Prenatal Representations of the Unborn Child

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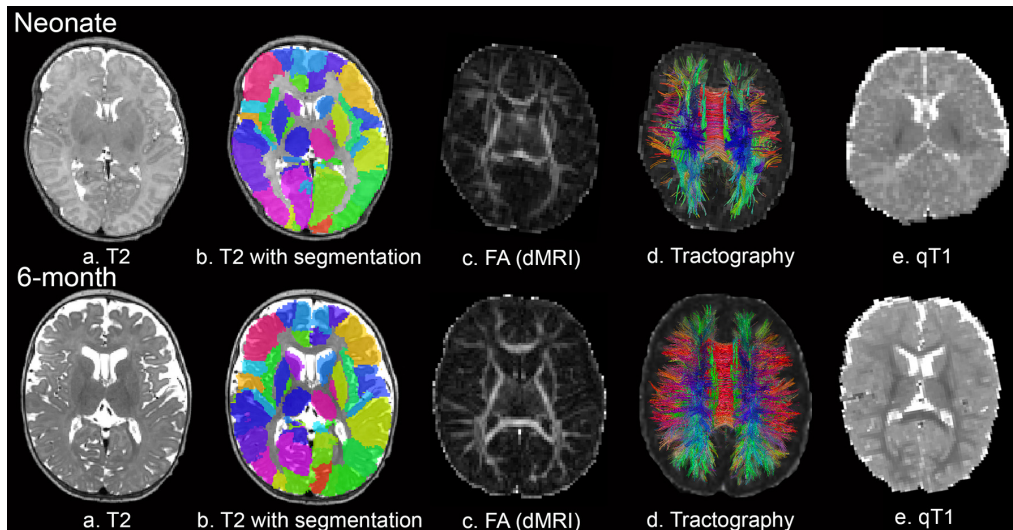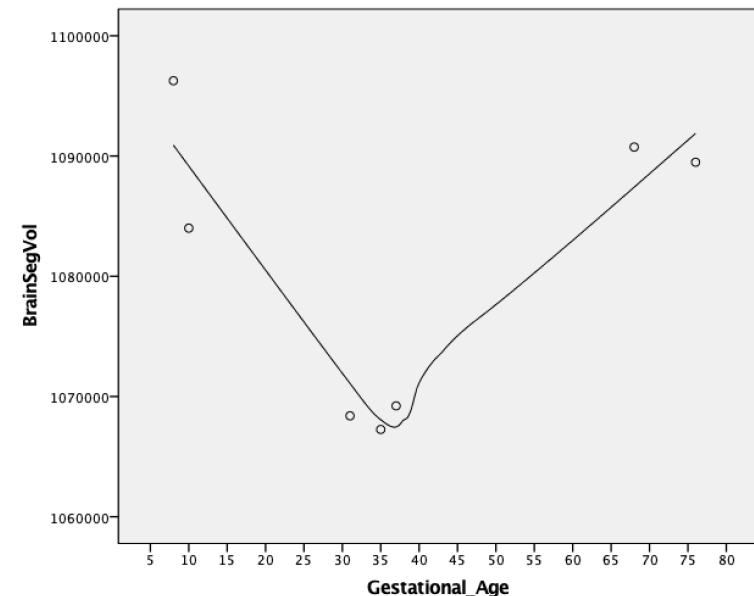
Vanderbilt University

Last time I talked to you all, I discussed neuroimaging in infants and pregnant people

Example images from neonate and 6-month scan. a. T2-weighted; b. T2-weighted with segmentation from iBEAT overlaid; c. Fractional anisotropy (FA) from Diffusion-weighted MRI; d. Tractography using Camino; e. T1-weighted Quantitative MRI (qT1).

