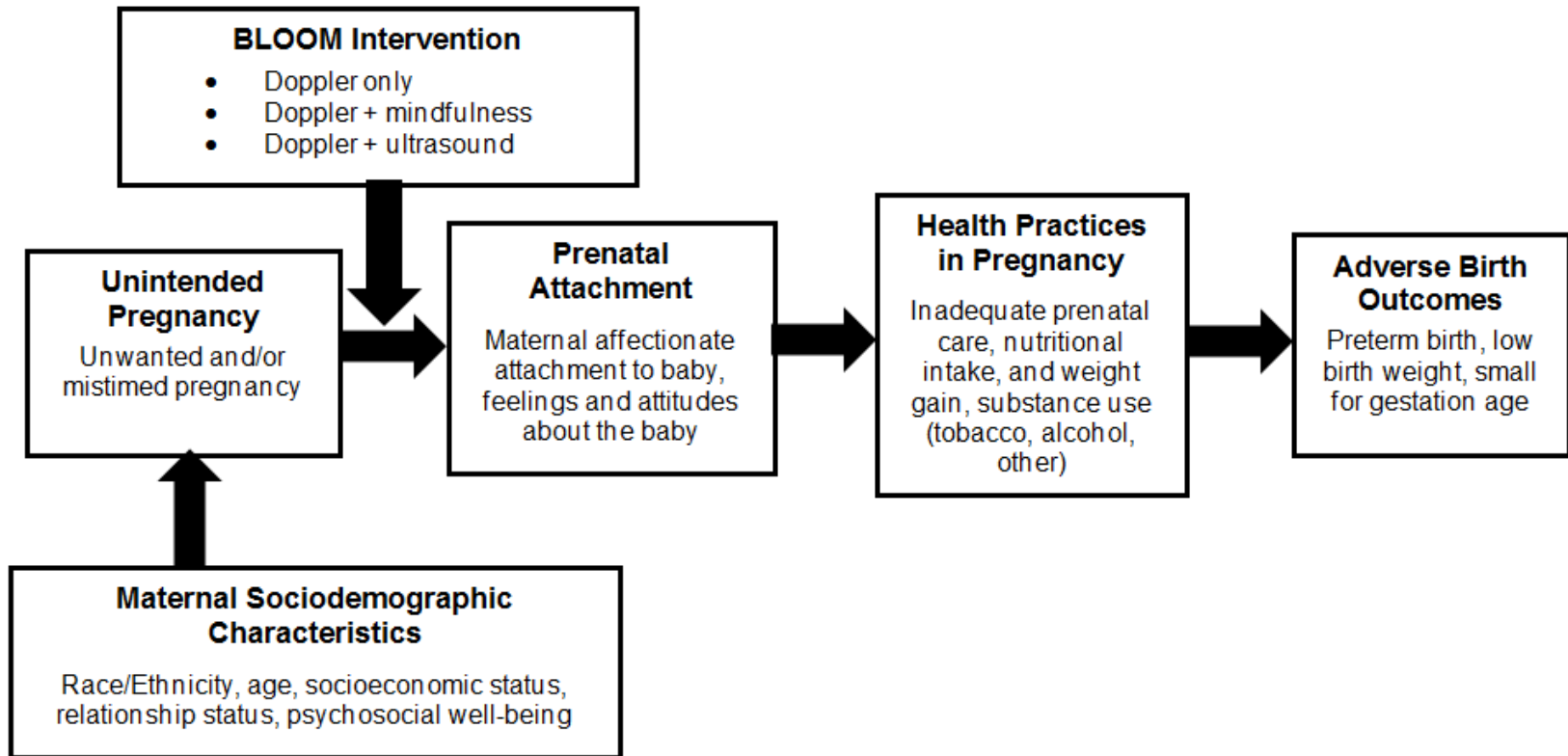


Figure 1. Conceptual model of the moderating effect of BLOOM on the reduction of adverse birth outcomes.

BLOOM Findings

Table 1. BLOOM Intervention Pilot Results (N=34).											
	Condition										
	Control (n=9)		Doppler only (n=8)		Doppler+ Mindfulness (n=6)		Mindfulness only (n=11)		Total (n=34)		
	M	SD	M	SD	M	SD	M	SD	M	SD	
Pre MFAS	90.4	11.32	94.88	8.46	93	6.1	96.73	8.81	93.86	9.14	
Post MFAS	88.22	11.46	96.57	7.21	97.83	9.83	97	7.51	94.67	9.57	
Difference MFAS	-1.78	7.31	2.57	5.5	4.83	6.68	0.27	5.9	1.03	6.52	
Change Score Analysis ¹											
β			.34		.44*		.28				
Adj. R ²										.15	

¹ Change score analysis of difference in MFAS between time 1 and time 2 controlling for baseline MFAS.

*p<.05.

Current Research Activities

- About to launch 6 month post-birth assessment
- Data merging, cleaning, coding, analysis
- Dissemination of findings (conference presentations, manuscript development)
- Preparation/submission of grant proposals

Publications and Presentations Funded by CIRCA	
Publications	6
Under Revisions	4
Under Review	8
Conference Presentations	22



Questions??

If you are interested in collaborating with us on this data or future projects, please contact us!

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- Note: Support for this study comes from NIGMS (P20GM109097)