Total brain volume appears to decrease during pregnancy and increase again postpartum
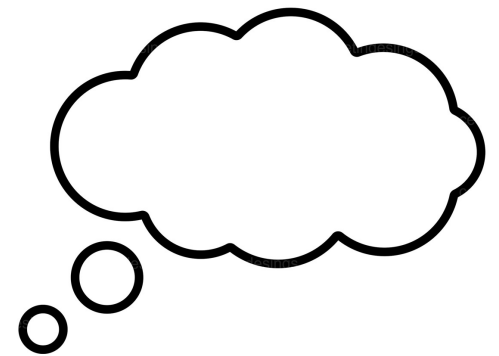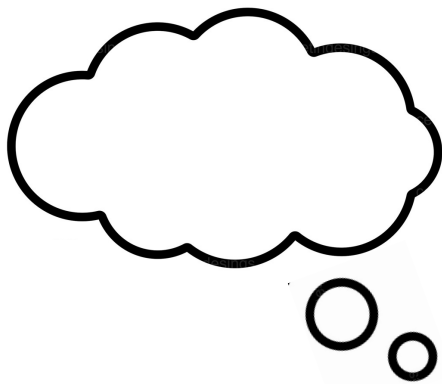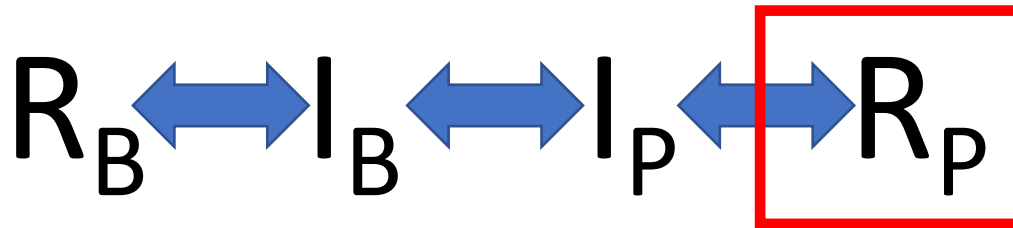
This work requires us to interview pregnant people (typically identifying as women or "moms"), in order to follow them and their infants over time

Today I will be sharing some of what we've learned from those interviews

The driving theory is that parent's beliefs about who their child is affects their interactions, and ultimately the child's understanding of themselves and their world

$$R_B \longleftrightarrow I_B \longleftrightarrow I_P \longleftrightarrow \boxed{R_P}$$

R_B = baby's representational world

I_B = baby's interactive behavior

I_P = parent's interactive behavior

R_P = parent's representational world

Stern-Brushweiler and Stern (1989)

Working Model of the Child Interview (prenatal version) includes this prompt

I want you to think about your child's personality. I am going to ask you to pick five words (adjectives) to describe your child's personality now. After you have told me what they are, I will ask you about each one.

Zeanah et al.

We find that experiences of child maltreatment, stress during pregnancy, and symptoms of depression are each associated with aspects of prenatal representations.

We also see evidence that representations may be a link between past experiences and parenting behavior with one's own child.

Using sentiment analyses we examined use of negative emotion words to describe one's unborn child

When infants were 11 months examined the parent–child interactions

Katherine Guyon-Harris, Ph.D.

The emotional tone of child descriptions during pregnancy is associated with later parenting

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Abstract
Introduction: How parents think and feel about their young children has implications for the parent–child relationship. We examined prospective associations between prenatal descriptions of the unborn child's personality and later parenting behavior.
Methods: Pregnant women ($N = 120$; mean age = 26.16, $SD = 5.71$) were recruited in their third trimester for a longitudinal study. The sample is demographically diverse and predominantly economically disadvantaged. During prenatal interviews, women described their unborn child's personality, from which positive and negative emotion words were coded. Parenting behavior was coded 12 months postpartum ($n = 105$ for longitudinal analyses).
Results: Use of positive and negative words was negatively correlated ($r = -.34$, $p < .001$). Greater use of positive words to describe the unborn child's personality was associated with higher observed sensitivity, warmth, and engagement during mother–infant interactions, whereas negative words were associated with higher interference and lower levels of sensitivity. Mothers who used anxiety- and/or anger-related words to describe their unborn child, relative to mothers who did not, demonstrated higher interference and lower warmth and sensitivity.
Conclusion: Descriptions of a child's personality before the child is born were associated with postnatal parenting behavior. Prenatal interventions that address negative thoughts and feelings regarding the child may be beneficial for promoting positive parenting postnatally.

TABLE 2   Mean differences between mothers who did and did not use anger and/or anxiety words

	Anger/anxiety words used			No anger/anxiety words used			t (df)	Cohen's d
	M	SD	n	M	SD	n		
Free play								
Sensitivity	2.45	0.69	11	3.44	0.80	94	3.91 (103)***	1.25
Engagement	3.72	0.79	11	3.86	0.70	94	0.60 (103)	
Interference	2.91	1.22	11					
Covert hostility								
W								
Ar								−0.44
En					0.79	94	−0.54 (103)	−0.17
Fla	2.91	1.22	11	2.60	0.86	94	−0.83 (11.19)	−0.35
Cleanup								
Sensitivity	2.27	0.65	11	3.12	0.83	94	3.26 (103)**	1.04
Engagement	3.18	0.75	11	3.44	0.81	94	0.99 (103)	0.32
Interference	3.09	1.03	11	2.15	0.82	94	−3.52 (103)**	−1.11
Covert hostility	1.07	0.22	11	1.03	0.11	94	−0.90 (103)	−0.29
Warmth	1.64	0.67	11	2.12	0.72	94	2.12 (103)*	0.68

Negative emotional words were prospectively associated with lower sensitivity, lower warmth, and higher interference at infant age 11 months

Though not certainly causal, the strong association with caregiving led us to wonder what was the "source" of these ideas
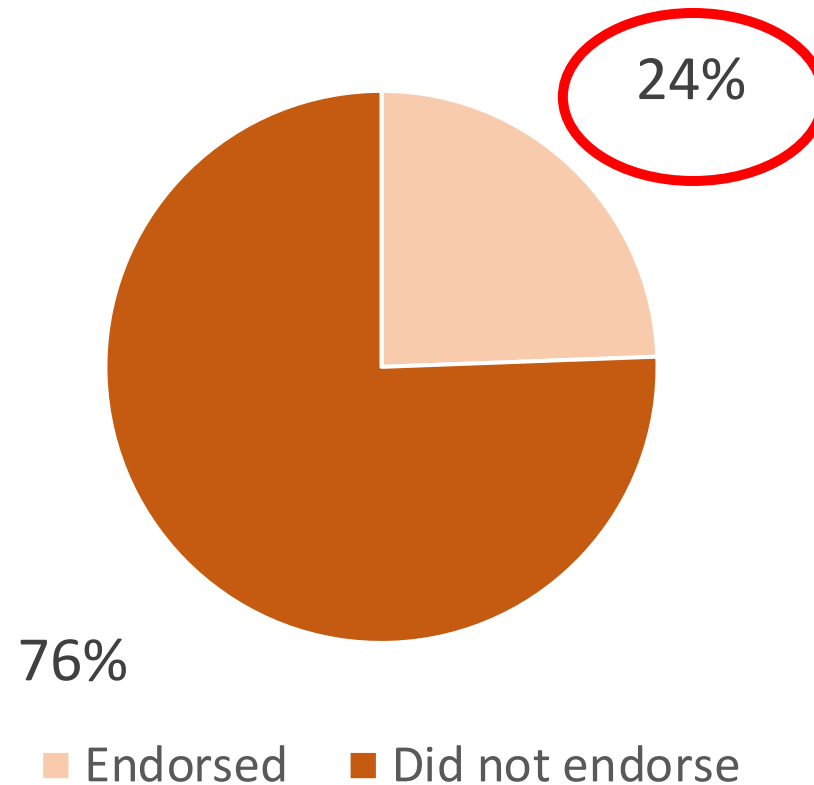
We asked "why did you pick" each word. Here's an example:

PARTICIPANT'S RESPONSE TO WHY SHE SPONTANEOUSLY PICKED "STUBBORN"

I noticed that experiences during prenatal care (primarily ultrasound exams) visits seemed to be coming up a lot.
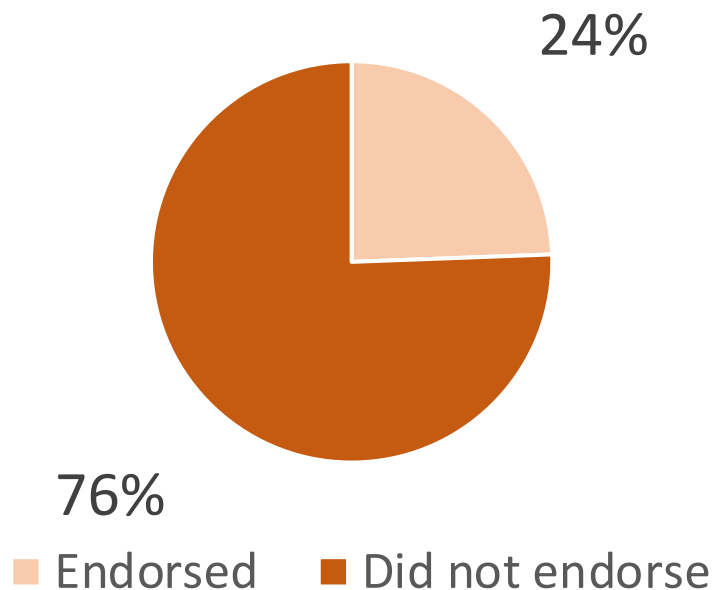
We reviewed our videos and coded how often adjectives came from prenatal care visits.

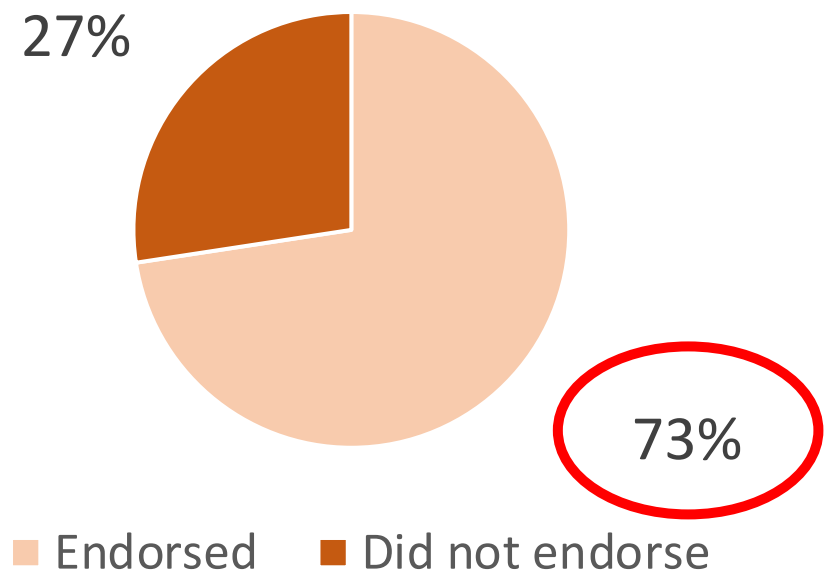# Participants spontaneously reporting adjectives came from prenatal care visit (n=127)

24%

76%

■ Endorsed ■ Did not endorse

Parental representations and prenatal care visits

Participants spontaneously reporting adjectives came from prenatal care visit (n=127)

24%

76%

Endorsed   Did not endorse

Participants reporting adjectives came from prenatal care visit when asked (n=135)

27%

73%

Endorsed   Did not endorse

What are the consequences of an "expert" telling a pregnant person what they can tell about who their baby is?
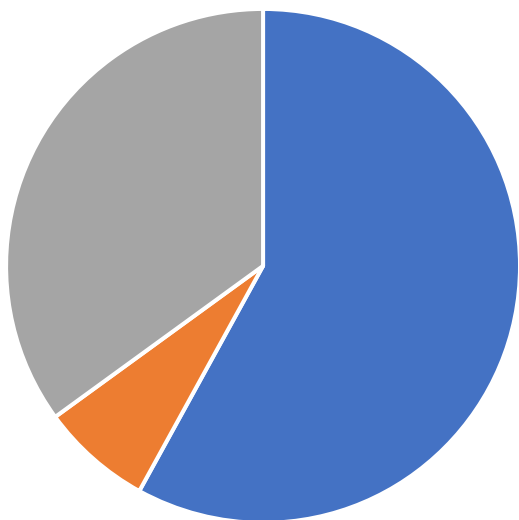
Remember this movie?

If not, Leo DiCaprio and crew try to implant an idea into Cillian Murphy's character's subconscious.

We examined whether words that came from prenatal visits were more positive, neutral, or negative compared to all of the words provided

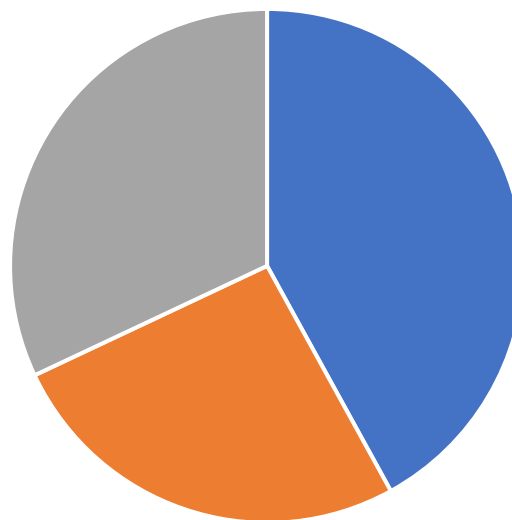# Proportion of Valence at Pregnancy

All Pregnancy Words (1204 words total)

■ Positive Words ■ Negative Words ■ Neutral Words

7% negative

Prenatal Visit Words (190 words total)

■ Positive Words ■ Negative Words ■ Neutral Words

26% negative

These ideas about who the child is appear to be relatively persistent even after meeting and getting to know one's baby

Given how often difficulties in getting the measurements during ultrasound exams came up as a topic, we launched an experiment to test out causal links between what technicians say and what participants think about the fetus

Using Prolific we recruited 161 assigned female at birth individuals of child-bearing age for a "virtual" ultrasound visit. All saw the same introduction video asking them to imagine a scenario.

Introduction Video

Kaylin Hill, Ph.D.   Abby Blum

They were then randomized into three conditions based on an amalgam of participants' reports:

Technical Issue

Blaming of Baby

Parent–Child Relationship

We then asked participants to generate 5 words to describe the baby's personality.

We pre-registered our hypotheses and analyses, and the findings far exceeded our expectations
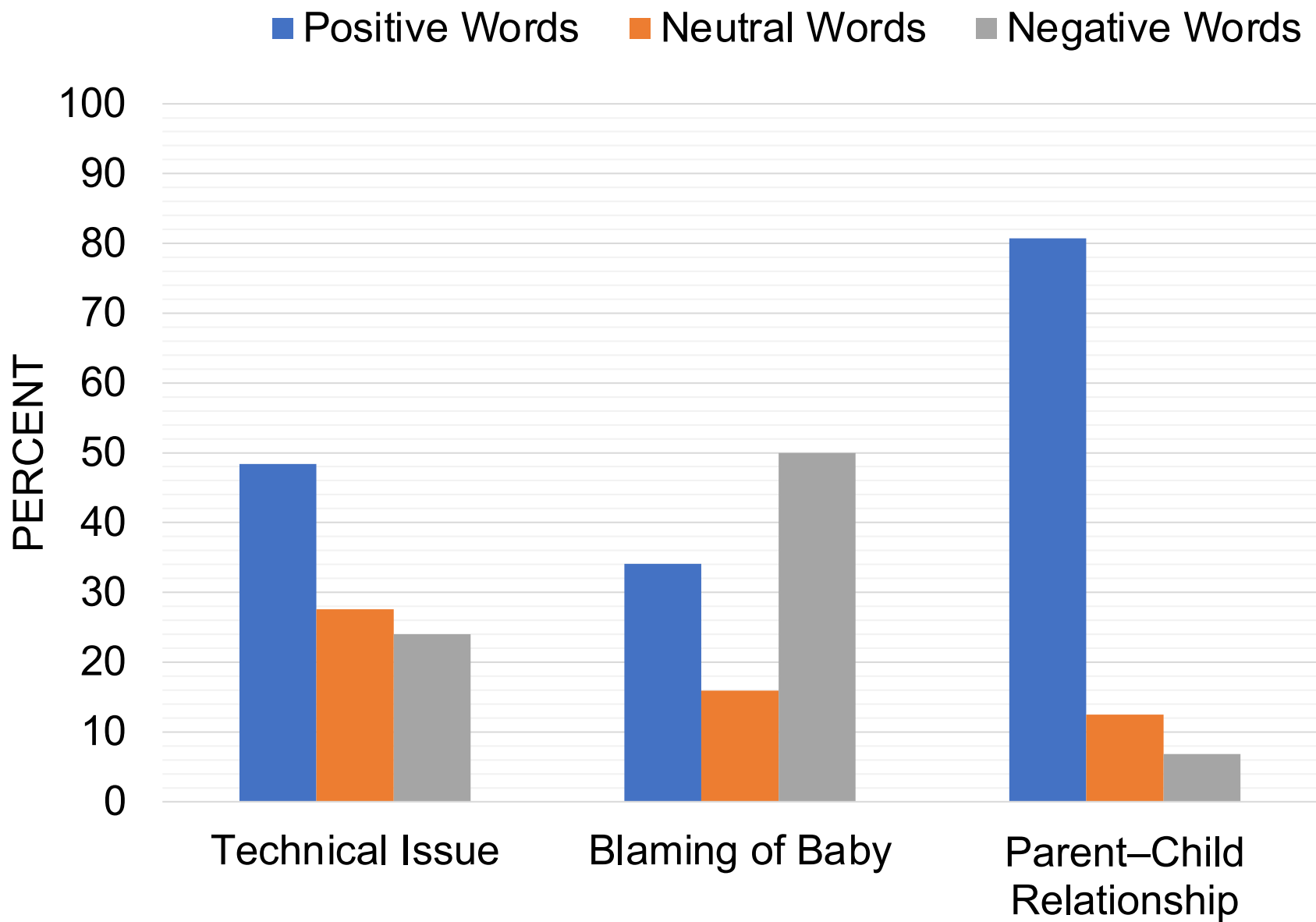
Next are some word clouds

Technical Issue

Blaming of Baby

Parent–Child Relationship

Chi-square (4) = 166.14, p = 7.0485E-35

Though preliminary, these point us in a direction for what "script" to give to ultrasound technician's during their procedures.

Conclusions

Parent's representations:

Begin during pregnancy

Explain later caregiving

Are influenced by prenatal care visits

Please find me if you want to discuss further!

SEA

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